

The English Martyrs Catholic School and Sixth Form College

Year 11 Knowledge organiser Core subjects

(Triple Science)



Name:

The English Martyrs Catholic School and Sixth Form College

How to use your knowledge organiser

This booklet contains the minimum knowledge required for each of the core subjects of:

- English
- Mathematics
- Science (Combined and Triple)
- Religious Education

This does not replace the knowledge and resources given to you by your subject teachers, but if you are struggling with knowing what to revise for each subject, then this booklet is a place to start.

At the end of the booklet is also some information on different revision techniques and how to plan a revision timetable.



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English Literature





A Christmas Carol



Key events (AO1)

Associated quotes

A miserly old man called Ebenezer Scrooge is mean, selfish and cruel to all around him. One night when returning home he is visited by the ghost of his old friend and business partner Jacob Marley. Marley tells Scrooge he must change his ways and live a life of generosity or he will be punished and forced to walk the earth forever more. Scrooge is visited by three spirits (The Ghosts of Christmas Past, Present and Yet-to-Come) who all show him visions of his life and how his life will be if he doesn't change. Filled with regret, sorrow but a determination to change, Scrooge is returned to his home on Christmas Day where he sets out to change his life and use his wealth to help others. He goes on to embody the Christmas spirit better than anyone else.

Stave 1: Marley's Ghost

We discover Jacob Marley, who was Ebenezer Scrooge's business partner, died seven years ago. Scrooge is working in his counter-house, along with his clerk - Bob Cratchit. Scrooge's nephew Fred arrives and wishes him a Merry Christmas, but Scrooge dislikes his enthusiasm for the festive and answers: "Bah! Humbug!" Scrooge argues that Christmas is like any other day when there is money to be paid through bills. Fred has a different attitude, proclaiming Christmas to be a "as a good time: a kind, forgiving, charitable, pleasant time: the only time I know of, in the long calendar of the year, when men and women seem by one consent to open their shut-up hearts freely." Fred invites his uncle to visit him and his friends for Christmas, but Scrooge refuses. Two portly gentlemen then come into Scrooge's counter house and ask Scrooge if he would donate money for the poor. Scrooge asks them if the prisons and workhouses are still open and dismisses them - saying he wishes to donate nothing and to be left alone. The weather is getting colder and colder. Outside, a Christmas caroler tries to sing a song through the keyhole of Scrooge's office door but Scrooge scares him off. After closing up the counting office and before he goes home, Scrooge tells his clerk Bob Cratchit that he wants him to work on Christmas Day, but eventually he is persuaded to allow him to have the day off - but Cratchit must turn up all the earlier the next day.

Scrooge continues his usual routine of having dinner in a tavern and then returns home through awful, foggy London streets. As he arrives at his front door he thinks he sees Marley's face on the door knocker until it turns back into an ordinary knocker. He is surprised but refuses to accept what he has seen. Scrooge thinks he sees a hearse going up the stairs in front of him. He rushes into his room and locks the door behind him, putting on his dressing gown as well. He eats gruel by the fire, but suddenly the carvings on the mantelpiece change into pictures of Jacob Marley's face. Again, Scrooge is reluctant to accept what he has seen. All of the bells and in the room start ringing and Scrooge hears footsteps coming up the stairs. A ghost floats through the door - it is Jacob Marley - see-through and covered up in chains, cash-boxes, keys, padlocks, ledgers, deeds and heavy purses wrought in steel. Scrooge tries to deny Marley's Ghost exists, claiming he is just a symptom of food poisoning. The ghost explains to Scrooge that he has spent seven years wandering the world in his chains as a form of punishment for the way he lived his life. Marley's Ghost tells Scrooge he has come back to save Scrooge from the same fate he has suffered. He informs Scrooge that he will be visited by three different spirits over the next three nights. The first one will come at one o'clock, the next the same time and the final one will be there on the last stroke of midnight. The ghost moves towards Scrooge's window which opens by itself. Scrooge is terrified and full of fear. The ghost tells Scrooge to look out of the window and he sees many spirits, all covered in chains. They are all shouting about how they did not lead caring and honourable lives and did not help others. Marley disappears and Scrooge goes back to bed and falls asleep.

"Scrooge was his sole executor, his sole administrator, his sole assign, his sole residuary legatee, his sole friend and sole mourner."

"But what did Scrooge care? It was the very thing he liked."

"Bah! Humbug!"

"Are there no prisons?" asked Scrooge.

"Plenty of prisons," said the gentleman, laying down the pen again.

"As a good time: a kind, forgiving, charitable, pleasant time" Fred on Christmas



Stave 2: The First of the Three Spirits

Scrooge wakes up at midnight and is confused. When he went to sleep it was 2am! To begin with he believes he must have slept through an entire day or it's noon and the sun isn't out. He remembers that Marley's Ghost told him the first spirit will arrive at 1am. Terrified and anxious, Scrooge waits. At one o'clock Scrooge's curtains on his bed are blown away by an unusual, child-like character who exudes wisdom and experience. The spirit has a cap to cover the light that comes from his head. Scrooge is taken to the rural countryside where he was born and raised. He visits his old school, sees his young friends and remembers many parts of his childhood. The effect of seeing these memories makes Scrooge cry. The ghost moves Scrooge into the school where a lonely little boy - Scrooge as a youngster - is all alone at Christmas time. Scrooge and the ghost continue to visit different Christmases of the past and eventually we see a little girl - Scrooge's sister Fan - who runs into the room and tells Scrooge she has come to take him home. She says their father has allowed Ebenezer Scrooge to come home. Young Scrooge hugs his sister. Scrooge reveals to the ghost that Fan died years ago and she is the mother of his nephew Fred. The Ghost of Christmas Past and Scrooge visit other Christmases and see a party being held by Fezziwig, a merchant who had Scrooge as an apprentice when Ebenezer was younger. Scrooge sees an older version of himself in conversation with Belle - his fiancée. She tells Scrooge she is ending their engagement as his love of capital gain and greed has ruined their love that used to be everything to Scrooge. Scrooge is taken to see a more recent Christmas where an older Belle talks to her new husband about her former fiancé Scrooge. Her husband says that Scrooge is alone in the world. Scrooge is struggling to deal with these scenes and begs the ghost to allow him to go back home. Full of anger, sadness and loss, Scrooge grabs the ghost's cap and pulls it over the child's head, and the light begins to diminish. By the time he gets to the ground, Scrooge finds himself back in his bedroom, where he goes to bed again and falls asleep straight away.

"A solitary child, neglected by his friends, is left there still." Scrooge said he knew it. And he sobbed.

"Scrooge sat down upon a form, and wept to see his poor forgotten self as he used to be."

"Why, it's old Fezziwig! Bless his heart; it's Fezziwig alive again!"

"Spirit!" said Scrooge in a broken voice, "remove me from this place."



Stave 3: The Second of the Three Spirits









In the distance the church clock strikes one and Scrooge wakes up in shock. He is glad to be awake and is waiting for the second spirit to arrive, but none seems to come. Scrooge waits 15 minutes and then suddenly a bright light beams down onto him. Scrooge moves into his other room where he finds the second spirit waiting for him. The Ghost of Christmas Present is very different to the first spirit. He is a giant, covered in green robes and sits on top of a throne made of a huge Christmas feast. He has a booming, loud voice and tells Scrooge he has more than 1800 brothers (one for each Christmas). He lives for only a single day. The spirit tells Scrooge to touch his robe, and when he does so the feast and room disappear. Scrooge finds himself in the middle of London on Christmas morning. It is very busy and full of life. He sees all sights of a joyful Christmas day as people shovel snow, take presents to each other and say to each other: "Merry Christmas!" The ghost and Scrooge then move on to visiting Bob Cratchit's family - remember that Cratchit is Scrooge's clerk. Mrs Cratchit prepares a Christmas meal of goose and all the trimmings. They are poor and this meal is one of the few treats they set money aside for. The eldest daughter Martha comes back from her job at the milliner's. Peter, the eldest son, wears a stiff-collared shirt which he received from his father. Bob arrives carrying his young son Tiny Tim on his shoulders. Tiny Tim has a debilitating condition that makes him very weak. The family is happy even though they have little food to celebrate Christmas with. Scrooge begs the Ghost to know whether Tiny Tim will survive. The spirit replies that given the current conditions in the Cratchit house, there will be an empty chair at next year's Christmas dinner. They move on to other people celebrating Christmas, including an isolated community of miners, lighthouse workers celebrating, and a crew on board a ship. Next they move on to Fred's Christmas party, where Scrooge enjoys watching the many party games, although none of the party guests can actually see him. As the night carries on, the Ghost of Christmas Present grows older. Lastly they come to a huge expanse of emptiness. Scrooge sees a pair of starving children who travel with the Ghost beneath his robes; their names are Ignorance and Want. Scrooge inquires if nothing can be done to help them. Mockingly, the ghost echoes Scrooge's own words from Stave 1: "Are there no prisons? Are there no workhouses?" The spirit vanishes as the clock strikes midnight and Scrooge sees a strange hooded ghost moving towards him.



"Oh, a wonderful pudding! Bob Cratchit said, and calmly too, that he regarded it as the greatest success achieved by Mrs Cratchit since their marriage."




But even here, two men who watched the light had made a fire, that through the loophole in the thick stone wall shed out a ray of brightness on the awful sea.





Fred on Scrooge: "I mean to give him the same chance every year, whether he likes it or not, for I pity him."





"Are there no prisons?" said the Spirit, turning on him for the last time with his own words. "Are there no workhouses?"

	Character summary	Key Quotes	Associated themes or ideas:
<p>Jacob Marley</p> 	<p>Scrooge's former business associate and friend. Marley passed away seven years ago on Christmas Eve. Marley inspired Scrooge to be selfish, greedy and utterly ruthless when dealing with other people. However, it is Marley that comes back to Scrooge as a ghost to tell him to change his ways or end up with the same fate as him, cursed to forever travel the world filled with regret and sorrow.</p>	<p>"It is required of every man," the Ghost returned, "that the spirit within him should walk abroad among his fellowmen, and travel far and wide; and if that spirit goes not forth in life, it is condemned to do so after death. It is doomed to wander through the world -- oh, woe is me! -- and witness what it cannot share, but might have shared on earth, and turned to happiness!"</p>	<p>Christmas Spirit Regret Sorrow Greed Supernatural Choice Time Guilt and Blame Emotional Coldness Memory and the Past Compassion and Forgiveness</p>
<p>Ebenezer Scrooge</p> 	<p>The central protagonist (main character) of the novella, Scrooge is a selfish, greedy but ultimately isolated elderly man that has spent much of his life hoarding his wealth away from others despite being surrounded by poverty and suffering. He is initial cruel and callous to everyone else before the visits of Marley's Ghost and the Three Spirits bring about his epiphany and the change in his character. Through the help of the narrator we follow Scrooge on his journey through his own past, present and potential future and celebrate his embracing of the Christmas spirit at the end.</p>	<p>"Bah! Humbug!"</p> <p>"Since you ask me what I wish, gentlemen, that is my answer. I don't make merry myself at Christmas and I can't afford to make idle people merry."</p> <p>"I will honour Christmas in my heart, and try to keep it all the year. I will live in the Past, the Present, and the Future."</p>	<p>Isolation Christmas Spirit Regret Sorrow Greed Choice Guilt and Blame Emotional Coldness Emotional Warmth Catharsis Transformation Memory and the Past Compassion and Forgiveness</p>
<p>The Ghost of Christmas Past</p> 	<p>The first of the three spirits to visit Scrooge, The Ghost of Christmas Past takes Scrooge on a journey through his memories – ones he enjoys remembering and others that bring up emotions that he has long since buried. We see his absolute joy at seeing Fan and Fezziwig again, but his immense sorrow and regret for what happened between him and Belle. The Ghost is presented as very unusual looking and re-reading and re-analysing the use of description of the character would be very useful to you as part of your revision.</p> 	<p>"It wore a tunic of the purest white, and round its waist was bound a lustrous belt, the sheen of which was beautiful."</p> <p>"Why did his cold eye glisten, and his heart leap up as they went past? Why was he filled with gladness when he heard them give each other Merry Christmas, as they parted at cross-roads and-bye ways, for their several homes? What was merry Christmas to Scrooge? Out upon merry Christmas! What good had it ever done to him?"</p>	<p>Supernatural Memory and the Past Compassion and Forgiveness Regret Sorrow Choice Guilt and Blame Christmas Spirit Family Emotional Warmth Time</p>
<p>The Ghost of Christmas Present</p> 	<p>The second of the three spirits that is presented a giant representing all that is great and good about Christmas Day. He is more dominating than the previous spirit and mocks Scrooge's own words from Stave 1 when Scrooge previously asked about prisons and workhouses being in operation. This spirit shows to Scrooge how everyone across society takes joy from Christmas and celebrate together, they do not isolate themselves like Scrooge has done. In particular, the visit to the Cratchits and Scrooge seeing the love for Tiny Tim hits him hard.</p>	<p>"I am the Ghost of Christmas Present," said the Spirit. "Look upon me."</p> <p>"[Tiny Tim] told me, coming home, that he hoped the people saw him in the church, because he was a cripple, and it might be pleasant to them to remember upon Christmas Day, who made lame beggars walk, and blind men see."</p>	<p>Christmas Spirit Family Compassion and Forgiveness Isolation Supernatural Emotional Warmth Choice Guilt and Blame Time Self-awareness</p>
<p>The Ghost of Christmas Yet-to-Come</p> 	<p>The final spirit is a dark, silent phantom that terrifies Scrooge and in some ways resembles the Grim Reaper, a classical symbol of death. This spirit shows Scrooge how the death of an isolated and friendless man sees vagabonds still his personal items, people celebrating his death and others suffering at his lack of compassion in life. Finally, the Ghost shows Scrooge his own gravestone and it is as this point that Scrooge has his epiphany.</p>	<p>"He lay, in the dark empty house, with not a man, a woman, or a child, to say that he was kind to me in this or that, and for the memory of one kind word I will be kind to him."</p> <p>"We may sleep to-night with light hearts, Caroline."</p>	<p>Supernatural Regret Sorrow Choice Time Guilt and Blame Transformation Emotional Coldness Isolation Death Family</p>
<p>Fred</p> 	<p>Scrooge's nephew and the son of Ebenezer's sister Fan. Fred embodies everything good about Christmas and is filled with joy and happiness everywhere he goes. He is the antithesis of Ebenezer Scrooge. When Scrooge sees Fred spending Christmas with his friends Fred refuses to criticise Scrooge, only saying he pities him. Fred is delighted to see his uncle in Stave 5.</p>	<p>"He had so heated himself with rapid walking in the fog and frost, this nephew of Scrooge's, that he was all in a glow"</p>	<p>Family Christmas Spirit Memory and the Past</p>
<p>Other characters</p> 	<p>Bob Cratchit – An honourable man and a wonderful father. Scrooge comes to respect him very much. He is part of the Cratchit family including his wife, Martha, Belinda and Peter. Tiny Tim - Bob's crippled son who everyone loves and everyone pities. Dickens was arguably trying to evoke immense sympathy from his readers for this weak but wonderful young boy. Tiny Tim survives his illness thanks to Scrooge's financial help. Fan and Belle – Scrooge's sister and former fiancée. They represent Scrooge's past and his regrets. Fezziwig – Scrooge's old boss who represents the Christmas Spirit. The portly gentlemen – Scrooge is rude to them but apologizes to one of them in Stave 5. They raise money for charity.</p>	<p>"Hilli-ho!" cried old Fezziwig, skipping down from the high desk, with wonderful agility. (Stave 2)</p> <p>"I have come to bring you home, dear brother!" said the child, clapping her tiny hands, and bending down to laugh. "To bring you home, home, home!" Fan (Stave 3)</p> <p>"God bless us every one!" said Tiny Tim, the last of all. (Stave 3)</p>	<p>Christmas Spirit Memory and the Past Guilt and Blame Emotional Warmth 6 Isolation Regret Sorrow Transformation Charity</p>

Stave 4: The Last of the Three Spirits	
<p>This new phantom is very different to the others spirits. He wears a black hooded robe and moves towards Scrooge. Scrooge cannot help but kneel before him and asks if he is The Ghost of Christmas Yet to Come. The phantom says nothing and Scrooge feels terrified. Scrooge is still hugely affected by the visits of the last two spirits and asks the phantom to share his lesson so he can avoid the fate of Jacob Marley. The ghost takes Scrooge to the London Stock Exchange, where he overhears a group of businessmen discussing the death of a wealthy man. Next they see a pawn shop in a poor part of London, where a group of low-lives sell personal items taken from a dead man.</p> <p>Scrooge sees the body of the dead man all alone and demands to be shown someone who feels sorry for this man who has passed. The ghost shows the dinner table of a poor family, where a husband and wife express relief at the death of a man to whom they owe money. They move on to the Cratchit household again, where the family struggles to cope with the death of Tiny Tim. Scrooge is desperate to know the identity of the dead man, struggling to understand what point or lesson the ghost is trying to make. Suddenly, he finds himself in a rundown churchyard where the spirit points him toward a freshly dug grave. Scrooge approaches the grave and reads the inscription on the headstone: EBENEZER SCROOGE. Stunned, Scrooge grabs at the spirit and begs him to stop the events of his nightmarish vision. He promises to honour Christmas within his heart and to live by the lessons of Past, Present, and Future. The spirit's hand begins to tremble, and, as Scrooge continues to ask for mercy, the phantom's robe shrinks and collapses. Scrooge finds himself returned to the his bed once more.</p>	<p>"He felt that it was tall and stately when it came beside him, and that its mysterious presence filled him with a solemn dread."</p> <p>"I will honour Christmas in my heart, and try to keep it all the year."</p> <p>I promised him that I would walk there on a Sunday. My little, little child!" cried Bob. "My little child!"</p> 
Stave 5: The End of It	
<p>Scrooge realises he has a chance to live the rest of life in a way that will make him truly happy. He praises of the three spirits and the ghost of Jacob Marley. When he realises he hs been returned back to Christmas morning, he begins shouting "Merry Christmas!" as loud as he can. Full of energy and excitement, Scrooge struggles to dress properly and dances while he shaves. As quickly as he can, Scrooge runs into the street and offers to pay the first boy he meets a colossal sum to deliver a great Christmas turkey to Bob Cratchit's family. He meets one of the portly gentlemen who in Stave 1 asked for donations to the poor. Scrooge apologises for his rudeness, and whispers into the man's ear the massive sums of money he promises to give to charity. Scrooge moves on to Fred's Christmas party and shows such joy and enthusiasm that the other guests cannot understand Scrooge's sea change in behaviour.</p> <p>The next morning, Scrooge arrives at the office early and decides to put on his usual stern and serious expression when Bob Cratchit enters eighteen and a half minutes late. Scrooge, pretending to be disgusted, begins to criticize Bob, before suddenly telling Bob he will give him a large raise and will assist his family as much as he can. Bob cannot believe it, but Scrooge promises to keep his word. We are told by the narrator that Scrooge is as good as his word: He helps the Cratchits and becomes a second father to Tiny Tim who does not die as predicted in the ghost's dreadful vision. Many people in London are puzzled by Scrooge's new behaviour, but Scrooge merely laughs at them. Scrooge brings the Christmas spirit into every day, respecting the lessons of Christmas more than any man alive. The narrator finishes the story by saying that Scrooge's words and thoughts should be shared by of all of us ... "and so, as Tiny Tim observed, God bless us, Every one!"</p>	<p>"I don't know how long I've been among the Spirits. I don't know anything. I'm quite a baby. Never mind. I don't care. I'd rather be a baby. Hallo! Whoop! Hallo here!"</p> <p>"I'll send it to Bon Cratchit's!" whispered Scrooge, rubbing his hands, and splitting with a laugh. "He shan't know who sends it. It's twice the size of Tiny Tim. Joe Miller never made such a joke as sending it to Bob's will be!"</p> 

Context key idea (A03)	Why is this significant?
<p>Philanthropy and Dickens' Sense of Social Justice</p> 	<p>Although now in Britain we have what is known as the welfare state (which includes support for the neediest including the NHS, social housing, unemployment benefits and more), there is was little government support for the poorest in society during the Victorian era.</p> <p>Many wealthy Victorians who were socially conscious (meaning they felt a responsibility to help those who could not help themselves) became heavily involved in philanthropy. They used their own money to give to charities and to set up their own charities to help those that needed help. Charles Dickens was one such person and he used his own money to help others, as well as working with wealthy benefactors to make changes in society, too.</p> <p>Dickens was philanthropic advisor to Angela Burdett-Coutts (1814-1906), known as 'the richest heiress in all England'. Dickens used her wealth to give to social causes as well. In 1847 her money was used to create Urania Cottage for homeless women. Under his guidance she also supported the Ragged School Union, which was founded in 1844 to provide free education to poor children by Lord Shaftesbury.</p> <p>Moreover, Dickens used his writing to act as a social commentator – bringing to the attentions of his middle and upper class readers the need for social upheaval. Some of his characters play a positive philanthropic role, such as Mr Brownlow in Oliver Twist, the Cheeryble brothers in Nicholas Nickleby, and Mr and Mrs Garland in The Old Curiosity Shop.</p>
<p>Victorian Deprivation</p>  	<p>Workhouses existed well before the Victorian era, but the 1834 Poor Law Amendment Act meant it a legal requirement for all able-bodied people to work in workhouses to get their 'poor relief' (financial support). Before this time the poorest in society had to rely on charity and hand outs to survive. However, Victorians saw poverty as a kind of illness or disease in society that needed to be eradicated. Governments were keen to move the poorest indoors, away from everyone.</p> <p>However, those in charge of the country made workhouses places to be feared in order to prevent 'lazy' citizens thinking it was an easy option instead of going out to find work. Workhouses meant the poorest would work for food and a place to sleep, but many people saw it as a form of slavery. workhouses also took in orphans, abandoned children, the mentally ill, the disabled, unmarried mothers and the elderly. Despite their age or abilities, all were required to work long and demanding hours.</p> <p>Whenever someone entered a workhouse they were stripped, bathed whilst being supervised and then provided with a uniform. This uniform separated them from the rest of society. If those from workhouses were out in the streets everyone else would instantly know they were in a workhouse. Often children were 'hired out' to wealthy business men and made to work in awful places such as mines. You were not allowed to try to contact your family and doing so could result in being punished. The standard of education provided was awful and would not help those within the workhouses get out of them. The food given to those in the workhouses was of a poor quality, simple and the same every day. Food was seen as a tool to keep you working, not as something to be enjoyed.</p>

Linguistic devices (AO2)	Why is this significant?
Pathetic fallacy 	This is where a writer gives human feelings to non-human objects or places to get across a tone or emotion to readers. For instance, the weather is very foggy and dingy as Scrooge walks through London in Stave 1, indicating mystery and a lack of harmony in Scrooge's world. In Stave 1 he is surrounded by the "Piercing, searching, biting cold", echoing Scrooge's cold heart and lack of human warmth. By Stave 5 after Scrooge has transformed into a joyful human being the weather has also changed: "No fog, no mist; clear, bright, jovial, stirring, cold; cold, piping for the blood to dance to".
Epiphany 	An epiphany is a sudden realisation of something. Scrooge has an epiphany as he reveals after seeing his own gravestone that he must love with Christmas in his heart (Stave 5). Because of this epiphany he is then able to go out at the end of the text and share his wealth with others and actually feel happy.
Symbols 	Each of the ghosts acts as a symbol for something much greater. The Ghost of Christmas Past embodies Scrooge's regrets that he changed so much from his past, that he did not make the most of his family and that he has lost his fiancée Belle. The Ghost of Christmas Present is a symbol of the happiness and joy all people feel at Christmas despite their often harsh and deprived conditions. The Ghost of Christmas Yet-to-Come symbolises what will happen to Scrooge and his friends and family if he does not change.
Metaphors and Similes, Personification, Parallelism, and Descriptive Language 	Dickens needs to use a lot of descriptive language to get across not only the Christmas London settings but also the unusual spirits that visit Scrooge. Marley's Ghost needs to be terrifying, the Ghosts of Christmas Past and Present are not human but supernatural. He uses numerous metaphors and similes to get across both characters and setting to his readers. Dickens was a master of description and this shines through in A Christmas Carol. Metaphor example: "But he [Scrooge] was a tight-fisted hand at the grindstone" Simile example: "It was a strange figure -- like a child: yet not so like a child as like an old man..."

Form (AO2)	Why is this significant?
Allegory 	An allegory is a type of story that has a hidden meaning, where characters represent bigger themes and ideas. For instance, Star Wars is an allegory of good and evil. The Jedi represent good and the Dark Side represents evil. In the same way A Christmas Carol represents turning away from greed, selfishness and an obsession with money and turning towards helping others and using your wealth to good for friends, family and society.
Frame Story 	Because A Christmas Carol begins with a narrator introducing the story and finishes with the narrator summing it up and ending it, this is known as a 'frame story'. At the beginning Scrooge's character is established by the narrator and at the end his dramatic shift in personality is explained by the narrator as well. In between these two parts of the plot we find out other stories from Scrooge's past, present and future in order for him to have his epiphany and change.
Cyclical Structure 	A cyclical structure to a text is where it begins and ends in the same way. In Stave 1 Scrooge is rude and unkind to Bob Cratchit, two portly gentleman raising money for charity, and his nephew Fred. In the final stave he sees all these people again and is able to apologise and show them his transformation. It's a structure that works very well for emphasising Scrooge's change in personality.
'Staves' instead of 'Chapters' 	A stave could refer to a wooden plank used to help in construction (a bit like scaffolding). It can also refer to a musical staff or symbol - used with sheet music. Whilst Dickens most likely used 'staves' instead of chapters in A Christmas Carol because he wanted to associate the plot with a literal 'Christmas Carol' or song, it could be said that each chapter helps in the construction of Scrooge as a transformed man. Similarly, in two other novellas by Dickens he also used musical symbols instead of 'chapters' ("quarters" in <i>The Chimes</i> and "chirps" in <i>The Cricket on the Hearth</i>).

Characters		
Inspector Goole	Priestley's mouthpiece; advocates social justice; serves as the Birlings' conscience	Socialist, moralistic, righteous, powerful, intimidating, unconventional, mysterious, imposing, sardonic, omnipotent
Mr. Arthur Birling	Businessman; capitalist; against social equality; a self-made man (new-money)	Capitalist, arrogant, foolish, Panglossian, emasculate, prejudice, ignorant, selfish, stubborn, vainglorious
Mrs. Sybil Birling	Husband's social superior; believes in personal responsibility	Arrogant, cold-hearted, insincere, prejudice, naïve, conformist, bitter, controlling, remorseless
Sheila Birling	Young girl; comes to change views and pities Eva; feels regret	Transformative, remorseful, socialist, pseudo-inspector, sensitive, astute, strong-minded, empowered
Eric Birling	Young man, drinks too much; forces himself on Eva Smith; regrets actions	Rebellious, reckless, immature, insubordinate, compulsive, desperate, disgraced, dualistic, irresponsible
Gerald Croft	Businessman; engaged to Sheila; politically closest to Birling	Aristocratic, evasive, secretive, dishonest, disingenuous, oleaginous, chivalric, privileged, pragmatic
Eva Smith	Unseen in play; comes to stand for victims of social injustice (changes her name to Daisy Renton)	Suffragist, victim, emblematic, allegorical, vulnerable, desperate, socialist, moralistic, principled

Theatrical Stagecraft: Dramatic Devices

Dramatic irony	Birling's speeches, Mrs. Birling's witless implication of Eric
Stage directions	Instructions for the actors; often revealing – such as the lighting change when the Inspector arrives: "Pink and intimate then brighter and harder"
Setting	Constant throughout but subtle changes e.g. lighting; characters on/off stage
Tension	Builds up throughout the play; interrogation of characters, personal relationships, secrecy
Cliff-hanger	Eric's reappearance in Act 3; the ending allows the audience to make up their minds
Foreshadowing	Symbolism (The Titanic), Mr. Birling's "knighthood", war
Time-lapse	Set in 1912, written in 1945; audience in a privileged position.
The 4th Wall	The Inspector's final speech addressed directly to audience.

Social, Historical and Literary Allusions

"the Titanic"	The Titanic sailed from Southampton and sank in the early hours of 15th April 1912. Priestley clearly wants his audience to see his drama play out against a background of real historical events and he has also chosen a moment in time when Birling's comments appear particularly ironic.
"Nobody wants war"	In reality, economic rivalry between the British Empire and the new German Empire was one of the many causes of the First World War.
"Russia"	The irony here suggests that Russia will have progressed further than other European countries by the 1940s.
"Bernard Shaws and H. G. Wells"	Both the noted Irish playwright George Bernard Shaw (1856-1950) and the father of science-fiction H. G. Wells (1866-1946) were well-known and outspoken socialists.

'An Inspector Calls' by J.B. Priestley: A Knowledge Organiser

Plot	
Act 1	Set in April 1912, Brumley, Midlands, UK. The Birling family and Gerald Croft are celebrating Sheila Birling's engagement to Gerald with a dinner. Mr Birling lectures his son, Eric Birling, and Gerald about the importance of every man looking out for himself if he wants to get on in life. Edna (the maid) announces that an inspector has arrived. Inspector Goole says that he is investigating the death of a young woman who committed suicide, Eva Smith. Mr Birling is shown a photograph of Eva, after initially denying recognising the woman in the photo, he remembers firing her in 1910 for organising a strike over workers pay. Sheila recalls also having Eva sacked about her manner when served by her in an upmarket department store. The Inspector reveals that Eva Smith changed her name to Daisy Renton. Gerald reveals to Sheila he had an affair with Daisy Renton.
Act 2	Gerald explains to The Inspector that he had an affair with Eva, but hasn't seen her since he ended their relationship back in Autumn 1911. Sheila gives her engagement ring back to Gerald. The Inspector turns his attention to Mrs Sybil Birling, she confesses that she also had contact with Eva, but Eva gave herself a different name to Mrs Birling. Eva approached a charity chaired by Mrs Birling to ask for help. Eva was desperate and pregnant but help was refused by Mrs Birling because she was offended by the girl calling herself 'Mrs Birling'. She tells Eva that the baby's father should be made entirely responsible. She also tells Inspector Goole that the father should be held entirely responsible and should be made an example of.
Act 3	Eric is revealed as the father. He stole money from Mr Birling's office to provide money to Eva. The Inspector delivers his final speech. After he leaves, the family begin to suspect that he was not a genuine police inspector. A phone call to the Chief Constable confirms this. Next, they phone the infirmary to be informed that no suicide case has been brought in. Mr Birling, Mrs Birling and Gerald congratulate themselves that it was all a hoax and they continue can continue as before. This attitude upsets Sheila and Eric. The phone rings. Mr Birling announces to the family that a girl has just died on her way to the infirmary, a police inspector is coming to question them

Key concepts and context: Think about...

1912	Set just before WWI and the sinking of the Titanic. A moment of rising international tensions and industrial expansion. End of Victorian era saw the demise of the rigid class system. Labour Party, founded in 1900, gaining momentum. The Russian Revolution began in 1917.
1945	People were recovering from six years of warfare, danger and uncertainty. Class distinctions greatly reduced as a result of two world wars. Women had a more valued place in society. Desire for social change. Following WW2, Labour Party won a landslide victory over Winston Churchill and the Conservatives.
Wealth, Power and Influence	The Birlings and the Crofts are representative of the wealthy upper-class. They all misuse their social influence to benefit themselves. Their actions adversely affect the vulnerable people in society.
Blame and Responsibility	Who is to blame for Eva's death? Each of the Birlings contribute to a chain of events leading to the destruction of Eva Smith. What responsibilities do the characters have to each other? To society?
Public v Private	How do the public lives, the facades, of the Birlings juxtapose their private personas? What are their motivations for this? What are the repercussions, and for who?
Morality and Legality	What are the moral and legal laws of the society depicted in the play? How do they interweave? What actions do the characters undertake that are wrong, morally or legally?
Class Politics	How do the ideologies of capitalism and socialism collide in the play? Which characters are representative of which political allegiance? Is there a correlation between a character's political beliefs and their behaviours?
Prejudice	What are the prejudices held by the Birlings? What are their inherent views regarding class and status? How do they act on these prejudices, and what are the consequences?
Young v Old	What differences are evident between the younger and older generation? They react and behave differently throughout the play – why? What are their attitudes towards each other? What do they learn? Which characters change, and how?

ACT	Order of the Inspector's Questioning
Act 1	<i>Sheila and Gerald's engagement is celebrated.</i>
Act 1	<i>Birling says there will be no war; references Titanic</i>
Act 1	<i>Inspector arrives; a young girl has committed suicide.</i>
Act 1	<i>Birling threw her out after strike; Sheila had her fired for laughing.</i>
Act 2	<i>Gerald had an affair with Daisy Renton</i>
Act 2	<i>Mrs. Birling refused to give charity to Eva; blames father.</i>
Act 3	<i>Eric's involvement revealed; possible rape hinted at.</i>
Act 3	<i>Inspector leaves. Gerald returns; met policeman, no Inspector G</i>
Act 3	<i>Telephone rings; an inspector is coming.</i>

Key Notes

Priestley asks his audience to examine their **individual** and **collective responsibility** to society. He wants a **welfare state**.

The **hypocrisy** of **middle-class Edwardian** society is uncovered: **appearance & reputation** matter more than **reality & morality**.

Priestley criticises the selfishness of **capitalism** and wants a fairer, **socialist** future after the horrors of two world wars..

Priestley shows the **older generation** to be set in their ways, while the young are **open to change**.

Eva Smith is the **embodiment** of young, **working-class women** who were **oppressed** by the **middle/upper classes**.

The play demonstrates that when workers do not have **full employment rights** they cannot fight back

Character Quotes

Birling's Confidence	"We're in for a time of steadily increasing prosperity'
Birling on society	"The way some of these cranks talk and write now, you'd think everybody has to look after everybody else'
Sheila's recognition	"but these girls aren't cheap labour – they're people'
Sheila's regret	"it's the only time I've ever done anything like that, and I'll never, never do it again to anybody'
Sheila on the inspector	"we all started like that – so confident, so pleased with ourselves until he began asking us questions'
Sheila on Eric	"he's been steadily drinking too much for the last two years'
Inspector on guilt	"I think you did something terribly wrong – and that you're going to spend the rest of your life regretting it'
Mrs Birling defends herself	"she was claiming elaborate fine feelings and scruples that were simply absurd in a girl in her position'
Eric explains	"I'm not very clear about it, but afterwards she told me she didn't want me to go in but that – well, I was in that state when a chap easily turns nasty – and I threatened to make a row'
The inspector says	"but each of you helped to kill her. Remember that'
Inspector's message	"there are millions and millions and millions of Eva Smiths and John Smiths still left with us, with their lives, their hopes and fears, their suffering, and chance of happiness, all intertwined with our lives, with what we think and say and do. We don't live alone.'

Thematic Quotes

Social responsibility	"We are responsible for each other" <i>Inspector</i> "Public men, Mr Birling, have responsibilities" <i>Inspector</i> "It's what happened to the girl and what we all did to her that mattered." <i>Eric</i>
Capitalism	"These silly capital vs labour agitations." <i>Birling</i> "A man has to make his own way" <i>Birling</i>
Class	"A girl of that class" <i>Mrs Birling</i> "Well, we've several hundred young women there, y'know, and they keep changing." <i>Birling</i>
Age	"the famous younger generation" <i>Birling</i> "What's the matter with that child?" <i>Birling</i> "Just keep quiet, Eric" <i>Birling</i>
Gender & attitudes to women	"I hate those <i>hard-eyed dough-faced women</i> " - <i>Gerald</i> "And you think young women ought to be protected against unpleasant and disturbing things?" <i>Inspector</i> "She had far too much to say, far too much" <i>Birling</i>

Poem	Key quotations
Ozymandias	'Two vast and trunkless legs of stone/ Stand in the desert' 'Half sunk, a shattered visage lies' 'wrinkled lip, and sneer of cold command' 'My name is Ozymandias, king of kings: Look on my works, ye Mighty, and despair!' 'Nothing beside remains' 'colossal wreck'
Storm on the Island	'The wizened earth had never troubled us' 'build our houses squat, Sink walls in rock and roof them' 'Exploding comfortably' 'salvo'/'strafe'/'bombarded' 'The very windows, spits like a tame cat Turned savage' 'Strange, it is a huge nothing that we fear'
Remains	'probably armed, possibly not' 'I see every round as it rips through his life' 'sort of inside out, pain itself, the image of agony' 'tosses his guts' 'End of story, except not really.' 'blood-shadow stays on the street' 'but near to the knuckle, here and now, his bloody life in my bloody hands'
Bayonet Charge	'running- raw In raw-seamed hot khaki' 'dazzled with rifle fire' 'Bullets smacking the belly out of the air' 'In what cold clockwork of the stars and the nations Was he the hand pointing that second?' 'The patriotic tear that had brimmed in his eye Sweating like molten iron from the centre of his chest' 'shot-slashed furrows Threw up a yellow hare that rolled like a flame' 'King, honour, human dignity, etcetera Dropped like luxuries'
Charge of the Light Brigade	'Half a league, half a league' 'valley of Death' 'Theirs not to make reply, Theirs not to reason why, Theirs but to do and die.' 'Stormed at with shot and shell' 'Cannon to right of them, Cannon to left of them' 'Flashed' 'honour' 'Came through the jaws of Death, Back from the mouth of hell' 'When can their glory fade? O the wild charge'
War Photographer	'spools of suffering set out in ordered row' 'as though this were a church' 'which did not tremble then though seem to now' 'Rural England. Home again to ordinary pain' 'a half-formed ghost' 'The reader's eyeballs prick with tears between the bath and pre-lunch beers'
London	'chartered' 'Marks of weakness, marks of woe' 'In every cry' 'The mind-forged manacles' 'black'ning Church' 'blights with plagues the Marriage hearse'
The Prelude	'A little boat tied to a willow tree' 'It was an act of stealth And troubled pleasure' 'Small circles glittering idly in the moon' 'She was an elfin pinnace; lustily I dipped my oars into the silent lake' 'a huge peak, black and huge' 'grim shape Towered up between me...like a living thing, Strode after me' 'huge and mighty forms, that do not live Like living men, moved slowly through the mind'
Kamikazee	'a shaven head full of powerful incantations' 'little fishing boats strung out like bunting on a green-blue translucent sea' 'dark shoals of fishes flashing silver' 'arcing in swathes like a huge flag waved first one way then the other in a figure of eight,' 'they treated him as though he no longer existed' 'only we children still chattered and laughed till gradually we too learned to be silent'
Poppies	'poppies' 'steeled the softening of my face' 'All my words flattened, rolled, turned into felt, slowly melting' 'the world overflowing like a treasure chest' 'released a song bird from its cage' 'leaned against it like a wishbone' 'The dove pulled freely against the sky, an ornamental stitch'
Exposure	'merciless iced east winds that knife us' 'But nothing happens' 'snow-dazed' 'sun-dozed' 'Shutters and doors all closed: on us the doors are closed' 'For God's invincible spring our love is made afraid' 'Pause over half-known faces. All their eyes are ice' 'We only know war lasts, rain soaks, and clouds sag stormy'
My Last Duchess	'Looking as if she were alive' 'The depth and passion of its earnest glance' 'spot of joy' 'A heart—how shall I say?— too soon made glad' 'My gift of a nine-hundred-years-old name' 'stooping'/'stoop' 'I gave commands; Then all smiles stopped together' 'Notice Neptune, though, Taming a sea-horse'
The Émigrée	'There once was a country... I left it as a child but my memory of it is sunlight-clear' 'the bright, filled paperweight' 'it may be sick with tyrants, but I am branded by an impression of sunlight' 'That child's vocabulary I carried here like a hollow doll, opens and spills a grammar' 'white plane' 'white streets' 'I comb its hair and love its shining eyes. My city takes me dancing through the city of walls'
Tissue	'Paper that lets the light shine through, this is what could alter things' 'If buildings were paper, I might feel their drift, see how easily they fall away on a sigh' 'The sun shines through their borderlines' 'what was paid by credit card might fly our lives like paper kites' 'let the daylight break through capitals and monoliths, through the shapes that pride can make' 'of paper smoothed and stroked and thinned to be transparent, turned into your skin'
Checking Out Me History	'Dem tell me Wha dem want to tell me' 'Bandage up me eye with me own history Blind me to me own identity' 'hopeful stream to freedom river' 'but what happen to de Caribs and de Arawaks too' 'a healing star among the wounded a yellow sunrise to the dying' 'But now I checking out me own history I carving out me identity'
Key themes and ideas	Comparative words and phrases
War, Conflict, Identity, Individual Experiences, Death, Power, Culture, Helplessness, Change, Honour, Shame, Pride, Arrogance, Social Responsibility, Patriotism	<ul style="list-style-type: none"> Similarly, Likewise, In the same way, This is similar to, Equally, Also On the other hand, Although, Whereas, However, In stark contrast, Contrastingly

Context and Subject Matter

Ozymandias	Shelley was a Romantic poet who was well known as a 'radical' during his lifetime. He was expelled from university for writing about atheism which led to him to fall out with his father who disinherited him. Some people think Ozymandias reflects this side of his character. Although it is about the remains of a statue of Ozymandias (another name for the Egyptian pharaoh Rameses II) it can be read as a criticism of people or systems that become huge and believe themselves to be invincible.
Storm on the Island	Heaney was born in Northern Ireland to a farming family- much of his poetry is centred on the countryside and farm life that he knew as a child. In the late 60s, right up until the 90s, there was conflict in Northern Ireland between the Unionists (a group who wanted to remain in UK) and the Nationalists (a group who wanted to keep Ireland separate). This poem considers the power of nature.
Remains	Armitage made a film for Channel 4 in 2007 called <i>The Not Dead</i> and wrote a collection of poems of the same name. In preparation for this work, he interviewed veteran soldiers of different wars. The reference to 'desert sand' in this poem suggests that it is written about the Gulf War. The poem presents a dark and disturbing image of a soldier suffering post-traumatic stress disorder after conflict.
Bayonet Charge	Bayonet Charge is perhaps unusual for a Ted Hughes poem in that it focuses on a nameless soldier in the First World War (1914-18). It describes the experience of 'going over-the-top'. This was when soldiers hiding in trenches were ordered to 'fix bayonets' and climb out of the trenches to charge an enemy position. The aim was to capture the enemy trench. The poem describes how this process transforms a soldier from a living thinking person into a dangerous weapon of war.
Charge of the Light Brigade	Alfred Tennyson was one of 11 children born to an upper-middle class country vicar. In 1850, he became poet laureate, meaning he had to write important poems about events that affected the British nation. This poem celebrates the heroism and bravery of soldiers in the Crimean War which was fought between Britain and Imperial Russia from 1853-1856. In the Battle of Balaclava, an order given to the British army's cavalry (the Light Brigade) was misunderstood and 600 cavalymen ended charging down a valley straight into the fire of Russian cannons. Over 150 British soldiers were killed, and more than 120 were wounded.
War Photographer	Duffy was inspired to write this poem by her friendship with a war photographer. She was especially intrigued by the challenge faced by these people whose job requires them to record horrific events without being able to help. Duffy asks us to consider our own response when confronted with the photographs that we regularly see in our newspapers, and why so many of us have become desensitised to these images.
London	Blake rejected established religion for various reasons. One of the main ones was the failure of the Church to help children in London who were forced to work. Blake lived and worked in the capital, so was arguably well placed to write clearly about the conditions people who lived there faced. This poem comes from his collection 'Songs of Experience' where he deals with various dangerous industrial conditions, child labour, prostitution and poverty. Blake alludes to the 1789 French Revolution in this poem where the French people revolted against the monarchy and aristocracy.
The Prelude	Wordsworth grew up in the Lake District- his childhood experiences there, and the death of his mother, had a huge influence on his writing. Wordsworth is considered a Romantic poet as his poems deal with Nature. The poem shows the spiritual growth of the poet, how he comes to terms with who he is, and his place in nature and the world.
Kamikaze	During the Second World War, the term 'kamikaze' was used for Japanese fighter pilots who were sent on suicide missions. They were expected to crash their warplanes into enemy warships. The word 'kamikaze' literally translates as 'divine wind'. Pilots were revered for their heroism and remembered as martyrs. This poem perhaps prompts us to think about the consequences of suicide missions for families in the modern world as well as in past conflicts.
Poppies	Weir grew up in Italy and Northern England, with an English mother and an Italian father. She has continued to absorb different cultural experiences throughout her life, also living in Northern Ireland during the troubled 1980s. The poem is concerned with Armistice Sunday, which began as a way of marking the end of WW1 in 1918. It was set up so people could remember the ordinary men who had been killed. When Poppies was written, British soldiers were still dying in wars in Iraq and Afghanistan. As a way of trying to understand the suffering that deaths caused, Carol Ann Duffy asked a number of writers to compose poems.
Exposure	Owen used his writing to inform people about the horrors of life on the front line. It contradicted the glory portrayed in the British media. Owen joined the army in 1915 but was hospitalised in May 1917 suffering from 'shell shock' (Post-Traumatic Stress Disorder). He returned to the war but was tragically killed days before it ended; he was just 26. This poem deals with the winter of 1917 which was particularly cold- soldiers suffered from hypothermia or frostbite, and many died in the freezing conditions.
My Last Duchess	Browning was heavily influenced as a youngster by his father's extensive collection of books and art. This poem reflects Browning's love of history and European culture as the story is based on real historical figures. The narrator is Duke Alfonso II who ruled in Ferrara between 1559 and 1597. The Duchess of whom he speaks was his first wife, Lucrezia de' Medici, who died aged 17 in suspicious circumstances and might have been poisoned.
The Émigrée	The poem deals with the dilemma of the emigree, forced by war or conflict to leave their home, and longing to return. The complex emotions and pain of exile are explored as well as the way that the media presents conflict abroad and the way that society understands it.
Tissue	Dharker was born in Pakistan and grew up in Scotland. She has written numerous poems that deal with themes of identity, the role of women in society and the search for meaning. She draws on her multi-cultural experience in her work. The poet addresses some of the larger issues in society; greed, pride etc. and how we have built our world around them, at odds with our own existence.
Checking Out Me History	John Agard was born in Guyana in the Caribbean, in 1949. He moved to the UK in the late 1970s. At school, he had to follow a curriculum biased towards whites, especially British whites, instead of learning about significant black figures. He uses non-standard phonetic spelling to represent his own accent, and writes about what it is like being black to challenge racist attitudes.

Language	Structure	Form
<p>Alliteration- repetition of the same letter at the start of two or more words</p> <p>Allusion- reference to another literary work</p> <p>Assonance- repetition or pattern of the same vowel sounds</p> <p>Connotation- associated meaning of word</p> <p>Consonance- the partial or total identity of consonants in words whose main vowels differ</p> <p>Diction- usually used to describe the level of formality that a speaker uses</p> <p>Extended metaphor- a central metaphor that acts like an “umbrella” to connect other metaphors within it</p> <p>Hyperbole- exaggerated statement</p> <p>Imagery- visually descriptive language</p> <p>Metaphor- saying one thing is another</p> <p>Onomatopoeia- a figure of speech where words are used to imitate sounds</p> <p>Oxymoron- two terms appear next to each other that contradict each other</p> <p>Pathetic fallacy- weather to create mood</p> <p>Personification- make object human</p> <p>Pun- a play on words</p> <p>Satire- the use of humour or irony to mock, ridicule or criticise</p> <p>Semantic field- words related in meaning</p> <p>Simile- comparing using ‘like’ or ‘as’</p> <p>Sibilance- the repetition of an ‘s’ sound in two or more words</p> <p>Synecdoche- a figure of speech in which a part is substituted for the whole</p> <p>Tone- the implied attitude of a writer toward the subject and characters of a work</p> <p>Theme- the central idea of a literary work</p>	<p>Anapest- two unaccented syllables followed by an accented one</p> <p>Anaphora- the repetition of the same word or phrase at the beginning of a line</p> <p>Caesura- a piece of punctuation in the middle of a line creating a pause in rhythm</p> <p>Dactyl- a stressed syllable followed by two unstressed ones</p> <p>Elision- the omission of an unstressed vowel or syllable to preserve the meter of a line of poetry</p> <p>End-stopped line- a line ending in a full pause</p> <p>Enjambment- a sentence which continues, with no punctuation, into the line below</p> <p>Foot- a metrical unit composed of stressed and unstressed syllables</p> <p>Half rhyme- an imperfect rhyme where the ending consonant sound of a word is the same as another</p> <p>Juxtaposition- two or more contrasted ideas placed side by side</p> <p>Meter- the measured pattern of rhythmic accents in poems</p> <p>Parallelism- the similarity of structure in a pair or series of related words, phrases, or clauses</p> <p>Quatrain- a four-line stanza in a poem</p> <p>Refrain- a phrase, line or group of lines which is repeated throughout a poem</p> <p>Repetition- a repeated word or phrase usually used to emphasise importance.</p> <p>Speaker: the voice behind the poem – the person we imagine to be speaking. The speaker is <u>not</u> the poet. Even if the poem is autobiographical, you should treat the speaker as a fictional creation, because the writer is choosing what to say about himself.</p> <p>Rhyming Couplet- two lines of poetry that rhyme and have the same meter</p> <p>Rhyme- words that sound the same at the end</p> <p>Sestet- a six-line unit of verse constituting a stanza or section of a poem</p> <p>Stanza- two or more lines of poetry that form the divisions of the poem (paragraphs)</p>	<p>Allegory- a symbolic narrative which often takes the form of a story where the characters represent moral qualities</p> <p>Ballad- a narrative poem written in four-line stanzas, characterized by swift action and narrated in a direct style</p> <p>Blank verse – non rhyming lines written in iambic pentameter</p> <p>Dramatic monologue- a type of poem in which a speaker addresses an internal listener or the reader</p> <p>Elegy: An elegy is a poem about a dead person or thing</p> <p>Epic- a long narrative poem that records the adventures of a hero</p> <p>Free verse- poetry without a regular pattern of meter or rhyme</p> <p>Lyric- a poem that expresses personal and emotional feelings.</p> <p>Ode- a poem written in praise or celebration of a person, thing, or event</p> <p>Pastoral- a poem about nature or simple, country life</p> <p>Shakespearean sonnet- usually 14 lines which are formed by three quatrains with a rhyming couplet for the last two lines</p> <p>Sonnet- a fourteen-line poem in iambic pentameter and regular rhyme scheme</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Speaker: the voice behind the poem – the person we imagine to be speaking. The speaker is <u>not</u> the poet. Even if the poem is autobiographical, you should treat the speaker as a fictional creation, because the writer is choosing what to say about himself.</p> </div>



MACBETH'S TRAGIC FALL

- Loyal hero but brutal
- Conflicted
- Without motivation to pursue ambition
- Easily manipulated or loving husband?
- Guilty
- Insecure
- Paranoid
- Murderous
- Uneasy, without hope
- Secretive
- Tyrant/monster
- Demanding/assertive
- Distant
- Brave?
- Evil, hated
- Dead

CAN YOU FIND QUOTATIONS TO SUPPORT EACH OF THESE? LEARN THEM!

CONTEXT

- King James of Scotland—Jacobean audience
- King James 1—author of book on witchcraft
- Issues of succession from Elizabeth 1st
- Gunpowder Plot—Catholics tried to assassinate Protestant King
- Equivocation—a Catholic method under torture
- Divine Right of Kings—King as God's chosen representative on Earth
- Great Chain of Being—sin to disrupt
- Women expected to be passive, maternal, religious, dominated, submissive
- Play adapted from real life Macbeth/James 1 descended from Banquo/Stuart Kings
- Plays as popular form of entertainment
- Jacobean society religious—strong beliefs about Heaven and Hell, the afterlife, witches
- Tragedy: HAMARTIA, HUBRIS, CATHARTIS

LANGUAGE TECHNIQUES TO LOOK

OUT FOR:

- Gothic imagery
- Religious imagery
- Animal/bird imagery
- Light and dark imagery
- Metaphors
- Similes
- Personification
- Rhyming couplets=evil!
- Imperatives
- Questions
- Disruption of iambic pentameter

MAKE SURE YOU KNOW WHAT THESE TECHNIQUES TEND TO SHOW IN THE PLAY

SHAKESPEARE'S PURPOSES

- To entertain
- To flatter King James 1
- Scare/captivate the audience
- Warning: consequences of regicide
- To show a complex character with a fatal flaw

SHAKESPEARE'S EFFECTS

- **SHOWS:** conveys/demonstrates/presents
- **CREATES:** Crafts/constructs/portrays/establishes
- **ENGAGES:** Intrigues/captivates
- **SCARES:** Petrifies/terrifies/horrifies/shocks
- **SUGGESTS:** implies/hints/alludes/evokes/intimates

LADY MACBETH CHARACTER CHANGES

- Ambitious
- Driven
- Aware
- Manipulative
- In control, powerful
- Naïve
- On edge
- Dismissive of consequences
- Practical
- Distanced/rejected
- Guilty
- Traumatized
- Evil, hated
- Dead

BUT—CAN WE SEE HER IN A SYMPATHETIC WAY TOO?

CAN YOU FIND QUOTATIONS TO SUPPORT EACH OF THESE? LEARN THEM!

THEMES:

Power
Ambition
Appearance and reality
Masculinity
Supernatural
Secrecy
Kingship
Loyalty and betrayal
Good and evil
Fate and freewill

SYMBOLS /MOTIFS

Sleep/conscience
Blood/guilt
Gothic/evil
Succession
Light and dark
Clothing
Disruption of natural order/chaos
Water/innocence

VOCABULARY

- Evil/malevolent/wicked/sinful/vile
- Good/decent/moral/respected/virtuous/worthy

EXAM QUESTION

- Explore/to what extent
- Clearly shown where...
- However/ alternate interpretation
- Support-techniques-link-effect-context

ACT 1



- "Fair is foul and foul is fair" (W)
- "Brave Macbeth— well he deserves that name" (C)

- "Unseamed him from the nave to th'chaps" (C)
- "O valliant cousin, worthy gentleman" (D)
- "They doubly redoubled stroked upon the foe" (C)
- "Noble Macbeth " (D)
- "So foul and fair a day I have not seen" (M)
- "lesser than Macbeth and greater" (W)
- "to be King stands not within the prospect of beliee" (M)
- "the instruments of darkness tell us truths; Win us with honest trifles, to betray's in deepest consequence" (B)
- "This supernatural soliciting cannot be ill, cannot be good" (M)
- "present fears are less than horrible imaginings" (M)
- "If chance will have me King, why chance me crown me, without my stir" (M)
- "Stars hide your fires, let not light see my black and deep desires" (M)
- "I do fear thy nature—it is too full o' th'milk of human kindness" (Lady M)
- "Art not without ambition, but without the illness should attend it" (Lady M)
- "Come you spirits...unsex me here and fill me from the crown to the toe top-full of direst cruelty" (LM)



- "Look like th'innocent flower, but be the serpent under't" (LM)
- "Bloody instructions...return to plague the inventor" (M)
- "I have no spur to prick the sides of my intent, only vaulting ambition which o'erleaps itself and falls ..-"(M)
- "art thou afeard?" (Lady M)
- "When you durst do it, then you were a man" (Lady M)
- "If we should fail?" (M)
- "But screw your courage to the sticking place, and we'll not fail"" (Lady M)
- "False face must hide what false heart doth know" (M)

ACT 2



- "I would not sleep; merciful powers, restrain in me the cursed thoughts that nature gives way to in repose" (B)
- "I think not of them" (the witches) (M)
- "Keep my bosom franchised and allegiance clear" (B)
- "Is this a dagger I see before me?" (M)
- "The bell invites me, Hear

it not, Duncan, for it is a knell/That summons thee to heaven or to hell" (M)

- "Had he not resembled my father as he slept, I had done't" (Lady M)
- "This is a sorry sight" (M)
- "A foolish thought to say a sorry sight" (LM)
- "But wherefore could I not pronounce 'Amen'?" (M)
- "These deeds must not be thought after these ways, so it will make us mad"(LM)
- "Methought I heard a voice cry 'sleep no more: Macbeth does murder sleep" (M)
- "Go get some water and wash this filthy witness from your hand" (LM)
- "I am afraid to think what I have done; look on't again, I dare not" (M)
- "Will all great Neptune's ocean wash this blood clean from my hand?" (M)
- "A little water clears us of this deed" (LM)
- "To know my deed, 'twere best not know myself. Wake Duncan with thy knocking; I would though couldst" (M)
- "The night has been unruly" (Lennox)
- "O horror, horror, horror" (Macduff)
- "By th'clock 'tis day and yet dark night strangles the travelling lamp" (Ross)
- "A falcon towering in her pride of place was by a mousing owl hawked at and killed" (R)
- "Tis said they eat each other " (horses) (Old Man)



ACT 3

- "I fear thou played'st most foully for it" (B)
- "To be thus is nothing, but to be safely thus. Our fears in Banquo stick deep" (M)
- "Upon my head they placed a fruitless crown and put a barren sceptre in my grip" (M)
- "If't be so, for Banquo's issue have a filed my mind" (M)
- "Banquo, thy soul's flight, if it find Heaven, must find it out tonight" (M)
- "Nought's had, all's spent, where our desire if got without content" (LM)
- "Things without all remedy should be without regard: what's done is done" (LM)
- "We have scorched the snake, not killed it" (M)
- "These terrible dreams which afflict us nightly" (M)
- "Make our faces vizards to our hearts, disguising what they are" (M)
- "O full of scorpions is my mind, dear wife!" (M)
- "Be innocent of the knowledge dearest chuck" (M)
- "Thou marvellest at my words, but hold thee still; Things bad begun, make strong themselves by ill" (M)
- "Banquo's safe?" (M) "Ay, safe in a ditch he bides" (murderer)
- "Which of you have done this?" (M)
- "Thou canst not say I did it, never shake thy gory locks at me!" (M)



- "Are you a man?" (M)
- "This is the very painting of your fear" (LM)
- "What! Quite unmanned in folly?" (LM)
- "Hence horrible shadow, unreal mockery, hence!" (M)
- "It will have blood, they say, blood will have blood" (M)
- "I am in blood stepped in so far" (M)
- "You lack the season of all natures, sleep" (LM)

ACT 4

- "How now, you secret, black and midnight hags!" (M)
- "Beware Macduff" (Ap1)
- "None of women born shall harm Macbeth" (Ap2)
- "Macbeth shall never vanquished be until Great Birnham Wood to high Dunsinane castle shall come against him" (Ap3)



- "My heart throbs to know one things. ..Shall Banquo's issue ever reign in this kingdom?" (M)
- "The castle of Macduff I will surprise...give to th'edge o'th;sword his wife, his babes" (M)
- "Whither should I fly? I have done no harm" (Lady Macduff)
- "Bleed, bleed poor country" (Macduff about Scotland)
- "Not in the legions of horrid hell can come a devil more damned in evils to top Macbeth" (Macduff)
- "Your castle is surprised; your wife and babes savagely slaughtered" (R)
- "He has no children. All my pretty ones?" (Macduff)
- "Dispute it like a man" (Malcolm)
- "I shall do so, but I must also feel it as a man" (Macduff)

Learn some quotations!

- Colour code THEME or IMAGERY— look at the other side of this for ideas
- Choose 5 key quotations for each of Macbeth and Lady Macbeth— memorise them
- Draw pictures to help you remember key images
- Look for LANGUAGE TECHNIQUES, e.g metaphors, symbols

ACT 5



- "Out damned spot!" (LM)
- "Hell is murky" (LM)
- "Yet who would have thought the old man to have so much blood in him?" (LM)
- "Here's the smell of the blood still. All the perfumes of Arabia will not sweeten this little hand" (LM)
- "What's done cannot be undone" (LM)
- "Foul whisperings are abroad, unnatural deed do breed unnatural troubles" (Dr)
- "The mind I sway by and the heart I bear shall never sag with doubt not shake with fear" (M)
- "I have lived long enough. My way of life is fall'n into the sere" (M)
- "I'll fight till from my bones my flesh be hacked" (M)
- "Our castle's strength will laugh a siege to scorn" (M)
- "I have almost forgot to taste of fears...I have supped full with horrors" (M)
- "She should have died hereafter; there would have been a time for such a word. Tomorrow, and tomorrow, and tomorrow" (M)
- "Out, out, brief candle. Life's but a walking shadow" (M)
- "I pull in resolution and begin to doubt the equivocation of the fiend" (M)
- "Blow wind, come wrack; At least we'll die with harness on our back" (M)
- "They have tied me to a stake; I cannot fly" (M)
- "Abhorred tyrant" (young Siward)
- "Turn hell-hound, turn" (Macduff)
- "Macduff was from his mother's womb untimely ripped" (Macduff)
- "Before my body, I throw my warlike shield. Lay on Macduff..." (M)
- "This dead butcher and his fiend-like queen" (Malcolm)



The English Martyrs Catholic School and Sixth Form College

English Language



AQA GCSE English Language Paper 1 Explorations in Creative Reading and Writing

Question overviews:		Useful terms	Reading question tips	Exam breakdown
Q1	Find and list 4 things from the text (4 marks)	Alliteration Assonance Atmosphere Colloquialism Connotation Ellipsis Emotive Language Foregrounding Foreshadowing Figurative language Idiom Imagery Imperative Irony Juxtaposition Simile Simple sentence Minor sentence Metaphor Monosyllabic words Onomatopoeia Personification Word classes e.g. noun, adjective etc	<ul style="list-style-type: none"> Read the text carefully in full before answering any of the questions If the question tells you to focus on specific sections, only focus on those sections for that question Remember to use quotations throughout Q2-4 Remember to use terminology Make sure you comment on the effect of the language on the reader 	1 hour 45 minutes Section A – Reading (45 mins) Section B – Writing (45 mins) Proof reading and checking (15 mins) <u>Worth 50% of your GCSE grade</u>
Q2	Look at an extract and analyse how the writer uses language for effect (8 marks)			
Q3	Consider the whole text. Analyse how the writer has structured the text (8 marks)			Writing question tips
Q4	Evaluating the extent to which you agree with the statement given in the question (20 marks)		Assessment objectives (Reading) AO1 - Identify and interpret explicit and implicit information and ideas, select and synthesise evidence from different texts AO2 - Explain, comment on and analyse how writers use language and structure to achieve effects and influence readers, using relevant subject terminology to support their views AO3 - Compare writers' ideas and perspectives, as well as how these are conveyed, across two or more texts AO4 - Evaluate texts critically and support this with appropriate textual references	<ul style="list-style-type: none"> Plan your response so it has a clear structure, decide the tone and emotions you want to create Plan for structure – what do you want the reader to focus on at particular times? Try to 'show not tell' Use devices and good vocabulary appropriately – remember, no examiner wants to read a piece of writing that's been written from a device checklist Proof read for silly mistakes
Q5/6	Select ONE of the writing questions options. Produce a piece of original writing that meets the brief in the question (40 marks = 24 content + 16 technical accuracy)		Assessment objectives (Writing) AO5 - Content and organisation of ideas in original writing AO6 - Technical accuracy e.g. spelling, punctuation and grammar	
Useful words		Useful sentence structures:		
Conveys, suggests, implies, demonstrates, presents, shows, evokes		By using [TECHNIQUE], the writer shows... When the author says "EVIDENCE", it creates a sense of... This creates a Effect on the reader because...		

GCSE English Paper 2 - READING NON-FICTION

40 marks (25% GCSE) – Two non-fiction texts – one from 19th Century & one from 20th/21st century.

Question 1

Pick four true or false statements from a list of 8.

- 4 marks = 5 mins (4 boxes shaded)
- Named lines
- AO1 – find & inference

Before you begin - use the summary about both texts to help you understand the text. These boxes provide clues. Consider what the purpose, audience and form of the texts is.

To answer:

- Only look at lines named in question to in order to find answers.
- Only shade 4 boxes (1 box = 1 mark) - this is not a trick question – it is easy.

Question 2

Write a **summary** of the implicit* and explicit **differences** between Source A and B

- 8 marks = 8 mins
- Whole texts
- AO1 – summarise differences

- Read and highlight key words in the question**
- Start your answer with an **overview sentence** then your summary of differences (similarities).
- E.g. “Clearly, the differences between Eddie and Henry are vast as Henry’s experience of school is much harsher than Eddie’s; we can see this when Henry complains about not being able to write freely as Mr. Smith, ‘would flog me if he knew it.’ This is in contrast to...”
- Use **discourse markers**: Clearly,... However, ... Notably, this is different/similar... In contrast,
- Track** through each text; space your shorter quotes out throughout the whole text.

Question 3

How does the writer use **language** to...” in one source only

- 12 marks = 12 mins
- Selected lines
- AO2 – Language (**not structure**)

- Read and highlight key words in the question
- Determine the **big idea** in the extract. Which quotes demonstrate this effectively?
- Refer to the language devices and ensure you write about the **effects** of the use of language
- Start your answer with an **overview sentence**, then answer the question directly
- E.g. “The writer uses harsh metaphors and violent verbs to emphasis the devastating effect of the storm. Consider what the words make you think, feel and imagine. Write **a lot about a little** - e.g. “Personification is used in this phrase, ‘Death stood at my bedside,’ to create an intense feeling of fear for the reader, suggesting the writer felt death was imminent; it was a threatening being and about to take his life.”
- Use **discourse markers**: Notably,... As well as this,... Furthermore,... In addition... However, ...
- Track** through each text, space your quotes out throughout the whole text.

*Implicit – what you work out from what is stated in the text

Question 4

Compare how the two **writers** present/convey/convince/persuade ... in Source A and B

- 20marks = 20mins
- Whole texts
- AO3 – compare language/structure/other methods used

- Read and highlight key words in the question**
- Start your answer with an **overview sentence** then explain the differences/similarities in the **writers’ viewpoints/purpose/perspective**.
- e.g. The writers of Source A and Source B have wildly different views about parenting and education. The writer of Source A believes that education really is the job of parents and not schools, whereas the writer of Source B has sent both his boys off to a boarding school where he has little control and knows nothing about the standard of education they are receiving.” Refer to both writers throughout.
- What methods does the writer use? Does this capture their main attitude or is there a change elsewhere?
- Use the bullet points to organise your answer (first bullet point content comparison, second bullet point comparison of techniques used)
- E.g. For example, the writer of Source A explains using expert opinion that..., however, the writer of Source B uses statistics to back up their argument. The effect on the audience is similar as both add weight to the arguments the writers are putting forward and convince their audience of their standpoint.
- Go back and forth between the texts. Use **comparison words or phrases** to help you = Likewise, Similarly, In the same way, Different to..., UnlikeB, In contrast.....,However, etc.

Mark Scheme

Bands 1-4	4 – DETAILED. PERCEPTIVE 3 - CLEAR, RELEVANT 2 - SOME, ATTEMPTS 1 – SIMPLE, LIMITED
Q2	<ul style="list-style-type: none"> • Perceptive inference and differences from both texts • Well-judged quotations
Q3	<ul style="list-style-type: none"> • Analyses the effects of writer’s choices • Well-judged quotations • Sophisticated subject terminology
Q4	<ul style="list-style-type: none"> • Same as Q2/3 AND... • Detailed understanding of different perspectives & ideas

AOs

AO1	<ul style="list-style-type: none"> • Identify and interpret explicit and implicit * information and ideas. • Select and synthesise evidence from different texts.
AO2	<ul style="list-style-type: none"> • Explain, comment on and analyse how writers use language and structure to achieve effects and influence readers • Use relevant subject terminology to support views.
AO3	<ul style="list-style-type: none"> • Compare writers’ ideas across two or more texts.

Sentence starters to show inference.
This suggests/suggesting . . .
This creates/creating . . .
It seems to the reader that...
This possibly means...
The connotations reinforce . . .
This could indicate that...
This evokes a sense of . . .
This emphasises . . .

Methods

Metaphor
Alliteration
Direct Address
Facts
Anecdote
Triple
Hyperbole
Emotive language
Repetition
Simile
Allusion
Rhetorical Question
Opinions
Synesthesia
Connotation
Humour
Imperatives
Modal verbs
Statistics
Expert opinion
Tone
Personification
Sibilance
Onomatopoeia
Imagery
Symbolism
Contrast
Juxtaposition

Paper 2, Q5 WRITING NON-FICTION

Example question and how to get top marks

'Homework has no value. Some students get it done for them; some don't do it at all. Students should be relaxing in their free time.' Write an article for a broadsheet newspaper in which you explain your point of view on this statement. (24 marks for content and organisation 16 marks for accuracy)

Content	<input type="checkbox"/> Register is convincing and compelling for audience <input type="checkbox"/> Assuredly matched to purpose <input type="checkbox"/> Extensive and ambitious vocabulary with sustained crafting of linguistic devices
Organisation	<input type="checkbox"/> Varied and inventive use of structural features <input type="checkbox"/> Writing is compelling, incorporating a range of convincing and complex ideas <input type="checkbox"/> Fluently linked paragraphs with seamlessly integrated discourse markers
Technical accuracy	<input type="checkbox"/> Wide range of punctuation is used with a high level of accuracy <input type="checkbox"/> Uses a full range of appropriate sentence forms for effect <input type="checkbox"/> Uses Standard English consistently and appropriately with secure control of complex grammatical structures <input type="checkbox"/> High level of accuracy in spelling , including ambitious vocabulary <input type="checkbox"/> Extensive and ambitious use of vocabulary

16 Marks

Possible writing purposes (P.A.F)

Explain	<p>Q - Explain what you think about....</p> <input type="checkbox"/> Be factual <input type="checkbox"/> Give a balanced view <input type="checkbox"/> Use evidence to support your view <input type="checkbox"/> Use connectives of comparison <input type="checkbox"/> Write in 3 rd or 1 st person
Instruct/Advice	<p>Q - Advise the reader of the best way....</p> <input type="checkbox"/> Be factual <input type="checkbox"/> Write in present tense <input type="checkbox"/> Use connectives <input type="checkbox"/> Use technical terms <input type="checkbox"/> Write in 2 nd person
Argue	<p>Q - Argue the case for/against....</p> <input type="checkbox"/> Rhetorical questions <input type="checkbox"/> Emotive language <input type="checkbox"/> Counter arguments <input type="checkbox"/> AFOREST (helpful in the planning stages)
Persuade	<p>Q - Persuade the writer of the statement that...</p> <input type="checkbox"/> AFOREST (helpful in the planning stages) <input type="checkbox"/> One-sided argument, but recognise the counter argument

Assessment Objectives

A05 - Communicate clearly, effectively and imaginatively, selecting and adapting tone, style and register for different forms, purposes and audiences.

A05 - Organise information & ideas, using structural & grammatical features to support coherence & cohesion

A06 - Candidates must use a range of vocabulary and sentence structures for clarity, purpose and effect, with accurate spelling and punctuation.

Possible layouts/types of text/formats (P.A.F: Purpose, Audience, Form)

Letter	<input type="checkbox"/> the use of an addresses & date <input type="checkbox"/> a formal mode of address e.g. Dear Sir/Madam or a named recipient <input type="checkbox"/> effectively/fluently sequenced paragraphs <input type="checkbox"/> an appropriate mode of signing off: Yours sincerely/faithfully.
Article	<input type="checkbox"/> a clear/apt/original title <input type="checkbox"/> a strapline & subheadings <input type="checkbox"/> an introductory (overview) paragraph <input type="checkbox"/> effectively/fluently sequenced paragraphs.
Leaflet (text only)	<input type="checkbox"/> a clear/apt/original title <input type="checkbox"/> organisational devices such as inventive subheadings or boxes <input type="checkbox"/> bullet points <input type="checkbox"/> effectively/fluently sequenced paragraphs.
Speech (text only)	<input type="checkbox"/> a clear address to an audience <input type="checkbox"/> effective/fluently linked sections to indicate sequence <input type="checkbox"/> rhetorical indicators that an audience is being addressed <input type="checkbox"/> a clear sign off e.g. 'Thank you for listening'.
Essay	<input type="checkbox"/> an effective introduction and convincing conclusion <input type="checkbox"/> effectively/fluently linked paragraphs to sequence a range of ideas.

Consider:

A bold standpoint: hook/tone/style. Also consider Cohesive devices: adverbials/pronouns/reference chains/synonyms/rhetorical questions/discourse markers.

The Basics

Capital letters

Full stops

Question marks

Commas

Apostrophes

Consistent tense

Paragraphs

Homophone spellings

Connectives

Semi colons

Colons

Vary sentence starts/lengths

Vary paragraph lengths

Topic sentences

Sentence starters

Verb – Running quickly, she ...

Adverb – Frustratingly,

Adjective – Bold and brave

Preposition – Under 67% of teenagers ...

Connective – Nevertheless,

Methods

Imperative verbs

Alliteration

Modal verbs

Appeal

Figurative lang.

Opinion

Rhetorical question

Emotive language/ expert opinion

Statistics + Facts

Triplets

Exaggeration

Repetition

The Exam

45 minutes – 1 task – no choice

1. Read & highlight key words in question

2. Identify the P.A.F

3. Plan – use the five step model

4. Write it showing clear organization and technical accuracy

5. Proofread your work

Audience (P.A.F)

An audience your age:

- Colloquial expressions and sayings and references to modern culture.
- Frequent use of direct address.
- Use of humour and sarcasm.

An older audience:

- Keep it formal.
- Avoid references to modern culture, humour and sarcasm.
- Avoid using contractions (do not instead of don't)
- Relevant expert opinion

The English Martyrs Catholic School and Sixth Form College

Mathematics



Mathematics

Which papers will the students be sitting in this preparation examination?

Edexcel GCSE Higher

- Paper 1 is a non-calculator assessment and a calculator is allowed for Paper 2 and Paper 3.
- Each paper is 1 hour and 30 minutes long.
- Each paper has 80 marks.

OCR GCSE Foundation

- Paper 2 is a non-calculator assessment and a calculator is allowed for Paper 1 and Paper 3.
- Each paper is 1 hour and 30 minutes long.
- Each paper has 100 marks.

Key knowledge and Skills

Higher Paper

A checklist with help links to each topic can be found [here](#)

Foundation Paper

A checklist with help links to each topic can be found [here](#)

Useful revision tools

Higher Paper

Past papers with model and video solutions.

- <https://www.mathsgenie.co.uk/papers.html>

Practice papers with model solutions

- <https://corbettmaths.com/2019/04/01/gcse-practice-papers/>

Topic papers and video help

- https://www.youtube.com/playlist?list=PLCkAjxP1zN64-Og902CF_gFybL20fsvM5
- <https://www.mathsgenie.co.uk/gcse.html>
- <https://corbettmaths.com/contents/>

Foundation Paper

Past papers with model and video solutions.

- <https://www.mathsgenie.co.uk/OCRpapers.html>

Practice papers with model solutions

- <https://corbettmaths.com/2023/02/15/ocr-gcse-foundation-revision/>

Topic papers and video help

- <https://www.youtube.com/playlist?list=PLCkAjxP1zN67ktdbS7-TpWCfQbiAsOOvS>
- <https://www.mathsgenie.co.uk/gcse.html>
- <https://corbettmaths.com/contents/>

The English Martyrs Catholic School and Sixth Form College

Triple Science

Biology



Triple Science: Biology Paper 1

Summary Sheets

Foundation

Biology Paper 1	
	1h 45min
Topics in the Paper:	
B1	Cell Structure and Transport
B2	Cell Division
B3	Organisation and the Digestive System
B4	Organising Animals and Plants
B5	Communicable Disease
B6	Preventing and Treating Disease
B7	Non-Communicable Disease
B8	Photosynthesis
B9	Respiration

B1: Cell Structure and Transport

Cell Structures

Plant and animal cells (eukaryotic cells) have a cell membrane, cytoplasm and genetic material enclosed in a nucleus. Bacterial cells (prokaryotic cells) are much smaller in comparison. They have cytoplasm and a cell membrane surrounded by a cell wall. The genetic material is not enclosed in a nucleus. It is a single DNA loop and there may be one or more small rings of DNA called plasmids. Most animal cells have the following parts: nucleus, cytoplasm, a cell membrane, mitochondria, ribosomes. In addition to the parts found in animal cells, plant cells often have: chloroplasts, a permanent vacuole filled with cell sap. Plant and algal cells also have a cell wall made of cellulose, which strengthens the cell.

Part	Function
Nucleus	Contains genetic material, which controls the activities of the cell
Cytoplasm	Most chemical processes take place here, controlled by enzymes
Cell membrane	Controls the movement of substances into and out of the cell
Mitochondria	Most energy is released by respiration here
Ribosomes	Protein synthesis happens here
Cell wall	Strengthens the cell
Chloroplasts	Contain chlorophyll, which absorbs light energy for photosynthesis
Permanent vacuole	Filled with cell sap to help keep the cell <i>turgid</i>

An **electron microscope** has much higher magnification and resolution than a **light microscope**. This means that it can be used to study cells in much finer detail. This has enabled biologists to see and understand many more sub-cellular structures. Electron microscopes are more expensive and take up more space. Light microscopes are easy to use and cheap.

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$

Nerve Cell- Carry electrical impulses around the body of an animal for rapid communication. Have long axons to carry information. Synapses are adapted to pass impulse to another cell. Lots of dendrites to make connections with other cells. Contain lots of mitochondria to provide energy that is needed to make neurotransmitters.

Sperm Cell

Contain the genetic information of the male parent and move to reach an egg. Has an acrosome that contains enzymes for breaking through the egg. Middle section has lots of mitochondria to transfer energy needed for the tail to work. A long tail that moves from side to side to help the cell move. A large nucleus that contains genetic information. Streamlined shape.

Muscle Cell

Cells that contract and relax to bring about movement. Store glycogen that can be used in respiration. Contain lots of mitochondria to transfer energy needed for cells to contract and relax. Contain proteins that slide over each other.

Palisade Cell

A photosynthetic cell that carries out photosynthesis. Have a permanent vacuole to keep the cells rigid to keep the leaf spread out and the stem supported. Contain chloroplasts containing chlorophyll that absorb light for Found in layers in the leaf and outer layers of the stem to absorb as much light as possible. Regular shape so that cells can be closely packed together.

Root Hair Cell

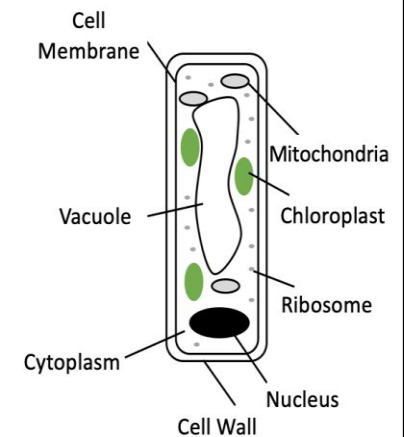
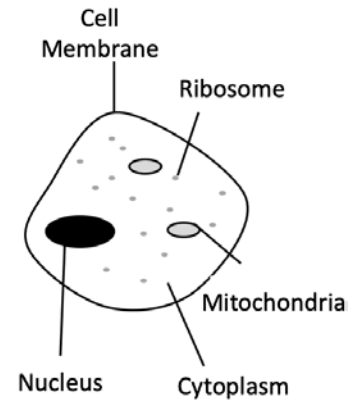
Take up water and mineral ions from the soil. Have lots of mitochondria to transfer energy for active transport of mineral ions. Have a large permanent vacuole to speed up the movement of water by osmosis. Have a large surface area for water to enter the cell.

Phloem Cell

Cells that make up a tissue to transport food around the plant. The cell walls between the cells break down to form sieve plates. Have very few supporting structures. Supported by companion cells. The mitochondria of these cells provide energy to the other cell.

Xylem Cell

Cells that make up a tissue to transport water around the plant. Have spirals and rings of lignin to make them very strong. The cells die and form long hollow tubes.



Plant and animal cells (eukaryotic cells) have a cell membrane, cytoplasm and genetic material enclosed in a nucleus. Most animal cells have the following parts: nucleus, cytoplasm, a cell membrane, mitochondria, ribosomes. In addition to the parts found in animal cells, plant cells often have: chloroplasts, a permanent vacuole filled with cell sap. Plant and algal cells also have a cell wall made of cellulose, which strengthens the cell.

B1.2: Cell Transport

<p>Osmosis Osmosis is the movement of water from a dilute solution to a concentrated solution through a partially permeable membrane.</p>		<p>Diffusion Diffusion is the spreading out of the particles of any substance in solution, or particles of a gas, resulting in a net movement from an area of higher concentration to an area of lower concentration. Some of the substances transported in and out of cells by diffusion are oxygen and carbon dioxide in gas exchange, and of the waste product urea from cells into the blood plasma for excretion in the kidney. Factors which affect the rate of diffusion are:</p> <ul style="list-style-type: none"> • the difference in concentrations (concentration gradient), • the temperature • the surface area of the membrane. 		<p>Surface Area to volume ratio A single-celled organism has a relatively large surface area to volume ratio. This allows sufficient transport of molecules into and out of the cell to meet the needs of the organism. In multicellular organisms, surfaces and organ systems are specialised for exchanging materials. This is to allow sufficient molecules to be transported into and out of cells for the organism's needs. The effectiveness of an exchange surface is increased by:</p> <ul style="list-style-type: none"> • Having a large surface area • A membrane that is thin, to provide a short diffusion path • Having an efficient blood supply • (in animals, for gaseous exchange) being ventilated 	
<p>Active transport Active transport moves substances from a more dilute solution to a more concentrated solution (against a concentration gradient). This requires energy from respiration. Active transport allows mineral ions to be absorbed into plant root hairs from very dilute solutions in the soil. Plants require ions for healthy growth. It also allows sugar molecules to be absorbed from lower concentrations in the gut into the blood which has a higher sugar concentration. Sugar molecules are used for cell respiration.</p>					
<p>Small Intestine In the small intestine sugar is absorbed by diffusion in the first part and it is absorbed by active transport in the later parts of the small intestine. Adaptations that the small intestine have include:</p>		<p>Root Hair Cells In the roots water is absorbed by osmosis from the soil and mineral ions are absorbed by active transport. Adaptations that the root cells have include:</p>		<p>Lungs and Gills In the lungs and gills oxygen diffuses into the blood and carbon dioxide diffuses out of the blood. Adaptations that the lungs and gills have include:</p>	
Adaptation	Description	Adaptation	Description	Adaptation	Description
Long	Increase surface area	Elongated Shape	Increase surface area	Lots of alveoli (lungs), lamellae (gills)	Increase surface area
Villi	Increase surface area	Lots of Root Hair Cells	Increase surface area		Thin Membrane
Thin Membrane	Short diffusion pathway	Thin Membrane	Short diffusion pathway	Good Blood Supply	Maintain a steep concentration gradient
Good Blood Supply	Maintain a steep concentration gradient	Water/Minerals Removed Quickly	Maintain a steep concentration gradient		
Lots of Mitochondria	Transfer energy from respiration	Lots of Mitochondria	Transfer energy from respiration	Good Ventilation	Maintain a steep concentration gradient

B2: Stem Cells

The Cell Cycle

Cells divide in a series of stages called the cell cycle. During the cell cycle the genetic material is doubled and then divided into two identical cells. The three stages of the cell cycle are:

Stage 1:

Before a cell can divide it needs to grow and increase the number of sub-cellular structures such as ribosomes and mitochondria. The DNA replicates to form two copies of each chromosome.

Stage 2:

One set of chromosomes is pulled to each end of the cell and the nucleus divides. This stage is known as mitosis.

Stage 3:

Finally the cytoplasm and cell membranes divide to form two identical cells.

Adult Stem Cells

They are stem cells are found throughout animals after development. They multiply by mitosis to replenish dying cells and regenerate damaged tissue. The cells can be found in bone marrow and can form many types of cells including blood cells.

Advantages	Disadvantages
Consent can be given to collect cells.	Painful to collect cells.
Safe	Risk of infection from collection of cells.
Does not sacrifice a life.	Stem cells can only form a limited type of cell.

Information in the cells

The nucleus of a cell contains chromosomes made of DNA molecules. Each chromosome carries a large number of genes. In body cells the chromosomes are normally found in pairs.

Stem Cells

A stem cell is undifferentiated cell which is able to make many more cells of the same type through division and differentiation. There are three types of stem cells:

- Adult Stem Cells
- Embryonic Stem Cells
- Meristems

Uses of Stem Cells

Stem cells, directed to differentiate into specific cell types, offer the possibility of a renewable source of replacement cells and tissues to treat diseases including macular degeneration, paralysis, spinal cord injury, stroke, burns, heart disease, diabetes, osteoarthritis, and rheumatoid arthritis.

Therapeutic Cloning

In therapeutic cloning an embryo is produced with the same genes as the patient. Stem cells from the embryo are not rejected by the patient's body so they may be used for medical treatment.

Advantages	Disadvantages
May cure diseases such as paralysis and diabetes.	Potential life is killed
Cells unlikely to be rejected.	Shortage of egg donors.
Cells and tissues of any type can be made.	May transfer viral infection.
Reduces waiting time for transplants	Poor success rate.
Many cells are produced.	

Meristems

Meristem tissue in plants can differentiate into any type of plant cell, throughout the life of the plant. Stem cells from meristems in plants can be used to produce clones of plants quickly and economically.

Uses of Meristems

- Rare species can be cloned to protect from extinction.
- Crop plants with special features such as disease resistance can be cloned to produce large numbers of identical plants for farmers.
- **Cloning** allows growers to mass produce **plants** that may be difficult to grow from seed.
- Cloning allows growers to mass produce plants that may be difficult to grow from seed.
- All the plants are genetically identical, which is useful because you can be sure of their characteristics

Embryonic Stem Cells

Undifferentiated cells found in an early embryo that have the potential to differentiate into lots of different cells in the body.

Advantages	Disadvantages
Low chance of rejection	Unreliable
Can differentiate into lots of different types of cells	Causes death to the embryo
Painless	Can't give consent

B3: Organisation and the Digestive System

<p>Principles of Organisation Cells are the basic building blocks of all living organisms. A tissue is a group of cells with a similar structure and function. Organs are aggregations of tissues performing specific functions. Organ systems, which is a group of organs that work together to form organisms.</p>		<p>Organs in the Digestive System The organs in the digestive system work together to digest large insoluble molecules into smaller insoluble molecules. Some of the organs include:</p>																																																	
<p>The Digestive System The digestive system is an example of an organ system in which several organs work together to digest and absorb food. The food you take in and eat is made up of large molecules that need to be digested to form smaller, soluble molecules that can be absorbed and used by your cells.</p>		<p>Organ</p>		<p>Function</p>																																															
<p>The Stomach An organ made up of muscular tissue, glandular tissue and epithelial tissue.</p>		<p>Pancreas</p>		<p>Produces hormones to control blood sugar and enzymes that break down food.</p>																																															
<table border="1"> <thead> <tr> <th>Tissue</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Muscular</td> <td>Churn food and digestive juices together.</td> </tr> <tr> <td>Glandular</td> <td>Produces digestive enzymes to break down food.</td> </tr> <tr> <td>Epithelial</td> <td>Covers the inside and outside of the organ.</td> </tr> </tbody> </table>		Tissue	Function	Muscular	Churn food and digestive juices together.	Glandular	Produces digestive enzymes to break down food.	Epithelial	Covers the inside and outside of the organ.	<p>Small Intestine</p>		<p>Where the soluble food molecules are absorbed into the blood stream, so they can be transported round your body. The small intestine is adapted to have a very large surface area as it is covered in villi. It has a good blood supply and short diffusion distances to blood vessels.</p>																																							
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<p>Bile Bile is made in the liver and stored in the gall bladder. It is alkaline to neutralise hydrochloric acid from the stomach. It also emulsifies fat to form small droplets which increases the surface area. The alkaline conditions and large surface area increase the rate of fat breakdown by lipase.</p>		<p>Chemistry of Food and Food Tests There are different chemicals in food. You need to know what they are broken down into and how you can't test for some of the different substances.</p> <table border="1"> <thead> <tr> <th>Substance in Food</th> <th>What It Is Broken Down Into</th> <th>Enzyme that Breaks it Down</th> <th>Chemical To Test for Substance in Food</th> <th>Positive Result for Test</th> </tr> </thead> <tbody> <tr> <td>Carbohydrate</td> <td>Small Sugars</td> <td>Carbohydrase</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Starch</td> <td>Glucose</td> <td>Amylase</td> <td>Add Iodine</td> <td>Turns Black/Blue</td> </tr> <tr> <td>Glucose</td> <td>N/A</td> <td>N/A</td> <td>Heat with Benedicts</td> <td>Brick Red Colour</td> </tr> <tr> <td>Protein</td> <td>Amino Acids</td> <td>Protease</td> <td>Add Biuret</td> <td>Turns purple colour</td> </tr> <tr> <td>Fats</td> <td>Fatty Acids and Glycerol</td> <td>Lipase</td> <td>Add Sudan (III)</td> <td>Forms a red layer</td> </tr> </tbody> </table>			Substance in Food	What It Is Broken Down Into	Enzyme that Breaks it Down	Chemical To Test for Substance in Food	Positive Result for Test	Carbohydrate	Small Sugars	Carbohydrase	N/A	N/A	Starch	Glucose	Amylase	Add Iodine	Turns Black/Blue	Glucose	N/A	N/A	Heat with Benedicts	Brick Red Colour	Protein	Amino Acids	Protease	Add Biuret	Turns purple colour	Fats	Fatty Acids and Glycerol	Lipase	Add Sudan (III)	Forms a red layer	<p>Lock and Key Model Enzymes are biological catalysts which will only speed up one type of reaction. Enzymes are proteins. The enzyme has an active site which matches the shape of a specific substrate molecule. The substrate binds to the active site and is broken down by the enzyme. The lock is the enzyme and the key is the substrate. Only the correctly sized key (substrate) fits into the key hole (active site) of the lock (enzyme).</p> <table border="1"> <thead> <tr> <th colspan="3">Enzymes Digestive enzymes convert food into small soluble molecules that can be absorbed into the bloodstream.</th> </tr> <tr> <th>Enzymes</th> <th>Where it Is Produced</th> <th>Optimum pH</th> </tr> </thead> <tbody> <tr> <td>Amylase</td> <td>Salivary Gland, Pancreas</td> <td>pH 7</td> </tr> <tr> <td>Protease</td> <td>Stomach, Pancreas</td> <td>pH 1.5</td> </tr> <tr> <td>Lipase</td> <td>Pancreas</td> <td>pH 7</td> </tr> </tbody> </table>		Enzymes Digestive enzymes convert food into small soluble molecules that can be absorbed into the bloodstream.			Enzymes	Where it Is Produced	Optimum pH	Amylase	Salivary Gland, Pancreas	pH 7	Protease	Stomach, Pancreas	pH 1.5	Lipase	Pancreas	pH 7
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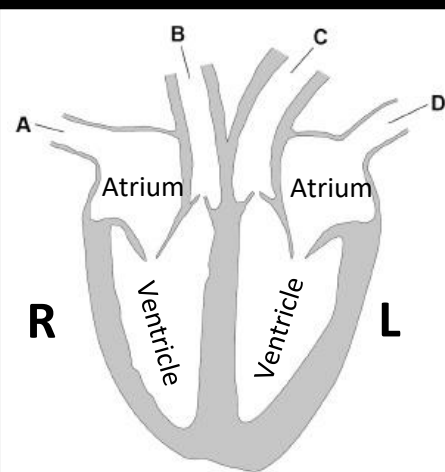
B4: Organisation of Animals: The Heart

Heart

The heart is an organ that pumps blood around the body in a double circulatory system. The right ventricle pumps deoxygenated blood to the lungs where gas exchange takes place. The left ventricle pumps oxygenated blood under higher pressure around the rest of the body. The heart is known as a double pump because it pumps blood to the lungs from the right hand side and to the body from the left hand side. Or you could say that on one journey around the body blood enters the heart twice.

Route of blood through the heart:

Body → Vena Cava → Right Atrium → Right Ventricle → Pulmonary Artery → Lungs → Pulmonary Vein → Left Atrium → Left Ventricle → Aorta → Body



A = Vena Cava
 B = Pulmonary Artery
 C = Pulmonary Vein
 D = Aorta

Pacemaker

The natural resting heart rate is controlled by a group of cells located in the right atrium that act as a pacemaker. Artificial pacemakers are electrical devices used to correct irregularities in the heart rate

Blood Vessels

Blood is pumped around the body by the heart and it travels along blood vessels. There are three different types of which include arteries, veins and capillaries.

Arteries

The arteries carry oxygenated blood away from the heart to the organs of the body. The blood is under very high pressure and so they have thick walls and have a thick layer of muscle and elastic fibres to withstand the pressure. The arteries are narrower tubes and so we say that they have a small lumen.

Veins

The veins carry deoxygenated blood towards the heart from the organs of the body. The blood is under low pressure and so they have thin walls and a large lumen. To stop the blood flowing backwards the veins also have valves.

Capillaries

The capillaries are a network of blood vessels that connect the arteries to the veins and get blood close to all cells in the body. They are very narrow so that blood vessels pass through them one by one and have very thin walls so that substances are able to diffuse easily through them.

Components of the Blood

Blood is pumped around the body by the heart and it travels along blood vessels. Blood is a tissue that is made up of plasma, red blood cells, white blood cells and platelets.

Component	Description
Plasma	Yellow liquid that carries other blood cells and substances such as hormones and urea around the body.
Red Blood Cells	Transport oxygen only around the body. To do this they have a biconcave shape and a red pigment called haemoglobin. For more space they have no nucleus.
White Blood Cells	Larger blood cells that have a nucleus. They defend the body from infection. They carry out phagocytosis, produce antibodies and produce antitoxins.
Platelets	Small fragments of cells that help to clot blood.

Calculating Rate of Blood Flow

To calculate rate of blood flow you need to find the volume of blood that passes through the blood vessel and the time that this occurs over. To calculate the rate of blood flow you would then use the following equation:

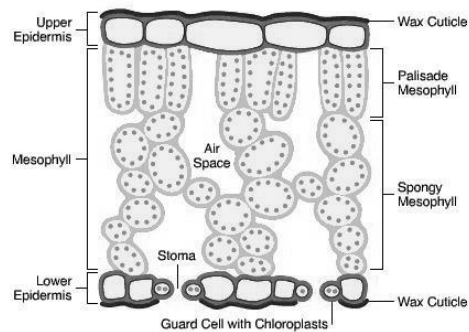
$$\text{Rate of Blood Flow} = \text{Volume of Blood} / \text{Number of Minutes}$$

B4: Organisation of Plants

Plant Tissues

Plants are multicellular organisms, just like animals. They also usually contain differentiated cells, tissues and organs. The leaves, stems and roots are all plant organs. They form a plant organ system for the transport of substances around the plant. **Epidermal tissues** cover the surface and protect them. These cells often secrete a waxy substance that waterproofs the surface of the leaf. **Palisade mesophyll** tissue contains lots of chloroplasts, which carry out photosynthesis. **Spongy mesophyll** tissue contains some chloroplasts for photosynthesis but also has big air spaces and a large surface area to make diffusion of gases easier.

Structure of the Leaf



Adaption	Purpose
Thin, waxy cuticle	To protect the leaf without blocking out light
Thin epidermis	To allow more light to reach the palisade cells
Palisade cells on the top surface	To absorb light
Many chloroplasts in the palisade cells	To increase absorption of light
Spongy mesophyll inside the leaf	Air spaces allow carbon dioxide to diffuse through the leaf, and increase the surface area

Guard Cells

The role of stomata and guard cells are to control gas exchange and water loss. The opening and closing of the **stomata** is controlled by the guard cells. In light, guard cells take up water by osmosis and become turgid. Because their inner walls are rigid they are pulled apart, opening the pore. In darkness water is lost and the inner walls move together closing the pore.

Phloem and Xylem

Plants have two different types of transport tissue. Xylem tissue transports water and mineral ions from the roots to the stems and leaves. It is composed of hollow tubes strengthened by lignin adapted for the transport of water in the **transpiration** stream. Phloem tissue transports dissolved sugars from the leaves to the rest of the plant for immediate use or storage. The movement of food molecules through phloem tissue is called **translocation**. Phloem is composed of tubes of elongated cells. Cell sap can move from one phloem cell to the next through pores in the end walls.

Transpiration

Transpiration explains how water moves up the plant against gravity in tubes made of dead xylem cells without the use of a pump. Water on the surface of spongy and palisade cells (inside the leaf) evaporates and then diffuses out of the leaf. This is called transpiration. More water is drawn out of the xylem cells inside the leaf to replace what's lost. As the xylem cells make a continuous tube from the leaf, down the stem to the roots, this acts like a drinking straw, producing a flow of water and dissolved minerals from roots to leaves.

Factor	Description	Explanation
Light	In bright light transpiration increases	The stomata (openings in the leaf) open wider to allow more carbon dioxide into the leaf for photosynthesis
Temperature	Transpiration is faster in higher temperatures	Evaporation and diffusion are faster at higher temperatures
Wind	Transpiration is faster in windy conditions	Water vapour is removed quickly by air movement, speeding up diffusion of more water vapour out of the leaf
Humidity	Transpiration is slower in humid conditions	Diffusion of water vapour out of the leaf slows down if the leaf is already surrounded by moist air

B5: Communicable Diseases

Communicable Disease

Pathogens are microorganisms that cause infectious disease, in animals and plants. Pathogens may be viruses, bacteria, protists or fungi. They depend on their host to provide the conditions and nutrients that they need to grow and reproduce. They frequently produce toxins that damage tissues and make us feel ill. They can be spread by direct contact, by water or by air. Bacteria and viruses may reproduce rapidly inside the body. Bacteria may produce poisons (toxins) that damage tissues and make us feel ill. Viruses live and reproduce inside cells, causing cell damage.

Human Defence System

The skin covers the whole body, protecting against physical damage, microbe infection and dehydration. Its dry, dead outer cells are difficult for microbes to penetrate, and the sebaceous glands produce oils that help kill microbes. The respiratory system is protected in several ways. Nasal hairs keep out dust and larger microorganisms. Sticky mucus traps dust and microbes, which are then carried away by cilia. The stomach contains **hydrochloric acid**, which destroys microorganisms. If a pathogen enters the body the immune system tries to destroy the pathogen. White blood cells help to defend against pathogens by; phagocytosis (ingesting pathogens), antibody production and antitoxin production.

Disease	Type of Microbe	Symptoms	How its Spread	Ways of Preventing Disease	Ways of Treating Disease
Salmonella	Bacterial	Fever, abdominal cramps, vomiting and diarrhoea	Bacteria in food and food prepared in unhygienic conditions	Vaccinating chickens and washing hands and surfaces.	Normally goes without treatment needed
Gonorrhoea	Bacterial	Thick yellow or green discharge from the vagina or penis and pain on urinating	Sexual Contact	Barrier method of contraception	Antibiotics
Measles	Virus	Fever and red skin rash	Inhalation of droplets from sneezes and coughs	Vaccination	-
HIV	Virus	Flu like illness to start before immune system becomes weakened.	Sexual contact or exchange of body fluids	Barrier method of contraception and not sharing needles	Antiretroviral Drugs
Tobacco Mosaic Virus	Virus	Mosaic pattern of discoloration on leaf	Contact between plants	-	Remove infected plants
Black Spot	Fungi	Purple or black spots on leaves	Contact between plants	-	Fungicides and removing dead leaves
Malaria	Protist	Episodes of fever that can be fatal	Mosquitos (vectors)	Preventing mosquitos from breeding and using nets	Antiviral Drugs

B6: Preventing and Treating Disease

Bacterial Growth

Bacteria multiply by simple cell division (binary fission) as often as once every 20 minutes if they have enough nutrients and a suitable temperature. Bacteria can be grown in a nutrient broth solution or as colonies on an agar gel plate. Uncontaminated cultures of microorganisms are required for investigating the action of disinfectants and antibiotics.

Growing bacteria in the lab

An uncontaminated culture of microorganisms can be grown using sterilised Petri dishes and agar. You sterilise the inoculating loop before use and fix the lid of the petri dish to prevent unwanted microorganisms getting in. Uncontaminated cultures of microorganisms are needed for investigating the action of disinfectants and antibiotics. Cultures should be incubated at a maximum temperature of 25°C in schools and colleges to reduce the likelihood of pathogens growing that might be harmful to humans.

Plant Disease Detection

Plant diseases can be detected by:

- Stunted growth
- Spots on leaves
- Areas of decay (rot)
- Growths/ Malformed stems
- Leaf discolouration
- Presence of pests.

Plant Disease Identification

Identification can be made by:

- Reference to a gardening manual or website
- Taking infected plants to a laboratory to identify the pathogen
- Using testing kits that contain monoclonal antibodies.

Physical Plant Defence

Cellulose cell walls

Tough waxy cuticle

Layer of dead cells around stems

Chemical Plant Defence

Antibacterial Chemicals

Poisons to deter herbivores

-

Mechanical Plant Defence

Thorns and hairs

Leaves which droop or curl when touched

Mimicry to trick animals

B6: Preventing and Treating Disease and B7: Non-Communicable Disease

Vaccination

Vaccination involves introducing small quantities of dead or inactive forms of a pathogen into the body to stimulate the white blood cells to produce antibodies. If the same pathogen re-enters the body the white blood cells respond quickly to produce the correct antibodies, preventing infection. If a large proportion of the population is immune to a pathogen the spread of the pathogen is much reduced. This is known as herd immunity.

Drugs in the Past

Traditionally drugs were extracted from plants and microorganisms.

- The heart drug digitalis originates from foxgloves.
- The painkiller aspirin originates from willow.
- Penicillin was discovered by Alexander Fleming from the Penicillium mould.

Antibiotics and Painkillers

Antibiotics, such as penicillin, are medicines that help to cure bacterial disease by killing infective bacteria inside the body. The use of antibiotics has greatly reduced deaths from infectious bacterial diseases. However, the emergence of strains resistant to antibiotics is of great concern. Antibiotics cannot kill viral pathogens. Painkillers and other medicines are used to treat the symptoms of disease but do not kill pathogens. It is difficult to develop drugs that kill viruses without also damaging the body's tissues.

Non-communicable Diseases

A non-communicable disease cannot be passed from one individual to another. Risk factors are aspects of a person's lifestyle, or substances present in a person's body or environment, that have been shown to be linked to an increased rate of a disease. For some non-communicable diseases, a casual mechanism for some risk factors has been proven, but not in others. A casual mechanism explains how one factor influences another through a biological process. Correlation does not prove causation and doctors have to do lots of research to prove a casual mechanism.

Alcohol

Alcohol can damage the liver and cause cirrhosis and liver cancer. Alcohol can cause brain damage and death. Alcohol taken in by a pregnant woman can affect the development of her unborn baby.

Smoking

Smoking can cause cardiovascular disease, lung cancer, and lung diseases such as bronchitis and COPD. A foetus exposed to smoke has restricted oxygen, which can lead to premature birth, low birthweight and even stillbirth. Tobacco smoke contains many harmful substances. These include: tar, nicotine and carbon monoxide. Tar causes cancer of the lungs, mouth and throat. It coats the surface of the breathing tubes and the alveoli. Nicotine is addictive - it causes a smoker to want more cigarettes. Carbon monoxide is a gas that takes the place of oxygen in red blood cells. This reduces the amount of oxygen that the blood can carry.

Development of drugs

New drugs are tested for toxicity, efficacy and dose. Toxicity is the degree to which a chemical substance can damage an organism. Efficacy is a measure of how effectively they work. Dose is the quantity of medicine that should be prescribed to be taken at one time. Preclinical testing is done in a laboratory using cells, tissues and live animals. Then clinical trials are carried out which involves testing the drugs on healthy volunteers and then patients to find out about safety and efficacy. Very low doses of the drug are given at the start of the clinical trial. If the drug is found to be safe, further clinical trials are carried out to find the optimum dose for the drug. In double blind trials, some patients are given a placebo. Neither the doctor or the patient will know who has been given the placebo. This is done to avoid bias.

Diet, Exercise and Disease

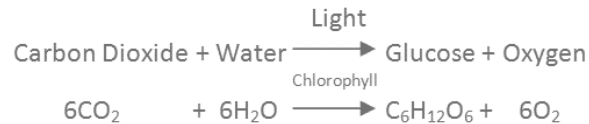
Regular exercise and a balanced diet are needed to keep the body healthy. Too little food leads to a person being underweight and prone to illness, while too much food and not enough exercise leads to a person being overweight and prone to other illnesses. Excess cholesterol increases the risk of heart disease. Excess salt causes high blood pressure and increases the risk of heart disease and stroke. Obesity is a strong risk factor for type 2 diabetes.

B8: Photosynthesis

Photosynthesis

Plants harness the Sun's energy in photosynthesis in order to make food. This process liberates oxygen which has built up over millions of years in the Earth's atmosphere. Both animals and plants use this oxygen to oxidise food in a process called aerobic respiration which transfers the energy that the organism needs to perform its functions. Photosynthesis is an endothermic reaction in which energy is transferred from the environment to the chloroplasts by light.

Photosynthesis is represented by the equation:



Plants absorb water through their roots, and carbon dioxide through their leaves. Some glucose is used for respiration, while some is converted into insoluble *starch* for storage. The stored starch can later be turned back into glucose and used in respiration. Oxygen is released as a by-product of photosynthesis. Leaves are adapted to perform their function e.g. they have a large surface area to absorb sunlight and lots of chloroplasts in the palisade cells.

Uses of glucose from photosynthesis

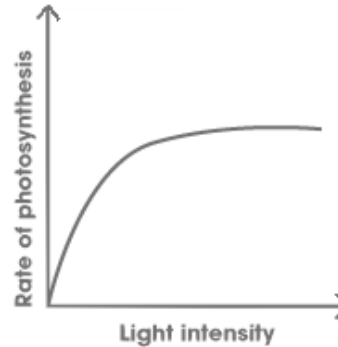
The glucose produced in photosynthesis may be:

- Used for respiration
- Converted into insoluble starch for storage
- Used to produce fat or oil for storage
- Used to produce cellulose, which strengthens the cell wall
- Used to produce amino acids for protein synthesis.

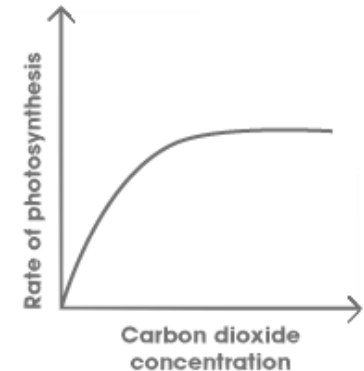
To produce proteins, plants and algal cells also use nitrate ions that are absorbed from the soil or water to make the amino acids used to make proteins.

Factors limiting photosynthesis

Three factors can limit the speed of photosynthesis - light intensity, carbon dioxide concentration and temperature.

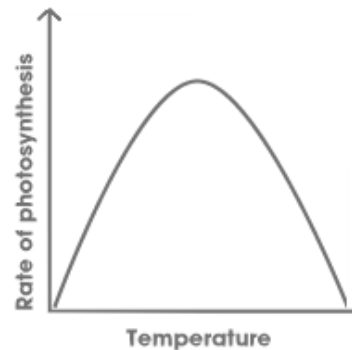


Sometimes photosynthesis is limited by the concentration of carbon dioxide in the air. Even if there is plenty of light, a plant cannot photosynthesise if there is insufficient carbon dioxide.



Without enough light, a plant cannot photosynthesise very quickly, even if there is plenty of water and carbon dioxide. Increasing the light intensity will boost the speed of photosynthesis.

If it gets too cold, the rate of photosynthesis will decrease. Plants cannot photosynthesise if it gets too hot.



These factors interact and any one of them may be the factor that limits photosynthesis.

Making the most of Photosynthesis

Limiting factors are important in the economics of enhancing the conditions in greenhouses to gain the maximum rate of photosynthesis while still maintaining profit. Farmers can use their knowledge of these limiting factors to increase crop growth in greenhouses. They may use artificial light so that photosynthesis can continue beyond daylight hours. The use of paraffin lamps inside a greenhouse increases the rate of photosynthesis because the burning paraffin produces carbon dioxide, and heat too.

B9: Respiration

Respiration

Cellular respiration is an exothermic reaction which is continuously occurring in living cells. The energy transferred supplies all the energy needed for living processes. Respiration in cells can take place aerobically (using oxygen) or anaerobically (without oxygen), to transfer energy. The equation to represent respiration is:



Organisms need energy for: chemical reactions to build larger molecules, movement and keeping warm.

Metabolism

Metabolism is the sum of all the reactions in a cell or the body. The energy transferred by respiration in cells is used by the organism for the continual enzyme controlled processes of metabolism that synthesise new molecules.

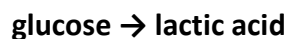
Metabolism includes:

- Conversion of glucose to starch, glycogen and cellulose
- The formation of lipid molecules from a molecule of glycerol and three molecules of fatty acids
- The use of glucose and nitrate ions to form amino acids which in turn are used to synthesise proteins
- Respiration
- Breakdown of excess proteins to form urea for excretion.

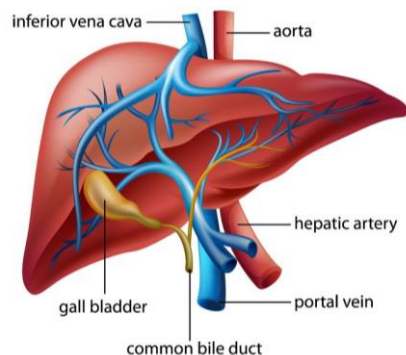
Anaerobic respiration

Anaerobic respiration does not require oxygen to transfer energy. During vigorous exercise the human body is unable to supply the cells with sufficient oxygen and it switches to anaerobic respiration. This process will supply energy but also causes the build-up of lactic acid in muscles which causes fatigue.

Anaerobic respiration in muscles is represented by the equation:



As the oxidation of glucose is incomplete in anaerobic respiration much less energy is transferred than in aerobic respiration.



Oxygen Debt

Blood flowing through the muscles transports the lactic acid to the liver where it is converted back into glucose. Oxygen debt is the amount of extra oxygen the body needs after exercise to react with the accumulated lactic acid and remove it from the cells.

Fermentation

Anaerobic respiration in plant and yeast cells is represented by the equation:



Anaerobic respiration in yeast cells is called fermentation and has economic importance in the manufacture of bread and alcoholic drinks.

Separate Science: Biology Paper 2 Higher

Summary Sheets

Biology Paper 2	
	1h 45min
Topics in the Paper:	
B10	Human Nervous System
B11	Hormonal Coordination
B12	Homeostasis in Action
B13	Reproduction
B14	Variation and Evolution
B15	Genetics and Evolution
B16	Interdependence and Competition
B17	Organising an Ecosystem
B18	Biodiversity and Ecosystems

B10 Part 1 – Human Nervous System

Homeostasis

Homeostasis is the regulation of the internal conditions of a cell or organism to maintain optimum conditions for function in response to internal and external changes. Homeostasis maintains optimal conditions for enzyme action and all cell functions. In the human body, these include control of:

- blood glucose concentration
- body temperature
- water levels.

These automatic control systems may involve nervous responses or chemical responses. All control systems include:

- cells called receptors, which detect stimuli (changes in the environment)
- coordination centres (such as the brain, spinal cord and pancreas) that receive and process information from receptors
- effectors, muscles or glands, which bring about responses which restore optimum levels.

The Nervous System

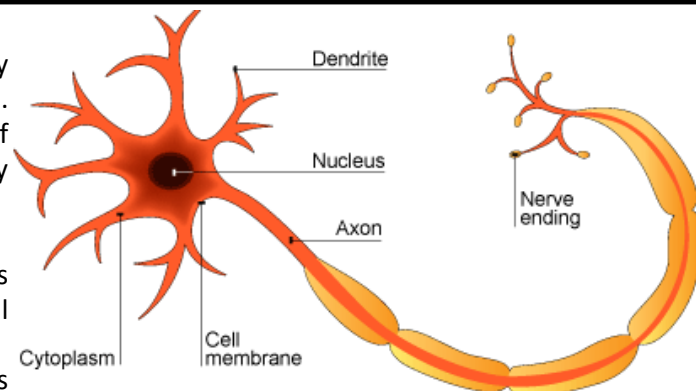
The nervous system enables humans to react to their surroundings and to coordinate their behaviour. Cells called receptors detect stimuli (changes in the environment). Information from receptors passes along cells (neurones) as electrical impulses to the central nervous system (CNS). The CNS is the brain and spinal cord. The CNS coordinates the response of effectors which may be muscles contracting or glands secreting hormones.

stimulus → receptor → coordinator → effector → response

Neurones

Neurones are nerve cells. They carry information as tiny electrical signals. There are three different types of neurones, each with a slightly different function:

1. sensory neurones carry signals from receptors to the spinal cord and brain.
2. relay neurones carry messages from one part of the CNS to another.
3. motor neurones carry signals from the CNS to effectors.



The axon is surrounded by a fatty layer known as the myelin sheath. This helps to protect the neurone and allow impulses to travel faster.

Synapses

Where two neurones meet, there is a tiny gap called a synapse. Signals cross this gap using chemicals released by a neurone. The chemical diffuses across the gap and makes the next neurone transmit an electrical signal.

1. An electrical impulse travels along an axon.
2. This triggers the nerve-ending of a neurone to release chemical messengers called neurotransmitters.
3. These chemicals diffuse across the synapse (the gap) and bind with receptor molecules on the membrane of the next neurone.
4. The receptor molecules on the second neurone bind only to the specific chemicals released from the first neurone. This stimulates the second neurone to transmit the electrical impulse

Reflex actions

When a receptor is stimulated, it **sends a signal to the central nervous system**, where the brain co-ordinates the response. But sometimes a **very quick response is needed**, one that does not need the involvement of the brain. This is a reflex action.

Reflex actions are rapid and happen without us thinking. For example, you would pull your hand away from a hot flame without thinking about it.

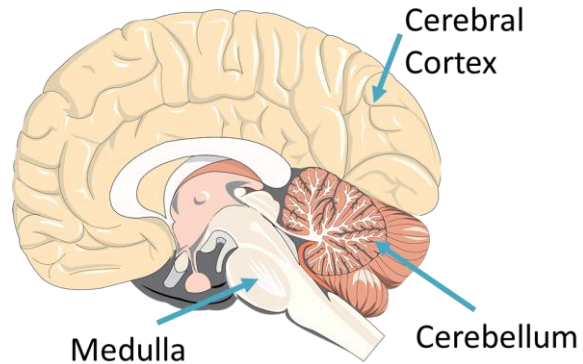
This is what happens:

1. receptor detects a stimulus - change in the environment
2. sensory neurone sends signal to relay neurone
3. motor neurone sends signal to effector
4. effector produces a response

B10 Part 2 – Human Nervous System

The Brain

The brain controls complex behaviour. It is made of billions of interconnected neurones and has different regions that carry out different functions.



- The cerebral cortex which controls memory, personality, intelligence and conscious thought
- The cerebellum which controls balance and co-ordination of movement
- The medulla which controls heart rate and breathing rate

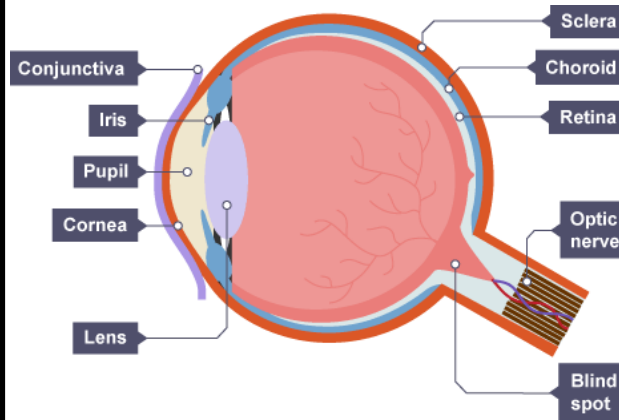
Studying the Brain

Neuroscientists have been able to map the regions of the brain to particular functions by studying patients with brain damage, electrically stimulating different parts of the brain and using MRI scanning techniques. The complexity and delicacy of the brain makes investigating and treating brain disorders very difficult. The brain is very complex and even simple processes such as eating involve neurones in lots of different areas of the brain. The brain can be very difficult to treat because surgery is very difficult and it is not fully understood what each area of the brain does, so it is easy to cause unintended damage. Drugs do not always reach the brain through the membranes that are around it.

The Eye

The eye is a sense organ containing receptors sensitive to light intensity and colour.

Part	Description	Function
Cornea	Front part of the tough outer coat, the sclera. It is convex and transparent.	refracts light into the eye.
Iris	Pigmented - decides the colour of your eyes - Its muscles contract and relax to alter the size of its central hole or pupil.	controls how much light enters the pupil
Lens	Transparent, bi-convex, flexible disc attached by the suspensory ligaments to the ciliary muscles.	focuses light onto the retina
Retina	The lining of the back of eye containing two types of photoreceptor cells - rods - sensitive to dim light and black and white - and cones - sensitive to colour.	contains the light receptors
Optic nerve	Bundle of sensory neurones at back of eye.	carries impulses from the eye to the brain



Accommodation

Accommodation is the process of changing the shape of the lens to focus on near or distant objects.

To focus on a near object:

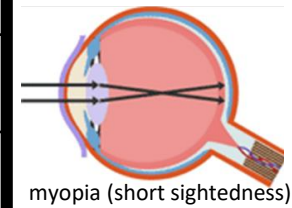
- the ciliary muscles contract
- the suspensory ligaments loosen
- the lens is then thicker and refracts light rays strongly.

To focus on a distant object:

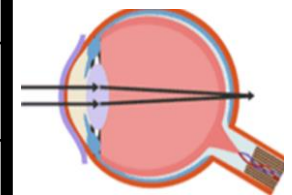
- the ciliary muscles relax
- the suspensory ligaments are pulled tight
- the lens is then pulled thin and slightly refracts light rays.

Problems with the eye

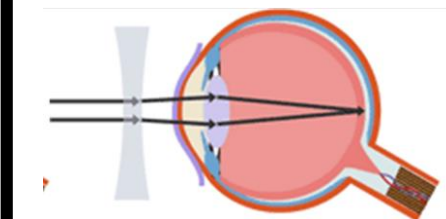
Two common defects of the eyes are myopia (short sightedness) and hyperopia (long sightedness) in which rays of light do not focus on the retina.



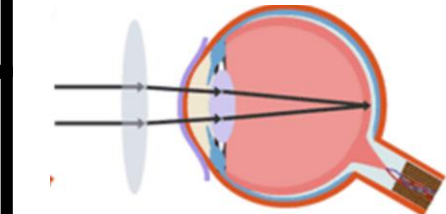
myopia (short sightedness)



hyperopia (long sightedness)



Concave lens corrects myopia.



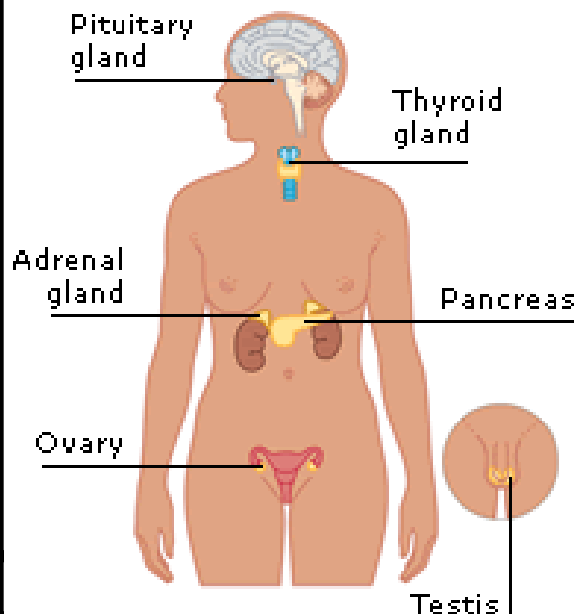
Convex lens corrects hyperopia.

- New technologies now include hard and soft contact lenses, laser surgery to change the shape of the cornea and a replacement lens in the eye.

B11 Hormonal Coordination

Endocrine System

The endocrine system is composed of glands which secrete chemicals called hormones directly into the bloodstream. The blood carries the hormone to a target organ where it produces an effect. Compared to the nervous system the effects are slower but act for longer.



Blood Glucose Levels

Blood glucose concentration is monitored and controlled by the pancreas. If the blood glucose concentration is too high, the pancreas produces the hormone insulin that causes glucose to move from the blood into the cells. In liver and muscle cells excess glucose is converted to glycogen for storage. If the blood glucose concentration is too low, the pancreas produces the hormone glucagon that causes glycogen to be converted into glucose and released into the blood.

The Pituitary gland

The pituitary gland in the brain is a 'master gland' which secretes several hormones into the blood in response to body conditions.

Gland - Hormone	Effect
Adrenal gland - adrenalin	It increases the heart rate and boosts the delivery of oxygen and glucose to the brain and muscles, preparing the body for 'flight or fight'.
Thyroid gland – thyroxine	Stimulates the basal metabolic rate. It plays an important role in growth and development.
Ovary - oestrogen	Controls puberty and the menstrual cycle in females; stimulates production of LH and suppresses the production of FSH in the pituitary gland.
Ovary - progesterone	Maintains the lining of the womb - suppresses FSH production in the pituitary gland.
Pancreas - insulin	Controls blood sugar levels.
Pituitary gland - anti-diuretic hormone	(ADH) Controls blood water level by triggering uptake of water in kidneys.
Pituitary gland - follicle stimulating hormone	(FSH) Triggers egg ripening and oestrogen production in ovaries.
pituitary gland - luteinising hormone	(LH) Triggers egg release and progesterone production in ovaries.
Testes - testosterone	Controls puberty in males.

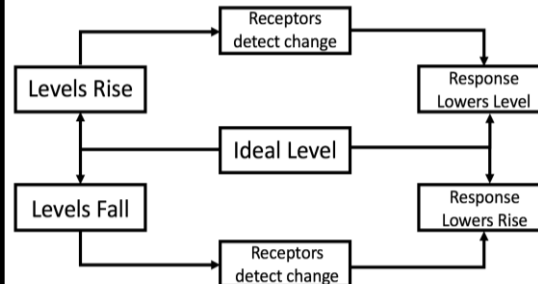
Diabetes

Type 1 diabetes is a disorder in which the pancreas fails to produce sufficient insulin. It is characterised by uncontrolled high blood glucose levels and is normally treated with insulin injections. Type 1 diabetes can be treated by Injecting insulin into the blood before meals. The extra insulin causes glucose to be taken up by the liver and other tissues. Cells get the glucose they need for respiration, and the blood glucose concentration stays normal.

In Type 2 diabetes the body cells no longer respond to insulin produced by the pancreas. A carbohydrate controlled diet and an exercise regime are common treatments. Obesity is a risk factor for Type 2 diabetes. A treatment for type 2 diabetes is a carbohydrate controlled diet, regular exercise and insulin injections if this fails to work.

Negative Feedback

Negative feedback systems work to maintain a steady state. An important example of a **negative feedback loop** is seen in control of thyroid hormone secretion. Adrenaline however, is not controlled by negative feedback.



B11 Hormonal Coordination

Puberty

During puberty reproductive hormones cause secondary sex characteristics to develop. Testosterone is the main male reproductive hormone produced by the testes and it stimulates sperm production. The time when the physical changes and emotional changes happen is called **adolescence**.

Boys

Here are some changes that happen only to boys:
voice breaks (gets deeper)
testes and penis get bigger
testes start to produce sperm cells
shoulders get wider
hair grows on face and chest.

Girls

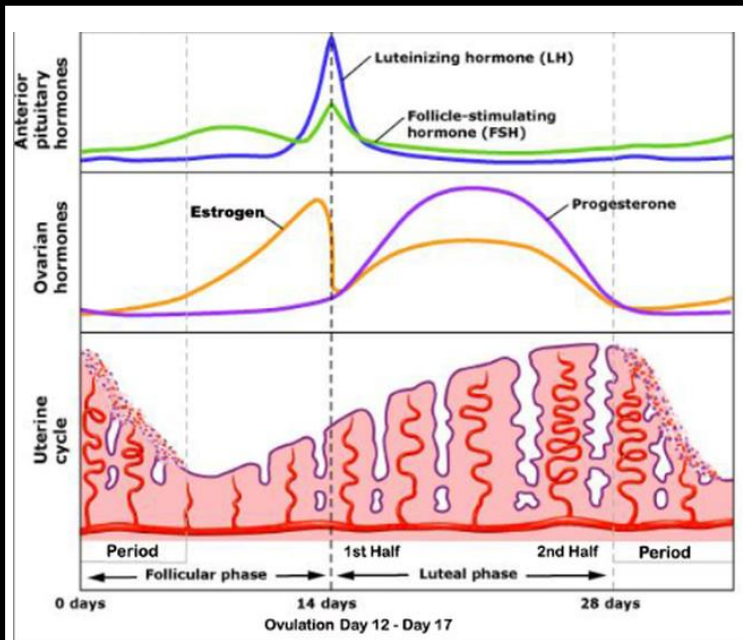
Here are some changes that happen only to girls:
breasts develop
ovaries start to release egg cells (periods start)
hips get wider.

Menstrual Cycle

Oestrogen is the main female reproductive hormone produced in the ovary. At puberty eggs begin to mature and one is released approximately every 28 days. This is called **ovulation**. During days 1-7 of the menstrual cycle the uterus lining is shed and the woman has her period.

Several hormones are involved in the menstrual cycle of a woman.

- Follicle stimulating hormone (FSH) causes maturation of an egg in the ovary.
- Luteinising hormone (LH) stimulates the release of the egg.
- Oestrogen and progesterone are involved in maintaining the uterus lining.



Control of Fertility

Fertility can be controlled by a variety of hormonal and non-hormonal methods of contraception. These include:

- oral contraceptives that contain hormones to inhibit FSH production so that no eggs mature
- injection, implant or skin patch of slow release progesterone to inhibit the maturation and release of eggs for a number of months or years
- barrier methods such as condoms and diaphragms which prevent the sperm reaching an egg
- intrauterine devices which prevent the implantation of an embryo or release a hormone
- spermicidal agents which kill or disable sperm
- abstaining from intercourse when an egg may be in the oviduct
- surgical methods of male and female sterilisation.

Fertility Treatment

FSH and LH can be used as a fertility drug to stimulate ovulation in women with low levels of FSH.

In vitro Fertilisation

- IVF involves giving a mother FSH and LH to stimulate the maturation of several eggs.
- The eggs are collected from the mother and fertilised by sperm from the father in the laboratory.
- The fertilised eggs develop into embryos.
- At the stage when they are tiny balls of cells, one or two embryos are inserted into the mother's uterus (womb).

Although fertility treatment gives a woman the chance to have a baby of her own it is very emotionally and physically stressful. The success rates are not high, IVF is expensive, not always free on the NHS and it can lead to multiple births which are a risk to both the babies and the mother.

Some religious groups disagree with IVF as embryos are destroyed during the process and they believe that life begins at conception.

B12 – Homeostasis in Action

Control of Body Temperature

Body temperature is monitored and controlled by the thermoregulatory centre in the brain. The thermoregulatory centre contains receptors sensitive to the temperature of the blood. The skin contains temperature receptors and sends nervous impulses to the thermoregulatory centre. If the body temperature is too high, blood vessels dilate (vasodilation) and sweat is produced from the sweat glands. Both these mechanisms cause a transfer of energy from the skin to the environment. If the body temperature is too low, blood vessels constrict (vasoconstriction), sweating stops and skeletal muscles contract (shiver).

Maintaining water balance

Water leaves the body via the lungs during exhalation. Water, ions and urea are lost from the skin in sweat. There is no control over water, ion or urea loss by the lungs or skin. Excess water, ions and urea are removed via the kidneys in the urine. If body cells lose or gain too much water by osmosis they do not function efficiently.

Anti-Diuretic Hormone

The water level in the body is controlled by the hormone ADH which acts on the kidney tubules. ADH is released by the pituitary gland when the blood is too concentrated and it causes more water to be reabsorbed back into the blood from the kidney tubules. This is controlled by negative feedback.

Ammonia

The digestion of proteins from the diet results in excess amino acids which need to be excreted safely. In the liver these amino acids are deaminated to form ammonia. Ammonia is toxic and so it is immediately converted to urea for safe excretion.

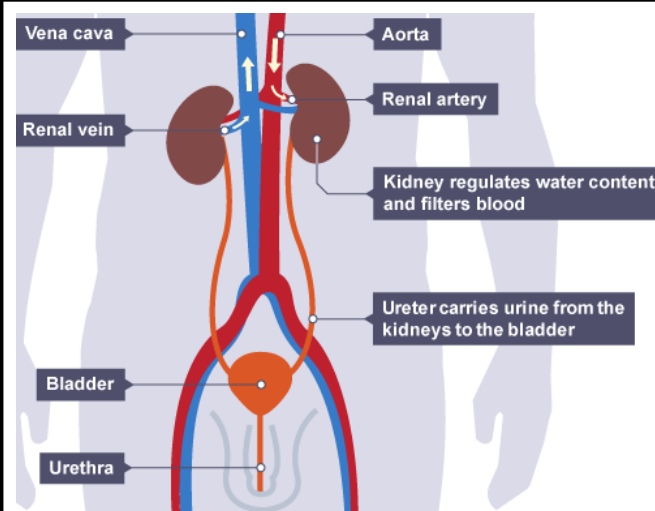
The Kidneys

The kidneys produce urine by filtration of the blood and selective reabsorption of useful substances such as glucose, some ions and water.

The inner part of the kidney is called the medulla and the outer part is the cortex. The renal arteries take blood with waste products to the kidneys to be filtered. Renal veins then return the filtered blood to be circulated around the body. Blood vessels take the blood through the kidneys where the waste products are removed into tubules. The ureter carries urine from the kidney to the bladder. Blood is filtered at high pressure to remove glucose, water, salts and urea. All the glucose, and some water and salts, are reabsorbed back into the blood. Note that urea is not reabsorbed. Urine is then passed from the bladder to the urethra to be released.

Kidney Dialysis

Kidney failure has serious consequences as it means that the water and ion balance cannot be regulated, and the levels of toxic urea build up in the body. This would ultimately be fatal if not treated. One method of treatment is kidney dialysis. In this procedure, patients are connected to a dialysis machine which acts as an artificial kidney to remove most of the urea and restore/maintain the water and ion balance of the blood. 'Dirty' blood (high in urea) is taken from a blood vessel in the arm, mixed with blood thinners to prevent clotting, and pumped into the machine. Inside the machine - separated by a partially permeable membrane the blood flows in the opposite direction to dialysis fluid, allowing exchange to occur between the two where a concentration gradient exists.



Kidney Transplants

Kidney transplantation is an alternative method for treating kidney failure. This procedure involves implanting a kidney from an organ *donor* into the patient's body to replace the damaged kidney. Two precautions can be taken to reduce organ rejection; Tissue typing and patients taking Immuno-suppressant drugs

Plant Hormones

Plants produce hormones to coordinate and control growth and responses to light (phototropism) and gravity (gravitropism or geotropism). Unequal distributions of auxin cause unequal growth rates in plant roots and shoots.

Uses of Plant Hormones

Plant growth hormones are used in agriculture and horticulture. Auxins are used as weed killers, as rooting powders and for promoting growth in tissue culture. Ethene is used in the food industry to control ripening of fruit during storage and transport. Gibberellins can be used to; end seed dormancy, promote flowering and increase fruit size.

B13 Part 1 - Reproduction

Sexual and Asexual Reproduction

Sexual reproduction involves the joining (fusion) of male and female gametes:

- sperm and egg cells in animals
- pollen and egg cells in flowering plants.

In sexual reproduction there is mixing of genetic information which leads to variety in the offspring. The formation of gametes involves meiosis. Asexual reproduction involves only one parent and no fusion of gametes. There is no mixing of genetic information. This leads to genetically identical offspring (clones). Only mitosis is involved.

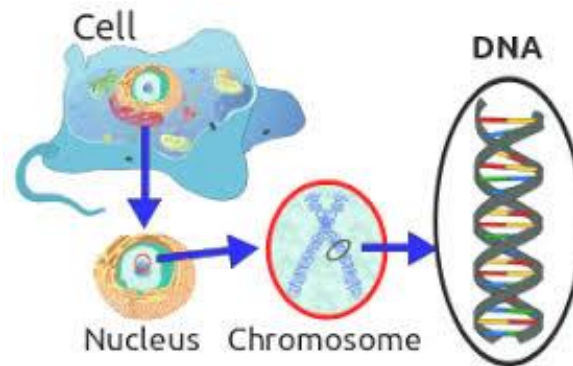
Meiosis

Meiosis leads to non-identical cells being formed while mitosis leads to identical cells being formed. In meiosis the number of chromosomes in gametes halves and fertilisation restores the full number of chromosomes. Cells in reproductive organs divide by meiosis to form gametes. When a cell divides to form gametes:

- copies of the genetic information are made
- the cell divides twice to form four gametes, each with a single set of chromosomes
- all gametes are genetically different from each other. Gametes join at fertilisation to restore the normal number of chromosomes. The new cell divides by mitosis. The number of cells increases. As the embryo develops cells differentiate.

DNA

The genetic material in the nucleus of a cell is composed of a chemical called DNA. DNA is a polymer made up of two strands forming a double helix. The DNA is contained in structures called chromosomes. A gene is a small section of DNA on a chromosome. Each gene codes for a particular sequence of amino acids, to make a specific protein.



The Genome

The genome of an organism is the entire genetic material of that organism. The whole human genome has now been studied and this will have great importance for medicine in the future.

By studying the human genome we can:

- search for genes linked to different types of disease
- understand and treat inherited disorders
- trace human migration patterns from the past.

Inherited Disorders

Some disorders are inherited. These disorders are caused by the inheritance of certain alleles.

- Polydactyly (having extra fingers or toes) is caused by a dominant allele.
- Cystic fibrosis (a disorder of cell membranes) is caused by a recessive allele.

Inheritance

Some characteristics are controlled by a single gene, such as: fur colour in mice; and red-green colour blindness in humans. Each gene may have different forms called alleles. The alleles present, or genotype, operate at a molecular level to develop characteristics that can be expressed as a phenotype. A dominant allele is always expressed, even if only one copy is present. A recessive allele is only expressed if two copies are present (therefore no dominant allele present). If the two alleles present are the same the organism is homozygous for that trait, but if the alleles are different they are heterozygous. Most characteristics are a result of multiple genes interacting, rather than a single gene.

Sex Determination

Ordinary human body cells contain 23 pairs of chromosomes. 22 pairs control characteristics only, but one of the pairs carries the genes that determine sex.

- In females the sex chromosomes are XX.
- In males the chromosomes are different (XY).

For your exam you need to be able to construct a Punnett square diagram and use it to calculate the probability of a child inheriting a disorder or being male or female.

Embryo Screening

Embryos can be screened for the alleles that cause polydactyly, cystic fibrosis and other genetic disorders. Note that you do not need to know or understand how embryo screening works for the examination. But you do need to know the risks associated with embryo screening.

B13 Part 2 - Reproduction

Advantages of sexual reproduction:

- produces variation in the offspring
- if the environment changes variation gives a survival advantage by natural selection
- natural selection can be speeded up by humans in selective breeding to increase food production.

Advantages of asexual reproduction:

- only one parent needed
- more time and energy efficient as do not need to find a mate
- faster than sexual reproduction
- many identical offspring can be produced when conditions are favourable.

Reproduction in Plants, fungi and parasites

Some organisms reproduce by both methods depending on the circumstances.

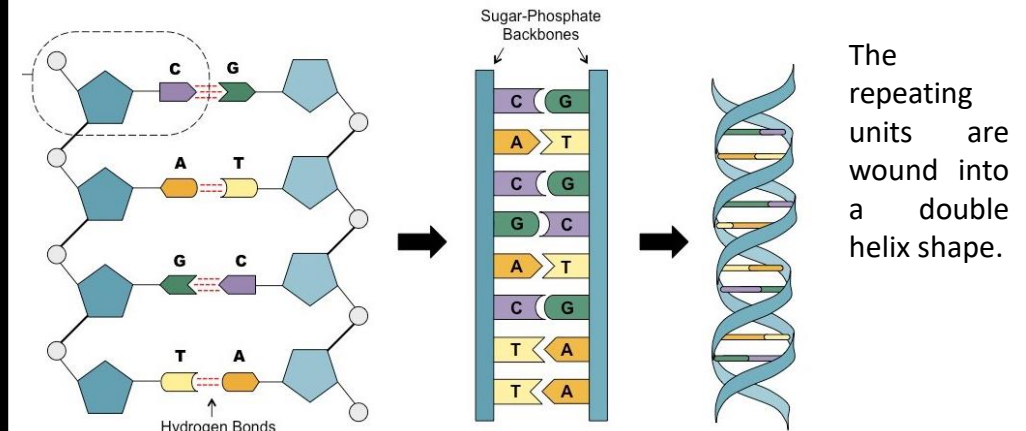
- Malarial parasites reproduce asexually in the human host, but sexually in the mosquito.
- Many fungi reproduce asexually by spores but also reproduce sexually to give variation.
- Many plants produce seeds sexually, but also reproduce asexually by runners such as strawberry plants, or bulb division such as daffodils.

Mutation

A change in DNA structure may result in a change in the protein synthesised by a gene. Mutations occur continuously. Most do not alter the protein, or only alter it slightly so that its appearance or function is not changed. A few mutations code for an altered protein with a different shape. An enzyme may no longer fit the substrate binding site or a structural protein may lose its strength. Not all parts of DNA code for proteins. Non-coding parts of DNA can switch genes on and off, so variations in these areas of DNA may affect how genes are expressed.

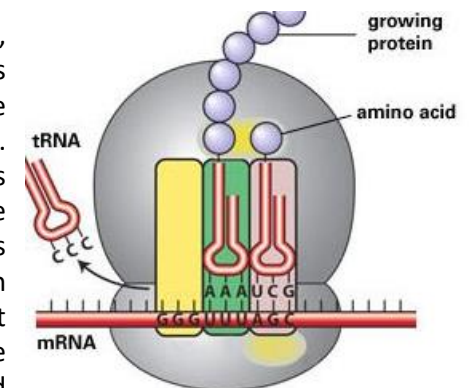
DNA Structure

DNA as a polymer made from four different nucleotides. Each nucleotide consists of a common sugar and phosphate group with one of four different bases attached to the sugar. DNA contains four bases, A, C, G and T. A sequence of three bases is the code for a particular amino acid. The order of bases controls the order in which amino acids are assembled to produce a particular protein. The long strands of DNA consist of alternating sugar and phosphate sections. Attached to each sugar is one of the four bases. The DNA polymer is made up of repeating nucleotide units. In the complementary strands a C is always linked to a G on the opposite strand and a T to an A. You do not need to know the names of A, T, G and C.



Protein Synthesis

Proteins are synthesised on ribosomes, according to a template. Carrier molecules bring specific amino acids to add to the growing protein chain in the correct order. When the protein chain is complete it folds up to form a unique shape. This unique shape enables the proteins to do their job as enzymes, hormones or forming structures in the body such as collagen. You are not expected to know or understand the structure of mRNA, tRNA, or the detailed structure of amino acids or proteins.



B14: Variation and Evolution

Variation

Differences in the characteristics of individuals in a population is called variation and may be due to differences in:

- the genes they have inherited (genetic causes)
- the conditions in which they have developed (environmental causes)
- a combination of genes and the environment.

There is usually extensive genetic variation within a population of a species. All variants arise from mutations and most have no effect on the phenotype. Some influence phenotype and very few determine phenotype. Mutations occur continuously. Very rarely a mutation will lead to a new phenotype. If the new phenotype is suited to an environmental change it can lead to a relatively rapid change in the species.

Evolution

Evolution as a change in the inherited characteristics of a population over time through a process of natural selection which may result in the formation of a new species. The theory of evolution by natural selection states that all species of living things have evolved from simple life forms (single cell organisms) that first developed more than three billion years ago.

Natural selection

The theory of evolution states that evolution happens by natural selection. Here are the key points:

- Individuals in a species show a wide range of variation.
- This variation is because of differences in genes.
- Individuals with characteristics most suited to the environment are more likely to survive and reproduce.
- The genes that allowed the individuals to be successful are passed to the offspring in the next generation.

Selective Breeding

Selective breeding (artificial selection) is the process by which humans breed plants and animals for particular genetic characteristics. Humans have been doing this for thousands of years since they first bred food crops from wild plants and domesticated animals. Selective breeding involves choosing parents with the desired characteristic from a mixed population. They are bred together. From the offspring those with the desired characteristic are bred together. This continues over many generations until all the offspring show the desired characteristic.

The characteristic can be chosen for usefulness or appearance:

- Disease resistance in food crops.
- Animals which produce more meat or milk.
- Domestic dogs with a gentle nature.
- Large or unusual flowers.

Selective breeding can lead to 'inbreeding' where some breeds are particularly prone to disease or inherited defects.

Speciation

A species is a group of organisms that reproduce to produce fertile offspring. If two populations of one species become so different in phenotype that they can no longer interbreed to produce fertile offspring they have formed two new species. For example, a horse and a donkey both evolved from a common ancestor to become two separate species.

Genetic Engineering

Genetic engineering is a process which involves modifying the genome of an organism by introducing a gene from another organism to give a desired characteristic. In genetic engineering, genes from the chromosomes of humans and other organisms can be 'cut out' and transferred to cells of other organisms.

Plant crops have been genetically engineered to be resistant to diseases or to produce bigger better fruits. Crops that have had their genes modified in this way are called genetically modified (GM) crops. GM crops include ones that are resistant to insect attack or to herbicides. GM crops generally show increased yields. Concerns about GM crops include the effect on populations of wild flowers and insects. Some people feel the effects of eating GM crops on human health have not been fully explored.

Modern medical research is exploring the possibility of genetic modification to overcome some inherited disorders. Bacterial cells have been genetically engineered to produce useful substances such as human insulin to treat diabetes.

In genetic engineering:

- enzymes are used to isolate the required gene; this gene is inserted into a vector, usually a bacterial plasmid or a virus
- the vector is used to insert the gene into the required cells
- genes are transferred to the cells of animals, plants or microorganisms at an early stage in their development so that they develop with desired characteristics.

Cloning**There are 4 methods of cloning.**

Tissue culture: using small groups of cells from part of a plant to grow identical new plants. This is important for preserving rare plant species or commercially in nurseries.

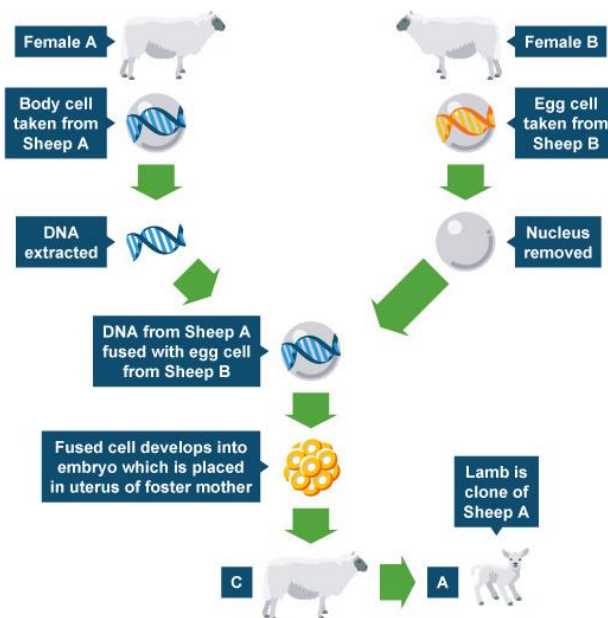
Cuttings: an older, but simple, method used by gardeners to produce many identical new plants from a parent plant.

Embryo transplants: splitting apart cells from a developing animal embryo before they become specialised, then transplanting the identical embryos into host mothers.

Adult cell cloning:

- The nucleus is removed from an unfertilised egg cell.
- The nucleus from an adult body cell, such as a skin cell, is inserted into the egg cell.
- An electric shock stimulates the egg cell to divide to form an embryo.
- These embryo cells contain the same genetic information as the adult skin cell.

• When the embryo has developed into a ball of cells, it is inserted into the womb of an adult female to continue its development.

**Theory of Evolution - Darwin**

Charles Darwin, as a result of observations on a round the world expedition, backed by years of experimentation and discussion and linked to developing knowledge of geology and fossils, proposed the theory of evolution by natural selection.

- Individual organisms within a particular species show a wide range of variation for a characteristic.
- Individuals with characteristics most suited to the environment are more likely to survive to breed successfully.
- The characteristics that have enabled these individuals to survive are then passed on to the next generation.

Darwin published his ideas in *On the Origin of Species* (1859). There was much controversy surrounding these revolutionary new ideas. The theory of evolution by natural selection was only gradually accepted because:

- the theory challenged the idea that God made all the animals and plants that live on Earth
- there was insufficient evidence at the time the theory was published to convince many scientists
- the mechanism of inheritance (DNA) and variation was not known until 50 years after the theory was published.

Jean-Baptiste Lamarck, theorised that changes that occur in an organism during its lifetime can be inherited. We now know that in the vast majority of cases this type of inheritance cannot occur.

Wallace

Alfred Russel Wallace independently proposed the theory of evolution by natural selection. He published joint writings with Darwin in 1858 which prompted Darwin to publish *On the Origin of Species* (1859) the following year. Wallace worked worldwide gathering evidence for evolutionary theory. He is best known for his work on warning colouration in animals and his theory of speciation. Alfred Wallace did much pioneering work on speciation but more evidence over time has led to our current understanding of the theory of speciation.

Mendel

In the mid-19th century Gregor Mendel carried out breeding experiments on plants. One of his observations was that the inheritance of each characteristic is determined by 'units' that are passed on to descendants unchanged.

In the late 19th century behaviour of chromosomes during cell division was observed.

In the early 20th century it was observed that chromosomes and Mendel's 'units' behaved in similar ways. This led to the idea that the 'units', now called genes, were located on chromosomes.

In the mid-20th century the structure of DNA was determined and the mechanism of gene function worked out. This scientific work by many scientists led to the gene theory being developed.

The importance of Mendel's discovery was not recognised until after his death.

B15: Genetics and Evolution

The theory of evolution

The theory of evolution by natural selection is now widely accepted. Evidence for Darwin's theory is now available as it has been shown that characteristics are passed on to offspring in genes. There is further evidence in the fossil record and the knowledge of how resistance to antibiotics evolves in bacteria.

Extinction

Extinctions occur when there are no remaining individuals of a species still alive. This is caused by new diseases, climate change, urbanisation, deforestation, predators, hunting, poaching and natural disasters.

Mass extinction is when there is a permanent loss of several species in a similar time frame. For example when the dinosaurs became extinct. Extinction on a large scale is caused by changes to the environment and catastrophic events such as massive volcanic eruptions or collisions with asteroids.

Fossils

Fossils are the 'remains' of organisms from millions of years ago, which are found in rocks. Fossils may be formed:

- from parts of organisms that have not decayed because one or more of the conditions needed for decay are absent
- when parts of the organism are replaced by minerals as they decay
- as preserved traces of organisms, such as footprints, burrows and rootlet traces.

Many early forms of life were soft-bodied, which means that they have left few traces behind. What traces there were have been mainly destroyed by geological activity. This is why scientists cannot be certain about how life began on Earth.

We can learn from fossils how much or how little different organisms have changed as life developed on Earth.

Resistant Bacteria

Bacteria can evolve rapidly because they reproduce at a fast rate. Mutations of bacterial pathogens produce new strains. Some strains might be resistant to antibiotics, and so are not killed. They survive and reproduce, so the population of the resistant strain rises. The resistant strain will then spread because people are not immune to it and there is no effective treatment.

MRSA (recent superbug outbreak) is resistant to antibiotics.

To reduce the rate of development of antibiotic resistant strains:

- doctors should not prescribe antibiotics inappropriately, such as treating non-serious or viral infections
- patients should complete their course of antibiotics so all bacteria are killed and none survive to mutate and form resistant strains
- the agricultural use of antibiotics should be restricted. The development of new antibiotics is costly and slow. It is unlikely to keep up with the emergence of new resistant strains.

Classification

Traditionally living things have been classified into groups depending on their structure and characteristics in a system developed by **Carl Linnaeus**. Linnaeus classified living things into kingdom, phylum, class, order, family, genus and species. Organisms are named by the binomial system of genus and species.

As evidence of internal structures became more developed due to improvements in microscopes, and the understanding of biochemical processes progressed, new models of classification were proposed. Due to evidence available from chemical analysis there is now a 'three domain system' developed by **Carl Woese**.

In this system organisms are divided into:

- archaea (primitive bacteria usually living in extreme environments)
- bacteria (true bacteria)
- eukaryota (which includes protists, fungi, plants and animals).

B16: Adaptations, Interdependence and Competition

Organisation of Ecosystems		Competition		Interdependence	
<p>An ecosystem is the interaction of a community of living organisms and their environment. A community is made up of two or more different species that live in the same place. The organisation and feeding relationships in a community can be represented by food chains. All food chains begin with a producer which synthesises molecules. This is usually a green plant or alga which makes glucose by photosynthesis. Producers are eaten by primary consumers, which in turn may be eaten by secondary consumers and they are then eaten by tertiary consumers. Consumers that kill and eat other animals are predators, and those eaten are prey.</p>		<p>Competition is when different organisms within a community are seeking the same limited resource. It is important that organisms are able to compete for their survival. If an organism is unable to compete successfully then it will struggle to survive, will be unlikely to reproduce and so its numbers in the community will fall. Plants in a community or habitat often compete with each other for light and space, and for water and mineral ions from the soil. Animals often compete with each other for food, mates and territory.</p>		<p>To survive and reproduce, organisms require a supply of materials from their surroundings and from the other living organisms there. Within a community each species depends on other species for food, shelter, pollination, seed dispersal etc. If one species is removed it can affect the whole community. This is called interdependence. A definition for interdependence is that it is the relationships between different species in a community in which changes to one population will cause a change to another population. A stable community is one where all the species and environmental factors are in balance so that population sizes remain fairly constant.</p>	
Abiotic and Biotic Factors					
Abiotic factors are nonliving while biotic factors are living. They are both able to affect the organisms that live in a community.					
Biotic Factor		How it Affects a Community			
Availability of Food	For example, if food is plentiful then the numbers of organisms in the community should increase. The number of organisms that eat the food will increase first, followed by the predators that eat them.	Light Intensity	Typically, when light intensity increases the rate of photosynthesis increases and so there will be more growth. There are however some plants that prefer shade, they will not grow as well when light intensity increases.		
New Predators Arriving	The arrival of new predators in an ecosystem can have a devastating effect to the entire ecosystem. Normally, in a balanced ecosystems, predators and prey have evolved together, their numbers increasing and decreasing in a cycle, there is a balance. A new predator arriving can destroy this balance. There could be a huge decline in the numbers of prey, which then reduces the food supply for the original predators.	Temperature	Animals and plants are adapted to survive in particular temperatures. If they are moved to a different temperature, they will struggle to survive.		
New Pathogens	It is very common for organisms that are new to an ecosystem to bring pathogens with them. The organisms that live in the community may not have come across the pathogen before and so will not have immunity which can have huge consequences for them and can cause death. An example of this in recent human history is the death of Native Americans from flu when Europeans first colonised North America.	Moisture Levels	Too little water and plants and animals will die. If plants are overwatered and the moisture levels are too high the roots are unable to get oxygen from the soil, are unable to respire, die and then rot which kills the rest of the plant.		
		Soil pH and Mineral Content	Some plants and aquatic organisms are adapted to survive in different pH's. Some survive in acidic conditions while others will survive in alkaline conditions. If the pH changes, the organism will struggle to survive.		
One Species Outcompeting Another	The introduction of a new species into an ecosystem can result in it out-competing another native species. This can lead to the native species struggling to survive and resource. For example, red squirrels are native to the UK while grey squirrels were introduced a few hundred years ago. The grey squirrels outcompeted the red squirrels and so the numbers of red squirrels has really decreased.	Wind Intensity and Direction	Lots of organisms prefer more sheltered locations. Plant seeds are more likely to settle and germinate there, and animals which depend upon these are more likely to live close to where they grow.		
		CO ₂ Levels for Plants	Carbon dioxide is required for photosynthesis. This means that areas with high levels of carbon dioxide have high rates of photosynthesis which results in healthy plants.		
		Oxygen Levels for Aquatic Animals	Water contains oxygen. This is a combination of oxygen produced by aquatic plants and oxygen that has dissolved in from the air. This oxygen is vital for organisms that live underwater as they need it for respiration. Without it aquatic animals would suffocate and die. Healthy bodies of water such as lakes and rivers have high levels of oxygen while polluted waters often have low levels of oxygen. Only certain species such as sludge worms can survive in polluted bodies of water. This pollution means that only certain species can survive there such as sludge worms. Sludge worms are a bioindicator species because their presence or absence informs us about the condition of the habitat. If they are present the habitat is polluted.		

B17: Organising an Ecosystem

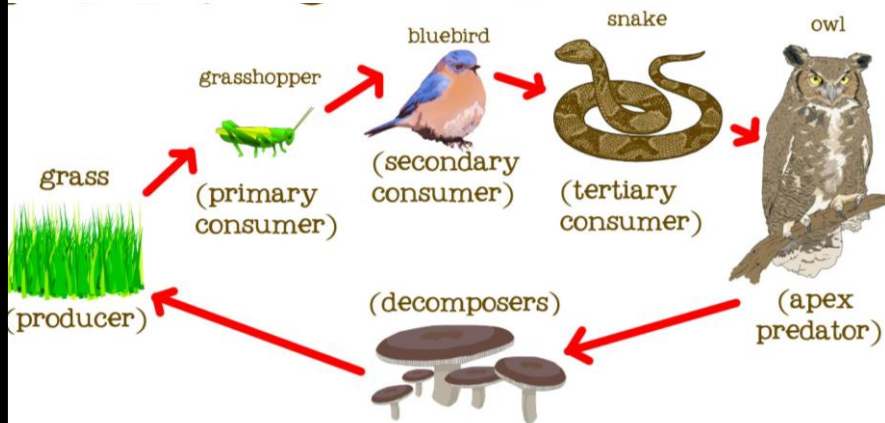
Ecosystems

An ecosystem is a community of animals, plants and micro-organisms, together with the habitat where they live. A habitat is a place where plants and animals live. A population is all the members of a single species that live in a habitat. An environment is all the conditions that surround any living organism - both the other living things and the non-living things or physical surroundings. Photosynthetic organisms are the producers of biomass for life on Earth. A range of experimental methods using transects and quadrats are used by ecologists to determine the distribution and abundance of species in an ecosystem. Environment - all the conditions that surround any living organism - both the other living things and the non-living things or physical surroundings.

Feeding Relationships

Feeding relationships within a community can be represented by food chains. All food chains begin with a producer which synthesises new molecules. On land this is usually a green plant that makes glucose by photosynthesis.

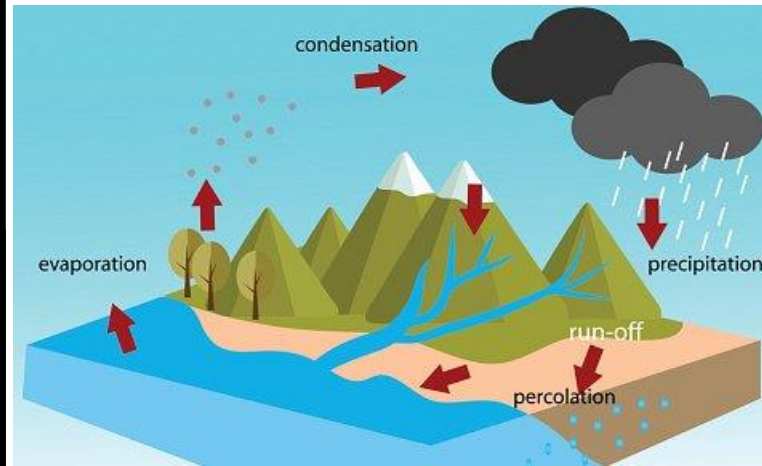
Producers are eaten by primary consumers, which in turn may be eaten by secondary consumers and then tertiary consumers. Consumers that kill and eat other animals are predators, and those eaten are prey. In a stable community the numbers of predators and prey rise and fall in cycles.



Recycling Materials

Recall that many different materials cycle through the abiotic and biotic components of an ecosystem. All materials in the living world are recycled to provide the building blocks for future organisms.

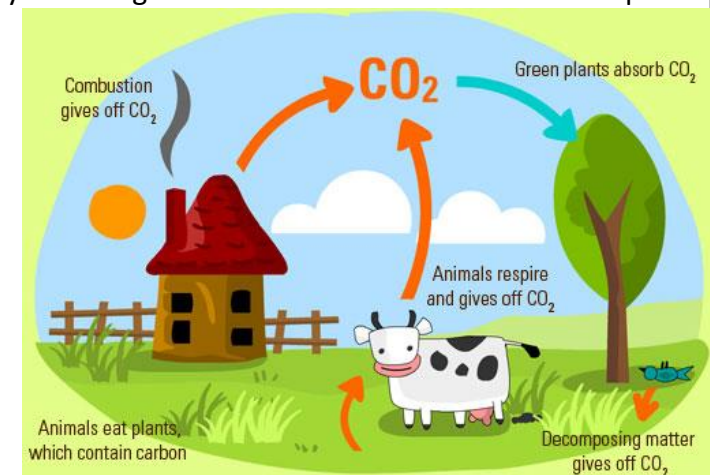
The **water cycle** provides fresh water for plants and animals on land before draining into the seas. Water is continuously evaporated and precipitated.



The main stages of the water cycle are: condensation, precipitation, evaporation, transpiration and respiration.

The **carbon cycle** returns carbon from organisms to the atmosphere as carbon dioxide to be used by plants in photosynthesis. The decay of dead plants and animals by microorganisms returns carbon to the atmosphere as carbon dioxide.

The main stages of the carbon cycle are: burning of fossil fuels, feeding on plant life, death of plants and animals, respiration, photosynthesis.



B18: Biodiversity and Ecosystems

<p>Global Warming</p> <p>This is the increase in the mean temperature of the Earth. Even a small average increase of temperature of 1°C over the last 100 years has had huge consequences all over the world.</p>		<p>Greenhouse Effect</p> <p>The greenhouse effect traps some of the energy from the sun and keeps our planet at a suitable temperature for life. The greenhouse gases in the atmosphere absorb some of the energy radiated by Earth and this is reradiated leading to global warming. Carbon dioxide, methane and water vapour are all example of greenhouse gases. Over the years there has been an increased release of these greenhouse gases.</p>		<p>Land Pollution</p> <p>Any rubbish that is thrown out and not recycled goes to landfill. These are large holes in the earth where rubbish is dumped. Sometimes people dump rubbish in public places to avoid paying for it to be disposed of. This is known as fly tipping.</p>	
		<p>Why There is More Waste</p> <p>Rapid growth in the human population and an increase in the standard of living mean that increasingly more resources are used and more waste is produced. Unless waste and chemical materials are properly handled, more pollution will be caused. Pollution is the contamination of the air, water or ground with harmful substances while waste is unwanted or unusable material.</p>			
Air Pollutant	How the Pollutant is Produced	Problem the Pollutant Causes		Water Pollution	Human Use of Land
Carbon Dioxide	Complete combustion of fuels	Causes global warming		<p>Water can become polluted by different sources including residential areas, industry and agriculture. Sewage from residential areas can contaminate water while rivers can also be contaminated from nearby farmland. Chemicals that farmers add to their fields can wash into nearby water. Examples of chemicals include pesticides, herbicides and fertilisers. When fertilisers and sewage enter a water source such as a river there is a growth of algae due to increased mineral ions. The algae die and microorganisms feed on the decaying matter, the microorganisms that do this respire using up oxygen and so the organisms that live in the water die due to lack of oxygen. This is called eutrophication. Sometimes in industrial areas toxic chemicals can be released illegally.</p>	<p>Humans reduce the amount of land available for other animals and plants by:</p> <ul style="list-style-type: none"> • Building • Quarrying • Farming • Dumping waste <p>By using this land we remove habitats for the plants and animals and reduce biodiversity. More and more land is being lost as the human population is increasing so quickly and there is an increased standard of living.</p>
Carbon Monoxide	Incomplete combustion of fuels due to a lack of oxygen in the air	Toxic gas. It reduces oxygen content in the blood. It is not easily detected as it is colourless and odorless.			
Carbon Particulates	Incomplete combustion of fuels due to a lack of oxygen in the air	Global Dimming and health problems for humans.			
Sulfur Dioxide	Some fuels such as coal can contain sulfur. When the fuel burns the sulfur reacts with oxygen also producing sulfur dioxide.	Dissolves in water to form acid rain. This damages buildings and can damage plants as well as organisms in bodies of water such as ponds. It can also cause respiratory problems.			
Oxides of Nitrogen	The conditions in a car's engine is very hot and high pressure. This causes the nitrogen in the air to react with oxygen forming oxides of nitrogen.	Dissolves in water to form acid rain. It can also cause respiratory problems.			
				<p>Peat Bogs</p> <p>Bogs are very wet area of land without trees that usually have many types of moss growing in them. They are very acidic and are often low in nutrients. Decay is very slow and the peat in the bog is made from partially decayed plants. Because of how long peat takes to form it is a non renewable energy resource like other fossil fuels. Peat is removed from bogs to burn which release carbon dioxide gas. It is also removed for gardeners to add to their soil. When peat is added to soil it is mixed with air. Microbes begin to decay the peat, as they do this they respire using the oxygen mixed into the soil which releases carbon dioxide gas. The destruction of peat bogs, and other areas of peat to produce garden compost, reduces the area of this habitat and thus the variety of different plant, animal and microorganism species that live there (biodiversity). The decay or burning of the peat releases carbon dioxide into the atmosphere.</p>	

B18: Biodiversity and Ecosystems

Transfer of Biomass

Producers are mostly plants and algae which transfer about 1 % of the incident energy from light for photosynthesis. Only approximately 10 % of the biomass from each trophic level is transferred to the level above it. Losses of biomass are due to:

- Not all the ingested material is absorbed, some is egested as faeces
- Some absorbed material is lost as waste, such as carbon dioxide and water in respiration and water and urea in urine.

Large amounts of glucose are used in respiration.

Factors Affecting Food Security

Food security is having enough food to feed a population. Biological factors which are threatening food security include:

- The increasing birth rate has threatened food security in some countries
- Changing diets in developed countries means scarce food resources are transported around the world
- New pests and pathogens that affect farming
- Environmental changes that affect food production, such as widespread famine occurring in some countries if rains fail
- The cost of agricultural inputs
- Conflicts that have arisen in some parts of the world which affect the availability of water or food.

Sustainable methods must be found to feed all people on Earth.

Greenhouse Effect

The greenhouse effect traps some of the energy from the sun and keeps our planet at a suitable temperature for life. The greenhouse gases in the atmosphere absorb some of the energy radiated by Earth and this is reradiated leading to global warming. Carbon dioxide, methane and water vapour are all example of greenhouse gases. Over the years there has been an increased release of these greenhouse gases which has led to global warming.

Global Warming

This is the increase in the mean temperature of the Earth. Even a small average increase of temperature of 1°C over the last 100 years has had huge consequences all over the world.

Accepting the Global Warming Theory

It took a while for global warming to be accepted by most people. There was not enough evidence in the past to convince people, however, there is more evidence that has been enough to convince most people. The evidence used by scientists is 'peer reviewed' by other scientists, which is the method used by the science community to ensure that research findings are valid. Peer review ensures that the science community are confident in the accuracy of data and any conclusions made.

Consequences of Global Warming

There are lots of consequences of global warming. These include:

- Melting of the polar ice caps which will lead to rising sea levels. When the polar ice caps melt there is a loss of habitat for the animals that live on the ice. The rising sea levels can also lead to other areas in the world flooding. The soil in the areas that flood will become saltier which will have an effect on the species that live there.
- Seawater will expand. The rising temperatures will cause the seawater to expand. This can cause flooding of low-lying land around the world.
- Extreme Weather such as more extreme storms.
- Changes in animal migration patterns.
- Changes in rainfall patterns. Some areas will have heavier rainfall and become much wetter, while other areas will have much less rainfall and become drier. This can cause deserts to form in a process called desertification
- Habitats changing
- Loss and extinction of animals and plants.

Farming Techniques

The efficiency of food production can be improved by restricting energy transfer from food animals to the environment. This can be done by limiting their movement and by controlling the temperature of their surroundings. Some animals are fed high protein diets to increase growth.

The English Martyrs Catholic School and Sixth Form College

Triple Science
Chemistry



Triple Science: Chemistry Paper 1

Summary Sheets Higher

Chemistry Paper 1	
	1h 45min
Topics in the Paper:	
C1	Atomic Structure
C2	The Periodic Table
C3	Structure and Bonding
C4	Chemical Calculations
C5	Chemical Changes
C6	Electrolysis
C7	Energy Changes

C1: Atomic Structure

<p>Atoms All substances are made of atoms. An atom is the smallest part of an element that can exist. Atoms of each element are represented by a chemical symbol for example the symbol for magnesium is Mg.</p>	<p>Conservation of Mass The law of conservation of mass says that no atoms are lost or made during a chemical reaction. This means that the mass of the products equals the mass of the reactants, so symbol equations must be balanced.</p>	<p>Compounds Compounds are formed from elements by chemical reactions. Compounds contain two or more elements chemically bonded together. They can be separated into elements by chemical reactions.</p>	<p>Mixtures A mixture consists of two or more elements or compounds not chemically joined together. This means that they still have the same chemical properties and they can be separated using different separation techniques. These techniques include filtration, crystallisation, distillation, fractional distillation and chromatography. These techniques do not involve chemical reactions.</p>												
<p>Crystallisation This is a separation technique to separate a soluble substance from a solvent. For example it can be used to separate salt from water or other substances that have dissolved. It involves adding the solution to an evaporating dish and heating it with a Bunsen Burner to get the water to evaporate. Heating is stopped when crystals form and the rest of the water is left to then evaporate at room temperature. To heat the salt more gently you can use a water bath which involves placing the evaporating dish on a beaker of water that is being heated with a Bunsen Burner.</p>	<p>Filtration This is a separation technique to separate an insoluble substance from a solvent. For example it can be used to separate sand from water or other solids that have not dissolved. It involves a funnel and filter paper and pouring the solution through the filter paper. The insoluble substance collects on the filter paper and this can then be washed and dried.</p>		<p>Chromatography This is a separation technique to separate different soluble substances from each other. It can be used to separate food colourings. It involves getting a piece of chromatography paper and drawing an origin line in pencil. A spot of the substance to be separated is then added to this origin line and the paper is then placed in a solvent with the origin line above the solvent. The solvent moves up the chromatography paper and the substance dissolves into it. The more soluble the substance the further up the paper it moves. As different substances have different solubilities they move up the paper different amounts and so are separated.</p>												
<p>Development of the Model of the Atom Dalton suggested that atoms were tiny spheres that could not be divided. JJ Thompson then discovered the electron. He also suggested the Plum Pudding Model. This was the idea that the atom was a ball of positive charge with negative electrons embedded in it. Then due to results from the alpha particle scattering experiment the nuclear model of the atom was suggested. Discovered the electron. Suggested the Plum Pudding Model. This was the idea that the atom was a ball of positive charge with negative electrons embedded in it. Niels Bohr then adapted this model by suggesting that electrons orbit the nucleus at specific distances and then James Chadwick proved the existence of neutrons.</p>			<p>Structure of the Atom The atom has protons and neutrons in its nucleus with electrons orbiting in shells on the outside. Protons and neutrons have a mass of 1 while electrons have a very small mass. Protons have a positive charge, electrons are negative while neutrons are neutral. Atoms are small, having a radius of about 0.1 nm and the radius of a nucleus is less than 1/10 000 of that of the atom. An atom is neutral because it has the same number of electrons and protons.</p>												
<p>Mass number Number of protons and neutrons an atom has. It is an average value that takes into account the abundance of the isotopes.</p>	<p>Ion An atom that has lost or gained electrons and so has a charge.</p>	<p>Chemical Reactions Reactants are what go into a chemical reaction while products are what are made. For example in the word equation hydrogen and oxygen are the reactants while water is the product: Hydrogen + Oxygen → Water Overall in any equation: Reactants → Products</p>	<p>Electron Configuration The electrons in an atom occupy the lowest available energy levels. The electronic structure of an atom can be represented by numbers or by a diagram. 2 electrons fill the first shell, and 8 fill the second and third shell. Once shell 3 is full the 4th begins to fill.</p>	<table border="1"> <tr> <td colspan="2">State Symbols</td> <td rowspan="5">Elements Elements are made up of just one type of atom. In the periodic table there are about 100 different elements.</td> </tr> <tr> <td>Solid</td> <td>(s)</td> </tr> <tr> <td>Liquid</td> <td>(l)</td> </tr> <tr> <td>Gas</td> <td>(g)</td> </tr> <tr> <td>Solution</td> <td>(aq)</td> </tr> </table>	State Symbols		Elements Elements are made up of just one type of atom. In the periodic table there are about 100 different elements.	Solid	(s)	Liquid	(l)	Gas	(g)	Solution	(aq)
State Symbols		Elements Elements are made up of just one type of atom. In the periodic table there are about 100 different elements.													
Solid	(s)														
Liquid	(l)														
Gas	(g)														
Solution	(aq)														
<p>Atomic Number The number of protons an atom has.</p>	<p>Isotope: Atoms with the same number of protons but different number of neutrons. They have different mass numbers.</p>														

C2: The Periodic Table

<p>Group 7 Elements in Group 7 are called the halogens and they have similar reactions because they have 7 electrons in their outermost shell. The halogens are non-metals and are molecules made of pairs of atoms. At room temperature F₂ is a yellow gas, Cl₂ is a green gas, Br₂ is a brown liquid while when in solution is it yellow and I₂ is a shiny black solids while when in solution it is a dark brown/red colour. When they form compounds with metals they form white solids.</p>	<p>Groups Groups are the vertical columns in the periodic table. Elements in the same group have the same number of electrons in their outermost shell and so they have similar properties. Every atom in group 1 has 1 electron in its outermost shell, while everything in group 7 has 7 electrons in its outermost shell.</p>		<p>Group 0 Elements in Group 0 are called the noble gases. They are unreactive and don't easily form molecules because their atoms have stable arrangements of electrons because they all have full outermost shells. The noble gases have eight electrons in their outer shell, except for helium, which has only two electrons. Down the group the boiling point increases and the gases become more dense.</p>										
<p>Trends in Group 7 Down the group the elements in group 7 become less reactive. This is because the atoms are bigger and so the outermost electrons are further away from the nucleus. This means that there is a weaker attraction between the electrons and the nucleus and so it is harder to gain an electron to the outermost shell.</p>	<p>Metals Metals form positive ions and are found on the left side of the periodic table and towards the bottom.</p>	<p>Non Metals Non Metals form negative ions. They found on the right side of the periodic table and towards the top.</p>	<p>Group 1 Elements in Group 1 are called the alkali metals and they have similar properties because they all have 1 electron on their outermost shell. They all react with oxygen, chlorine and water and down the group the metals become more reactive.</p> <p style="text-align: center;">Metal + Oxygen → Metal Oxide Lithium + Oxygen → Lithium Oxide 4Li (s) + O₂ (g) → 2Li₂O (s)</p> <p style="text-align: center;">Metal + Chlorine → Metal Chloride Sodium + Chlorine → Sodium Chloride 2Na (s) + Cl₂ (g) → 2NaCl (s)</p> <p style="text-align: center;">Alkali Metal + Water → Metal Hydroxide + Hydrogen Potassium + Water → Potassium Hydroxide + Hydrogen K (s) + H₂O (l) → KOH (aq) + H₂ (g)</p>										
<p>The Periodic Table The elements in the periodic table are arranged in order of atomic number. This means that elements with similar properties are in the same groups. The table is called a periodic table because similar properties occur at regular intervals.</p>	<p>Development of the Periodic Table Before the discovery of protons, neutrons and electrons, scientists grouped the elements by arranging them in order of their atomic weights. This posed some problems. Firstly, the early periodic tables were incomplete as not all elements had been discovered and secondly, some elements were placed in the wrong place if the order of atomic weights was followed. Mendeleev overcame these problems by firstly leaving gaps for undiscovered elements and he swapped the position of some elements when arranging them by atomic weight put them in the wrong groups. Overtime Mendeleev's periodic table was accepted because elements with properties predicted by Mendeleev were discovered and filled the gaps that he had left. Knowledge of isotopes made it possible to explain why the order based on atomic weights was not always correct and proved that Mendeleev was right to swap the position of some elements.</p>		<p>Trends in Group 1 Down the group the elements in group 1 become more reactive. This is because the atoms are bigger and so the outermost electrons are further away from the nucleus. This means that there is a weaker attraction between the electrons and the nucleus and so the outermost electron is lost more easily.</p>										
<p>Displacement A more reactive halogen can displace a less reactive halogen from an aqueous solution of its salt. For example: Chlorine + Potassium Iodide → Potassium Chloride + Iodine Cl₂ (aq) + KI (aq) → KCl (aq) + I₂ (aq) Chlorine is green when in solution and will displace the iodine. At the end of the reaction the iodine will be displaced and so the solution will be a brown colour.</p>	<p>Transition Metals These are metals positioned in the large central block of the periodic table between groups 2 and 3. Compared to the alkali metals the transition metals are harder, stronger, have a higher density, have higher melting and boiling points and are less reactive. Alkali metals form +1 ions while the transition metals form ions with different charges. Alkali metals form white compounds while the transition metals form coloured compounds. Transition metals are used as catalysts while alkali metals are not.</p>		<p>Comparing Metals and Non Metals</p> <table border="1" style="width: 100%;"> <tr> <th>Metals</th> <th>Non Metals</th> </tr> <tr> <td>Conduct Electricity</td> <td>Do not conduct electricity.</td> </tr> <tr> <td>Higher melting and boiling points</td> <td>Lower melting and boiling points</td> </tr> <tr> <td>Ductile</td> <td>Not ductile</td> </tr> <tr> <td>Malleable</td> <td>Brittle</td> </tr> </table>	Metals	Non Metals	Conduct Electricity	Do not conduct electricity.	Higher melting and boiling points	Lower melting and boiling points	Ductile	Not ductile	Malleable	Brittle
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C3: Structure and Bonding

States of Matter

The three states of matter are solids, liquids and gases. The symbols are (s), (l), (g) and (aq) for aqueous solutions. The boiling point of a substance is the temperature at which boiling and condensing happen. The melting point of a substance is the temperature at which freezing and melting happen. Different substances have different melting and boiling points due to the strength of the forces between the particles of the substance. The stronger the force the higher the melting and boiling point of the substance.

Chemical Bonds

There are three types of chemical bonds. Ionic bonds occur in compounds formed from metals combined with non-metals. Covalent bonds are found in non metal elements and compounds that are made of non metals. Metallic bonding occurs in metallic elements and alloys.

Metallic Bonds

Metals are giant structures of atoms arranged in a lattice. The electrons in the outermost shell of the metal atoms are delocalised and are free to move through the whole structure. This is why metals can conduct electricity. Strong electrostatic attractions between the negative electrons and the positive metal ions bond the metal ions together.

Properties of Metals

The bonds in metals are very strong and so metals have high melting and boiling points. In pure metals the atoms are arranged in layers which means metals can be bent and shaped. Metals can conduct electricity due to the delocalised electrons. They are also good conductors of thermal energy because energy can be transferred by the delocalised electrons. To make metals harder they can be mixed with other metals. This forms an alloy.

Ionic Bonding

When a metal reacts with a non metal electrons from the metal ion are transferred to the non metal ion. The metal atom loses electrons to become a positive ion while the non metal atom gains electrons to become a negative ion. Atoms in group 1 lose 1 electron from their outermost shell and form +1 ions while atoms in group 2 lose 2 electrons from their outermost shell and form +2 ions. Atoms in group 7 gain 1 electron and form -1 ions while atoms in group 6 gain 2 electrons and form -2 ions.

Ionic Compounds

An ionic compound is a giant structure of ions that are held together by strong electrostatic forces of attraction that act in all directions between oppositely charged ions. Ionic compounds have giant ionic lattices which means they have a regular structure. They have high melting and boiling points due to the strong bonds between the ions. When solid ionic compounds can't conduct electricity because the ions are not able to move. When molten or dissolved ionic compounds can conduct because the ions are able to move freely.

Graphene and Fullerenes

Graphene is a single layer of graphite. It is useful in electronics and composites. It has a very low density and for its mass is very strong. Fullerenes are molecules of carbon with hollow shapes. They also have hexagonal rings of carbon, but can also have rings made up of 5 or 7 carbon atoms also. The first to be discovered was buckminsterfullerene which was a sphere. Carbon nanotubes are cylindrical fullerenes with high length to diameter ratios. They are useful in electronics. They all have delocalised electrons and so can conduct electricity. They also have high tensile strength.

Polymers

Polymers are very large molecules. The atoms in the polymer molecules are linked to other atoms by covalent bonds which are very strong. The intermolecular forces between the polymer molecules are strong and so the substances are solids at room temperature.

Covalent Bonding

When atoms share pairs of electrons they form covalent bonds. These bonds are very strong. Covalent bonds are found in small molecules such as oxygen, water, carbon dioxide and ammonia and are also found in very large molecules such as diamond, graphite and silicon dioxide.

Small Covalent Molecules

Small molecules are usually gases or liquids with low melting and boiling points. This is because there are weak forces between the molecules. These are known as intermolecular forces. As the molecule increases in size the intermolecular forces increase and so they have higher melting and boiling points. Small molecules do not conduct because the molecules do not have an overall electric charge.

Giant Covalent Structures

Giant covalent structures are solids with high melting and boiling points. This is because all of the atoms are bonded together with strong covalent bonds. In diamond each carbon atom is covalently bonded to 4 others so it is very hard. It does not have delocalised electrons so can't conduct electricity. In graphite each carbon atom is covalently bonded to 3 others forming layers of hexagonal rings with no covalent bonds between the layers, this means the layers can slide over each other. In graphite, for each covalent atom, there is one delocalised electron so it can conduct electricity.

Nanoscience

Nanoscience is the science of structures that are between 1-100nm in size. Nanoparticles are used in medicine, electronics, sunscreen, cosmetics, as deodorants and as catalysts. Nanoparticles have properties different from those for the same material in bulk due to their high surface area to volume ratio. This means that smaller quantities are needed to be effective also. Nanoparticles are smaller than fine particles which have diameters between 100-2500nm. Coarse particles, also known as dust, have diameters between $1 \times 10^{-5} \text{m}$ and $2.5 \times 10^{-6} \text{m}$.

C4: Chemical Calculations

Conservation of Mass

The law of conservation of mass says that no atoms are lost or made during a chemical reaction. This means that the mass of the products equals the mass of the reactants.

Relative Formula Mass

The relative formula mass is represented by the symbol M_r . RFM is the sum of the relative atomic masses of the atoms in the formula. In a balanced chemical equation, the total of the relative formula masses of the reactants equals the total of the relative formula masses of the products in the quantities shown.

Mass Changes when Products or Reactants are Gases

Some reactions may appear to have a change in mass but this can be because a reactant or product is a gas and its mass has not been taken into account. For example if a gas is made in a chemical reaction and escapes into the atmosphere the mass will appear to decrease.

Use of amount of substance in relation to volumes of gases

1 mole of any gas occupies the same volume under the same conditions of temperature and pressure. The volume of one mole of any gas at room temperature (20°C) and pressure (1 atmosphere pressure) is 24dm³. The number of moles of gas can be calculated using the formula:

$$\text{No of moles of gas} = \frac{\text{volume of gas (dm}^3\text{)}}{24\text{dm}^3}$$

Or

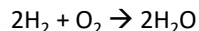
$$\text{No of moles of gas} = \frac{\text{volume of gas (cm}^3\text{)}}{24000\text{cm}^3}$$

Using Moles to Balance Equations

In a chemical reaction involving two reactants you would use an excess of one of the reactants to make sure that all of the other reactant is used up. The reactant that is completely used up is called the limiting reactant because it limits the amount of products that can be made.

Amount of Substances in Equations

The masses of reactants and products can be calculated from balanced symbol equations and chemical equations can be interpreted in terms of moles. For example:



This shows that 2 moles of hydrogen react with 1 mole of oxygen to make 2 moles of water.

Concentration of Solutions

Lots of chemical reactions take place in solutions. The concentration of a solution is measured in mass per given volume of solution and so the units are g/dm³.

Titration

The volumes of acid and alkali solutions that react with each other can be measured by titration using a suitable indicator. For example if you had a known concentration of acid and wanted to know the volume to neutralise 25cm³ of sodium hydroxide you would carry out a titration. You would add an indicator such as phenolphthalein, methyl orange or litmus to sodium hydroxide in a conical flask and you would add the acid from a burette. When the end point is near start swirling the conical flask and add the acid drop by drop until the indicator changes colour. Record the volume of acid added. In titration calculations you will need to use and rearrange the formula:

$$\text{Number of moles} = \text{concentration} \times \text{volume}$$

Using Concentrations of Solutions

The concentration of a solution is measured in mol/dm³. The amount in moles of solute or its mass in grams in a given volume of solution can be calculated from its concentration. If the volumes of two solutions that react completely are known and the concentration of one solution is known, the concentration of the other solution can be calculated. To find the concentration of a substance use the formulas:
Concentration (g/dm³) = mass of solute (g) / volume of solution (dm³)
Concentration (g/dm³) = (mass of solute (g) / volume of solution (cm³)) x 1000

Moles

Chemical amounts are measured in moles. The symbol for mole is mol. The mass of 1 mole of a substance in grams is equal to its relative formula mass. For example water has an RFM of 18 and 1 mole of water has a mass of 18g. 1 mole of any substance contains the same number of particles as one mole of any other substance. This number is known as the Avogadro constant. The value of the Avogadro constant is 6.02 x 10²³ per mole.

$$\text{Number of Moles} = \text{Mass} / \text{RFM}$$

Percentage Yield

In theory no atoms are lost or gained in a chemical reaction but often in a chemical reaction we do not obtain all the product that we should. This could be because the reaction was reversible and did not go to completion, some of the products was lost when it was made or separated from the mixture or some of the reactants did not react in the way expected. The amount of a product obtained is known as the actual yield. Theoretical yield is how much of the product should be made. When the actual yield is compared with the theoretical amount as a percentage, it is called the percentage yield. It is calculated using the formula:

$$\% \text{ Yield} = (\text{Actual Yield} / \text{Theoretical Yield}) \times 100$$

Atom Economy

The atom economy is a measure of the amount of reactants that end up as useful products. For sustainable development and for economic reasons it is important to use reactions with high atom economy. Atom economy can be calculated with the equation:

$$\% \text{ atom economy} = (\text{RFM of desired product} / \text{RFM of all reactants}) \times 100$$

C4: Chemical Calculations: Worked Examples

Relative Formula Mass

To calculate RFM of a substance you:

1. Identify the different types of atoms.
2. Identify how many of these atoms you have.
3. Identify the atomic mass for each of these atoms.
4. Multiply the atomic mass for each atom by the number of atoms.
5. Add the totals together.

For example: RFM of C_2H_6

$$C \times 2 = 12 \times 2 = 24$$

$$H \times 6 = 1 \times 6 = 6$$

$$\text{RFM} = 30$$

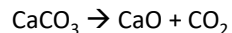
Percentage Yield

To calculate the percentage yield you:

1. Calculate the RFM of the substances involved.
2. Use this to calculate theoretical yield.
3. Write in the formula $\% \text{ Yield} = (\text{Actual Yield} / \text{Theoretical Yield}) \times 100$
4. Substitute numbers.
5. Do the working out.
6. Round to appropriate number of s.f and add units.

For example:

Calcium Carbonate \rightarrow Calcium Oxide + Carbon Dioxide



100kg of calcium carbonate is broken down and 45kg of calcium oxide is made. Calculate the % yield.

Step 1:

$$\text{RFM of } CaCO_3 = 100$$

$$\text{RFM of } CaO = 56$$

Step 2:

10kg of $CaCO_3$ should make 56kg of CaO

Steps 3 to 6:

$$\begin{aligned} \% \text{ Yield} &= (\text{Actual Yield} / \text{Theoretical Yield}) \times 100 \\ &= (45 / 56) \times 100 \\ &= 0.8035714286 \times 100 \\ &= 80.3571428571 \\ &= 80\% \end{aligned}$$

Moles

To calculate number of moles you:

1. Calculate the RFM of the substance.
2. Write in the formula Number of Moles = Mass / RFM
3. Substitute numbers.
4. Do the working out.
5. Round to appropriate number of s.f and add units

For example: How many moles of hydrochloric acid molecules are there in 8.2g of acid?

RFM of HCl is = 36.5

Number of moles = mass / RFM

$$= 8.2 / 36.5$$

$$= 0.2246575342$$

$$= 0.25\text{mol}$$

C4: Chemical Calculations: Worked Examples

Use of amount of substance in relation to volumes of gases

To calculate volume of gas you:

1. Identify if the volume you have been given is in cm^3 or dm^3
2. Write in the formula.
3. Substitute numbers.
4. Do the working out.
5. Round to appropriate number of s.f
6. Add units.

For example: A balloon is filled with 100cm^3 of helium gas. How many moles of helium is this?

No of moles of gas = volume of gas (cm^3) / 24000cm^3

$$= 100 / 24000$$

$$= 0.004166666667$$

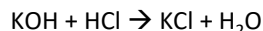
$$= 0.0042\text{mol}$$

Titration

For titration calculates you:

1. Identify the number of moles involved in the reaction.
2. Identify the ratio of reacting moles.
3. Convert cm^3 into dm^3 by dividing by 1000
4. Calculate the number of moles in the solution with a known concentration and volume using the formula no of moles = concentration x volume
5. Identify the number of moles for the other reactant using your ratio and number of moles you have already calculated.
6. Calculate the concentration using the rearranged formula: Concentration = no. of moles / volume

For example: 25cm^3 of KOH is neutralised by 6.25cm^3 of HCl which has a concentration of $2.00\text{mol}/\text{dm}^3$. Calculate the concentration of KOH.



Step 1: 1 mole of KOH and 1 mole of HCl

Step 2: 1: 1 ratio

Step 3: $25\text{cm}^3 = 0.025\text{dm}^3$ $6.25\text{cm}^3 = 0.00625\text{dm}^3$

Step 4: no of moles = concentration x volume

$$\text{no of moles} = 2 \times 0.0625$$

$$\text{no of moles} = 0.0125\text{mol}$$

Step 5: 1: 1 ratio so 0.0125mol of KOH also.

Step 6: Concentration = no. of moles / volume

$$\text{Concentration} = 0.0125 / 0.025$$

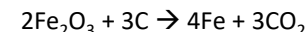
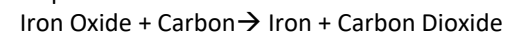
$$\text{Concentration} = 0.5\text{mol}/\text{dm}^3$$

Atom Economy

To calculate the atom economy you:

1. Balance the equation if needed.
2. Calculate the RFM of all the reactants.
3. Calculate the RFM of the desired product.
4. Write in the formula % atom economy = (RFM of desired product / RFM of all reactants) x 100
5. Substitute numbers.
6. Do the working out.
7. Round to appropriate number of s.f
8. Add units

For example:



Calculate the % atom economy for this process that forms iron.

Steps 1 and 2:

$$\text{RFM of } 2\text{Fe}_2\text{O}_3 = 320$$

$$\text{RFM of } 3\text{C} = 36$$

$$\text{RFM of } 4\text{Fe} = 224$$

Step 3: RFM of all reactants = $320 + 36 = 356$

Steps 4 to 8:

% atom economy = (RFM of desired product / RFM of all reactants) x 100

$$= (224 / 356) \times 100$$

$$= 0.6292134831 \times 100$$

$$= 62.9213483146$$

$$= 62.9\%$$

Using Concentrations of Solutions

To calculate concentration you:

1. Identify if the volume you have been given is in cm^3 or dm^3
2. Write in the formula.
3. Substitute numbers.
4. Do the working out.
5. Round to appropriate number of s.f
6. Add units.

For example: 25g of sodium chloride is dissolved into 200cm^3 of water. Calculate the concentration.

Concentration (g/dm^3) = (mass of solute (g) / volume of solution (cm^3)) x 1000

$$= (25 / 200) \times 1000$$

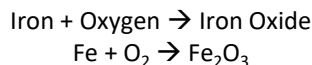
$$= 0.125 \times 1000$$

$$= 125\text{g}/\text{dm}^3$$

C5: Chemical Changes

Metal Oxides

Metals react with oxygen to produce metal oxides. Oxidation is when substances gain oxygen while reduction is when substances lose oxygen. This means that the reactions between metals and oxygen are oxidation reactions. For example:



Soluble Salts

Soluble salts can be made from acids by reacting them with solid insoluble substances, such as metals, metal oxides, hydroxides or carbonates. The solid is added to the acid until no more reacts and the excess solid is then filtered off to produce a solution of the salt. The salt solutions can then be crystallised to produce solid salts. To make copper chloride salts you could add copper oxide to warm hydrochloric acid and stir it. You would then filter the solution to remove the excess copper oxide and you would be left with a copper chloride solution. To remove the water you would then crystallise it using a Bunsen burner and evaporating dish.

The Reactivity Series

When metals react with other substances the metal atoms form positive ion and the reactivity of a metal is related to its tendency to form positive ions. Metals can be arranged in order of their reactivity in a reactivity series. We can do this by observing their reactions with acids and water. The non-metals hydrogen and carbon are often included in the reactivity series. A more reactive metal can displace a less reactive metal from a compound.

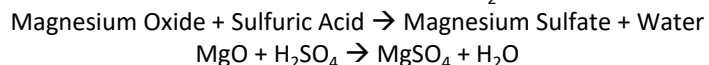
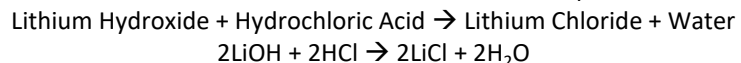
Most Reactive

Potassium
Sodium
Calcium
Magnesium
Aluminium
Carbon
Zinc
Iron
Tin
Lead
Hydrogen
Copper
Silver
Gold

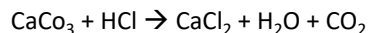
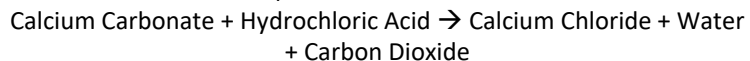
Least Reactive

Neutralisation

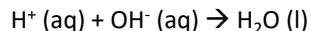
Acids are neutralised by alkalis and bases such as metal hydroxides and metal oxides to make salts and water. For example:



Acids can also react with metal carbonates to make salts, water and carbon dioxide. For example:

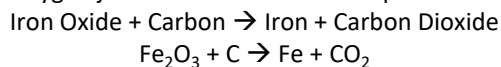


In neutralisation reactions between an acid and an alkali, hydrogen ions react with hydroxide ions to make water. This can be represented by the equation:



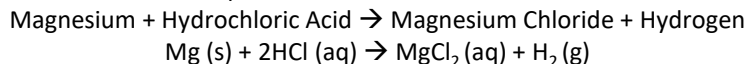
Extraction of Metals

Most metals are found as compounds in the Earth's crust and so chemical reactions are needed to extract the metal. Gold is unreactive and so is found as a pure metal. Metals less reactive than carbon they can be extracted by reduction with carbon. The metals will lose the oxygen joined to them. For example:

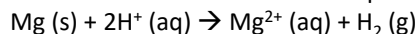


Oxidation and Reduction

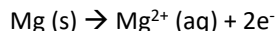
Oxidation is the loss of electrons and reduction is the gain of electrons. For example:



This equation can be summarised with the ionic equation:

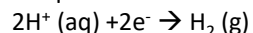


This equation can then be divided into two half equations:



This half equation shows that a magnesium atom is becoming a magnesium ion by losing electrons. This means it is being oxidised.

The other part of the half equation is:



This half equation shows that 2 hydrogen ions are becoming a hydrogen molecule by gaining electrons. This means they are being reduced. Overall in this reaction electrons are lost and gained and so this is called a redox reaction.

Metals and Water

To determine the reactivity of metals you could add them to water and record your observations. Most metals do not react very quickly with water, while some don't react at all. However, the alkali metals do react with water. This means that they are more reactive than other metals. When the alkali metals are added to water they form an alkaline solution and hydrogen. Potassium reacts the quickest and so is the most reactive, this is followed by sodium and then lithium.

pH Scale

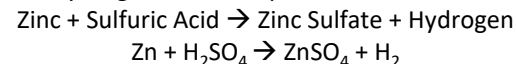
Acids produce hydrogen ions H^+ in solutions while alkalis contain hydroxide ions OH^- . The pH scale, from 0 to 14, is a measure of the acidity or alkalinity of a solution, and can be measured using universal indicator or a pH probe. A solution with pH 7 is neutral while solutions below 7 are acidic and solutions with a pH above 7 are alkalis.

Strong and Weak Acids

A strong acid such as hydrochloric, nitric and sulfuric acids is completely ionised in aqueous solution. A weak acid such as ethanoic, citric and carbonic acids is only partially ionised in aqueous solution. This means that if you have a strong and weak acid of the same concentration, the strong acid will have a lower pH. As the pH decreases by one unit, the hydrogen ion concentration of the solution increases by a factor of 10.

Metals and Acids

Acids react with some metals to produce salts and hydrogen. For example:



Sulfuric acid has the formula H_2SO_4 and makes sulfates. Hydrochloric acid has the formula HCl and makes chlorides.

C6: Electrolysis

Process of Electrolysis

When an ionic compound is dissolved in water or melted, the ions are free to move about. This means that the liquid ionic compounds and solutions are able to conduct electricity. These melted ionic compounds and solutions containing the ionic compounds are called electrolytes. Passing an electric current through electrolytes causes the ions to move to the electrodes. Positively charged ions move to the negative electrode, and negatively charged ions move to the positive electrode. The negative electrode is called the cathode and the positive electrode is called the anode. Ions are discharged at the electrodes producing elements. This process is called electrolysis.

Electrolysis of Molten Ionic Compounds

When an ionic compound is melted we say it is molten. When a simple ionic compound is electrolysed in the molten state using inert electrodes, the metal is produced at the cathode and the non-metal is produced at the anode. For example if molten lead bromide were to be electrolysed, lead would form at the cathode and bromine would form at the anode. If molten zinc chloride were to be electrolysed, zinc would form at the cathode and chlorine would form at the anode.

Oxidation and Reduction

Oxidation is the loss of electrons while reduction is the gain of electrons. This can be remembered using the phrase **OIL RIG**. **O**xidation **I**s **L**oss, **R**eduction **I**s **G**ain.

During electrolysis, at the cathode (negative electrode), positively charged ions gain electrons and so the reactions are reductions. At the anode (positive electrode), negatively charged ions lose electrons and so the reactions are oxidations.

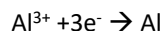
Using Electrolysis to Extract Metals

Metals can be extracted from molten compounds using electrolysis. Electrolysis is used if the metal is too reactive to be extracted by reduction with carbon or if the metal reacts with carbon. Large amounts of energy are used in the extraction process to melt the compounds and to produce the electrical current. This means the process is expensive.

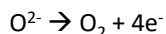
Extracting Aluminium Using Electrolysis

Aluminium is extracted from the ore bauxite using electrolysis. Bauxite contains the compounds aluminium oxide which has the formula Al_2O_3 . Aluminium oxide has a high melting point and so is mixed with cryolite to lower it. The aluminium oxide mixture is then melted so that the ions are free to move. The Al^{3+} ions are attracted to the cathode while the O^{2-} ions are attracted to the anode.

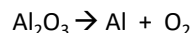
At the cathode the Al^{3+} ions gain 3 electrons and become aluminium atoms. The positive aluminium ions are attracted to the negative charge of the cathode. When the ions form atoms they then sink to the bottom of the electrolysis tank. As the ions have gained electrons they have been reduced. What happens at the negative electrode can be represented with the following half equation:



At the anode the O^{2-} lose two electrons. The negative ions are attracted to the positive charge of the anode. The oxygen atoms then bond together to form oxygen molecules O_2 . As the ions have lost electrons they have been oxidised. What happens at the positive electrode can be represented with the following half equation:



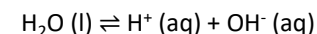
Overall:



The anode needs to be replaced because the carbon it contains reacts with the oxygen made to make carbon dioxide.

Aqueous Solutions

An aqueous solution is one in which a substance is dissolved in water. When ionic compounds dissolve in the water there will be ions from the compounds as well as hydrogen ions (H^+) and hydroxide ions (OH^-) from the water.



Electrolysis of Aqueous Solutions

The ions discharged when an aqueous solution is electrolysed using inert electrodes depend on the relative reactivity of the elements involved. In a solution containing a dissolved ionic compound there will be positive and negative ions from this compound as well as positive hydrogen ions and negative hydroxide ions from the water.

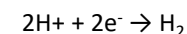
At the cathode hydrogen is produced if the metal in the solution is more reactive than hydrogen. If the metal is less reactive than hydrogen then a solid layer of pure metal will be produced instead.

At the positive electrode (anode), if halide ions are present in the solution then molecules of halogens will form. For example if the solution contains Cl^- ions then chlorine molecules will form at the anode while if F^- ions are present then fluorine molecules will form at the anode instead. If there are no halide ions in the solution then oxygen gas will be formed instead. This is because OH^- ions are attracted to positive electrode and are discharged making oxygen.

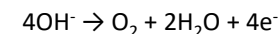
Half Equations

Half equations show the reactions at the electrodes.

For example when hydrogen forms at the cathode:



And when oxygen forms at the anode:



C7: Energy Changes

Energy Changes

In a chemical reaction energy is conserved. This means that the amount of energy of energy that goes into a chemical reaction comes out of the reaction.

Exothermic Reactions

An exothermic reaction transfers energy to the surroundings so the temperature of the surroundings increases. This means that the products have less energy than the reactants. Examples of exothermic reactions include combustion, oxidation reactions and neutralisation. Uses of exothermic reactions include self-heating cans and hand warmers.

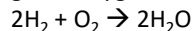
Cells and Batteries

Cells contain chemicals which react to produce electricity. The voltage produced depends on the type of electrode and electrolyte. A simple cell can be made by connecting two different metals in contact with an electrolyte. Batteries consist of two or more cells connected together in series to produce a higher voltage. In non-rechargeable cells and batteries the chemical reactions stop when one of the reactants has been used up. Alkaline batteries are non-rechargeable. Rechargeable cells and batteries can be recharged because the chemical reactions are reversed when an external electrical current is supplied.

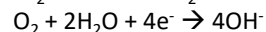
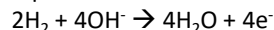
Fuel Cells

Fuel cells are supplied by an external source of fuel and the fuel is oxidised electrochemically within the fuel cell to produce a potential difference. A hydrogen fuel cell involves the oxidation of hydrogen to produce water.

Hydrogen + Oxygen → Water



This can be represented with the half equations:



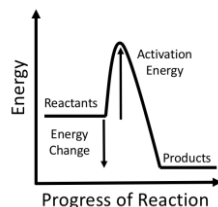
Hydrogen fuel cells offer a potential alternative to rechargeable cells and batteries.

Reaction Profiles

Chemical reactions occur when reacting particles collide with each other with enough energy. The minimum amount of energy that particles must have to react is called the activation energy. This activation energy is needed for a reaction to occur. Reaction profiles can be used to show the relative energies of reactants and products, the activation energy and the overall energy change of a reaction. You need to be able to draw simple reaction profiles.

Exothermic Reaction Profile

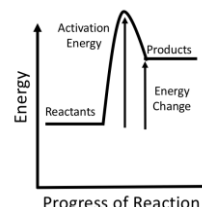
An exothermic reaction can be represented with the following reaction profile:



This shows that the reactants have more energy than the products. This is because energy is released into the surroundings.

Endothermic Reaction Profile

An endothermic reaction can be represented with the following reaction profile:



This shows that the reactants have less energy than the products. This is because energy is taken in from the surroundings.

How to Calculate Energy Changes

1. Check the symbol equation is balanced. If not balance it.
2. Identify the different bonds in the reactants.
3. Identify how many of each type of bond there is.
4. Calculate the energy needed to break these bonds.
5. Identify the different bonds in the products.
6. Identify how many of each type of bond there is.
7. Calculate the energy released when these bonds are formed.
8. Calculate the overall energy change using the formula:
$$\text{Energy Change} = \text{Bonds Broken} - \text{Bonds Made}$$
9. Add the units kJ.

An endothermic reaction will have an energy change that is a positive number, while an exothermic reaction will have an energy change that is a negative number. You will be given a table of common bond energies to use in your calculations.

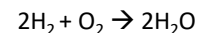
Endothermic Reactions

An endothermic reaction takes in energy from the surroundings so that the temperature of the surroundings decreases. This means that the products have more energy than the reactants. Examples of endothermic reactions include thermal decompositions and the reaction of citric acid and sodium hydrogencarbonate. Uses of endothermic reactions include some sports injury packs cool packs.

Energy Changes Calculations

During a chemical reaction energy must first be supplied to break the bonds in the reactants. When bonds in the products are formed energy is then released. The energy needed to break bonds and the energy released when bonds are formed can be calculated from bond energies. The difference between the sum of the energy needed to break bonds in the reactants and the sum of the energy released when bonds in the products are formed is the overall energy change of the reaction. In an exothermic reaction, the energy released from forming new bonds is greater than the energy needed to break existing bonds while in an endothermic reaction, the energy needed to break existing bonds is greater than the energy released from forming new bonds.

Energy Changes Worked Example:



Bonds Broken

$$\text{H-H} \times 2 = \mathbf{436} \times 2 = 872$$

$$\text{O=O} \times 1 = \mathbf{498}$$

$$= 1370 \text{ kJ}$$

Bonds Made

$$\text{H-O} \times 4 = \mathbf{464} \times 4$$

$$= 1856 \text{ kJ}$$

$$\text{Overall Energy Change} = \text{Broken} - \text{Made}$$

$$= 1370 - 1856 = -486 \text{ kJ}$$

This is an exothermic reaction.

The values in bold are the bond energies that will be given to you in the exam paper!

Separate Science: Chemistry Paper 2

Higher Summary Sheets

Chemistry Paper 2	
	1h 45min
Topics in the Paper:	
C8	Rates and Equilibrium
C9	Crude Oil and Fuels
C10	Organic Reactions
C11	Polymers
C12	Chemical Analysis
C13	Earth's Atmosphere
C14	Earth's Resources
C15	Using Our Resources

C8: Rates and Equilibrium: Chemistry Specification

Calculating Rates of Reaction

The rate of reaction can be found by measuring the amount of reactant used or the amount of product formed over time. It can be calculated using:

Rate of Reaction = Quantity of Reactant Used/Time

Rate of Reaction = Quantity of Product Formed/Time

The quantity can be measured by mass in grams and if so the units for rate of reaction will be g/s. The quantity can also be measured by volume in cm³, if so the unit for rate of reaction will be cm³/s. If the quantity is measured in moles then the units for rate of reaction will be mol/s.

Measuring Rate of Reaction

To measure the rate of reaction you could add the reactants together and:

- Measure the decreasing mass at regular time intervals. This method works if one of your products is a gas. You will need a conical flask to put the chemicals in, a balance to measure the mass a stopwatch and cotton wool to bung the top of the flask to prevent any of the reactants being lost.
- Measure the volume of gas produced at regular time intervals. Again this method works if one of your products is a gas. You will need a conical flask connected to a gas syringe and a stopwatch.
- Measure the time it takes for a cross to disappear. This method works if one of your products is a solid.

Changing Concentration and Equilibrium

If the concentration of a reactant is increased more products will be made. If the concentration of a product is decreased more reactants will react until equilibrium is reached again.

Changing Temperature and Equilibrium

If the temperature is increased the endothermic reaction will happen at a faster rate and the products of this reaction will increase. There will be fewer products made for the exothermic reaction in the opposite direction. If the temperature is decreased the endothermic reaction will happen at a slower rate and the products of this reaction will decrease. There will be more products made for the exothermic reaction in the opposite direction.

Collision Theory and Activation Energy

Chemical reactions can only occur when reacting particles collide with each other and with enough energy.

Rate of Reaction and Temperature

When temperature is increased the amount of collisions between reactants increases, and the collisions have more energy. This increases the rate of reaction.

Rate of Reaction and Concentration

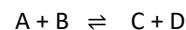
When concentration is increased the amount of collisions between reactants increases and so this increases the rate of reaction.

Catalysts

Catalysts increase the rate of reaction without being used up themselves. They do this by lowering the activation energy by providing an alternative pathway for the reaction to take place. Different reactions need different catalysts and enzymes are examples of biological catalysts. If a catalyst is involved with a chemical reaction it is not included in the chemical equation. When drawing a reaction profile to show a reaction with a catalyst, draw the activation energy for the reaction with the catalyst below the activation energy for the reaction without the catalyst.

Reversible Reactions

In some reactions the products can react with each other to make the original products again. These are reversible reactions. They are represented by:



Changing Pressure and Equilibrium

If pressure is increased the equilibrium will shift towards the side of the reaction with the smaller number of molecules. This can be determined from the symbol equation. If pressure is decreased the reaction will shift towards the side of the reaction with the larger number of molecules.

Factors Which Affect the Rates of Chemical Reactions

There are different factors that affect rate of reaction including concentration of reactants, pressure of reacting gases, the surface area of solid reactants, the temperature and the presence of a catalyst.

Rate of Reaction and Pressure

When the pressure of reacting gases is increased the amount of collisions between reactants increases and so the rate of reaction increases.

Rate of Reaction and Surface Area

When the surface area of reacting solids is increased the amount of collisions between reactants increases and so the rate of reaction increases.

Reversible Reactions and Energy Changes

If a reversible reaction is exothermic in one direction then it will be endothermic in the opposite direction.

Equilibrium

When a reversible reaction happens in a closed system in which reactants and products are unable to escape, equilibrium is reached. This is when the forward and reverse reaction happen at exactly the same rate. If a change is made to the conditions then the system will respond to counteract these changes. The effect of changing conditions can be predicted using Le Chatelier's Principle.

C9: Crude Oil: Chemistry Specification

Crude Oil

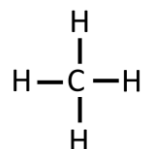
Crude oil is a finite resource found in rocks. It is the remains of an ancient biomass consisting mainly of plankton that was buried in mud. Crude oil is a mixture of a very large number of compounds. Most of the compounds in crude oil are hydrocarbons. Hydrocarbons are molecules made up of only hydrogen and carbon atoms. Most of the hydrocarbons found in crude oil are alkanes.

Alkanes

Alkanes are compounds with the general formula C_nH_{2n+2} . Examples of alkanes include methane, ethane, propane and butane.

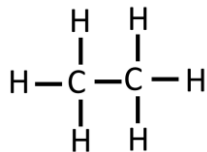
Methane

Methane is an alkane that contains 1 carbon atom. It has the chemical formula CH_4 and can be represented using the structural formula to the right.



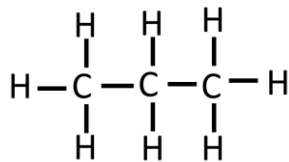
Ethane

Ethane is an alkane that contains 2 carbon atoms. It has the chemical formula C_2H_6 and can be represented using the structural formula to the right.



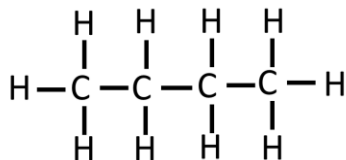
Propane

Propane is an alkane that contains 3 carbon atoms. It has the chemical formula C_3H_8 and can be represented using the structural formula below.



Butane

Butane is an alkane that contains 4 carbon atoms. It has the chemical formula C_4H_{10} and can be represented using the structural formula below.



Fractional Distillation

The many hydrocarbons in crude oil may be separated into fractions, each of which contains molecules with a similar number of carbon atoms, by fractional distillation. In this process the crude oil is heated until most of it turns into gas. The gases enter a fractioning column which is cooler at the top and hotter at the bottom. The gases rise up the column and as they rise they cool and condense back into liquids. The longer hydrocarbons have higher boiling points and so condense into liquids lower down the column while the smaller hydrocarbons have lower boiling points and so condense further up the column. The end result is crude oil separated into different fractions. Each fraction contains hydrocarbons with a similar number of carbon atoms and so they all have similar boiling points.

Petrochemicals

Different fractions of crude oil have many uses including as fuels that we depend for our modern lifestyle. Fuels from crude oil include petrol, diesel oil, kerosene, heavy fuel oil and liquid petroleum gases. Crude oil is also important for modern lifestyles as many useful materials including solvents, lubricants, polymers and detergents are produced by the petrochemical industry from crude oil. There is a huge selection of natural and synthetic carbon compounds due to the ability of carbon atoms to form families of similar compounds.

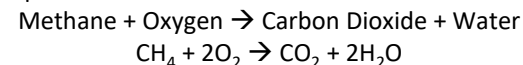
Properties of Hydrocarbons

Some properties of hydrocarbons depend on the size of their molecules, including boiling point, viscosity and flammability. As the size of alkanes increase the boiling point increases. This is because when the molecule is larger there are stronger intermolecular forces between the molecules. The longer the alkane chain the more viscous the alkane is also. As the alkane chain becomes longer the flammability of the alkane decreases. This means that methane is the most flammable of the alkanes. As short chain polymers are the most flammable this means that they are the most useful to use as fuels.

Combustion

The combustion of hydrocarbon fuels releases energy. During combustion, the carbon and hydrogen in the fuels are oxidised. The complete combustion of a hydrocarbon produces carbon dioxide and water.

For example:



Cracking

Hydrocarbons can be broken down to produce smaller, more useful molecules. This process is called cracking. Cracking can be done in different ways including catalytic cracking and steam cracking. In cracking a long chain hydrocarbon is broken down into smaller alkane molecules and alkenes which are another kind of hydrocarbon.

Catalytic Cracking

In catalytic cracking the long chain hydrocarbons are heated to vaporise them. Then the vapour is passed over hot powdered aluminium oxide which is a catalyst. The long chain molecules split apart on the surface of the catalyst.

Steam Cracking

In steam cracking the long chain hydrocarbons are heated to vaporise them. Then the vapour is mixed with steam. The long chain molecules then split apart.

Testing For Alkenes

Alkenes are more reactive than alkanes and can react with bromine. This means that if an alkene is present the bromine will turn colourless.

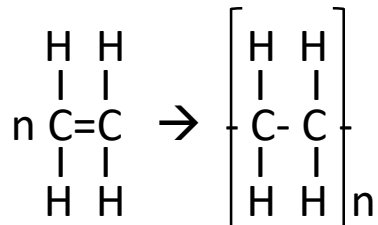
C10: Organic Reactions: Chemistry Specification

	Alkenes			Alcohols			Carboxylic Acids		
Functional Group	C=C			-OH			-COOH		
First 4 members of the series	Ethene	C ₂ H ₄	E.g. Butene	Methanol	CH ₃ OH	E.g. Ethanol	Methanoic Acid	COOH	E.g. Ethanoic Acid
	Propene	C ₃ H ₆		Ethanol	C ₂ H ₅ OH		Ethanoic Acid	CH ₃ COOH	
	Butene	C ₄ H ₈		Propanol	C ₃ H ₇ OH		Propanoic Acid	C ₂ H ₅ COOH	
	Pentene	C ₅ H ₁₀		Butanol	C ₃ H ₉ OH		Butanoic Acid	C ₃ H ₇ COOH	
Reactions	<p>Reaction with oxygen in combustion Alkenes react with oxygen during combustion but they tend to burn in air with smoky flames due to incomplete combustion. In general: Alkene + Oxygen → Carbon Dioxide + Water For example: Ethene + Oxygen → Carbon Dioxide + Water C₂H₄ + O₂ → CO₂ + H₂O</p> <p>Reaction with Hydrogen. In general: Alkene + Hydrogen → Alkane For example: Pentene + Hydrogen → Pentane C₅H₁₀ + H₂ → C₅H₁₂ This reaction takes place at 60°C in the presence of a nickel catalyst.</p> <p>Reaction with Water (Steam) In general: Alkene + Steam ⇌ Alcohol For example: Ethene + Steam ⇌ Ethanol C₂H₄ + H₂O ⇌ C₂H₄OH This reaction needs energy to heat the gases to a high temperature and a catalyst.</p> <p>Reaction with Halogens To identify a halogen you would use a halogen such as bromine. When it reacts with the alkane it turns colourless. This is because... Ethene + Bromine → Dibromoethane C₂H₄ + Br₂ → C₂H₄Br₂ Alkenes react with hydrogen, water and the halogens, by the addition of atoms across the carbon-carbon double bond so that the double bond becomes a single carbon-carbon bond.</p>			<p>Reaction with sodium In general: Sodium + Alcohol → Salt + Hydrogen For example: Sodium + Ethanol → Sodium Ethanoate + Hydrogen Na + C₂H₅OH → C₂H₅ONa + H₂</p> <p>Reaction with oxygen in combustion In general: Alcohol + Oxygen → Carbon Dioxide + Water For example: Ethanol + Oxygen → Carbon Dioxide + Water C₂H₅OH + O₂ → CO₂ + H₂O</p> <p>Alcohols in Water Small molecules of alcohol mix well with water and make neutral solutions.</p> <p>Reaction with an Oxidising Agent You can use oxidising agents such as potassium dichromate (V) to make carboxylic acids and water from alcohol. For example: Ethanol + Oxygen from oxidising agent → Ethanoic Acid + Water C₂H₅OH + O → CH₃COOH + H₂O</p> <p>Making Alcohols: Alcohol can be made in fermentation and can also be made by reacting ethene with water in the presence of a catalyst. Fermentation with yeast: Glucose → Ethanol + Carbon Dioxide</p> <p>Uses Ethanol is the main ingredient in alcoholic drinks and alcohols can be used as solvents as they dissolve many other organic compounds. This means they are used in products such as perfumes, aftershaves and mouthwashes.</p>			<p>Reaction with carbonates In general: Acid + Carbonate → Salt + Water + Carbon Dioxide For example: Ethanoic + Sodium → Sodium + Water + Carbon Acid Carbonate Ethanoate Dioxide CH₃COOH + NaCO₃ → CH₃COONa + H₂O + CO₂</p> <p>Reaction with alcohols In general: Alcohol + Carboxylic Acid ⇌ Ester + Water For example: Methanol + Ethanoic Acid ⇌ Methyl Ethanoate + Water CH₃OH + CH₃COOH ⇌ CH₃COOCH₃ + H₂O</p> <p>Dissolving in Water To show up their acidic properties acids must dissolve in water. This is because all acids ionise in water. Their molecules split up to form positive H⁺ ions and negative ions. Weak acids such as the carboxylic acids only partly ionise. When dissolving in water the following reaction can take place: Ethanoic Acid + Ethanoate Ions ⇌ Hydrogen Ions CH₃COOH + CH₃COO⁻ ⇌ H⁺ As carboxylic acids only partly ionise they have a higher pH than a strong acid and so there are slower reactions with metal carbonates.</p> <p>Esters have distinctive smells. Many smell sweet and fruity. This means that they are used in perfumes and food flavourings. Esters are also volatile which means they evaporate easily.</p>		

C11: Polymers: Chemistry Specification

Addition Polymerisation

In addition polymerisation alkenes such as poly(ethene) and poly(propene) make polymers. In an addition polymerisation reaction lots of small molecules known as monomers make large molecules called polymers. No other molecules are made in the reaction.



DNA

DNA is known as deoxyribonucleic acid and it is a large molecule that is needed for life. It codes for genetic instructions for the development and functioning of living organisms and viruses. DNA molecules are made of two polymer chains in a double helix. DNA contains four different monomers called nucleotides that react to form the polymer DNA.

Amino Acids

Amino acids have two different functional groups and they react in condensation polymerisation to make a polypeptide. One of the functional groups is a basic group known as an amine $-\text{NH}_2$ while the other functional group is an acidic group $-\text{COOH}$. Different amino acids can be combined in the same chain to make different proteins. Glycine has the formula $\text{H}_2\text{NCH}_2\text{COOH}$ and when it polymerises it makes the polypeptide $(-\text{HNCH}_2\text{COO}-)_n$ and $n \text{H}_2\text{O}$.

Naturally Occurring Polymers

Natural occurring polymers important for life include DNA, proteins which are made up of amino acids and starch and cellulose which are made of glucose monomers.

Condensation Polymerisation

In condensation polymerisation monomers with two functional groups join together when they react. In this reaction water is made which is why they are called condensation polymers. A diol is a molecule that contains two alcohol $-\text{OH}$ functional groups while a dicarboxylic acid contains two $-\text{COOH}$ functional groups. When a diol and a dicarboxylic acid polymerise they make a polyester.

C12: Chemical Analysis: Chemistry Specification

Pure Substance

In chemistry, a pure substance is a single element or compound, not mixed with any other substance. However, in everyday language, a pure substance can mean a substance that has had nothing added to it. We say it is unadulterated and in its natural state. An example of this is pure milk. In terms of chemistry this is a mixture, but in terms of everyday language it is a pure substance as no sugar etc. has been added to it. In chemistry you can tell if a substance is pure by melting or boiling it. This is because a pure element or compound melts and boils at specific temperatures.

Formulations

A formulation is a mixture that has been designed as a useful product. They are made by mixing its different components in carefully measured amounts to make sure that the product has the properties that are wanted. Examples of formulations include fuels, cleaning agents, paints, medicines, alloys, fertilisers and foods.

Testing Positive Ions

Flame Tests

Flame tests can be used to identify some positive metal ions. You need to know the following:
 Lithium - Crimson flame
 Sodium - Yellow flame
 Potassium - Lilac flame
 Calcium - Orange-Red
 Copper - Green flame
 If there is a sample containing a mixture of ions the flame colour can be masked. Sodium in particular masks other colour.

Using Sodium Hydroxide

When added to solutions of aluminium, calcium and magnesium ions a white precipitate is formed. Aluminium hydroxide will dissolve if an excess of sodium hydroxide is added. You need to know the following results:
 Copper(II) - Blue Precipitate
 Iron (II) - Green Precipitate
 Iron(III) - Brown Precipitate.

Testing Gases

Testing Hydrogen

The test for hydrogen uses a burning splint held at the open end of a test tube of the gas. Hydrogen burns quickly with a squeaky pop sound.

Test for Carbon Dioxide

The test for carbon dioxide uses a solution of calcium hydroxide known as lime water. It turns cloudy when carbon dioxide is present.

Test for Oxygen

The test for oxygen uses a glowing splint inserted into a test tube of the gas. The splint relights in oxygen.

Test for Chlorine

Litmus paper is used to test chlorine uses litmus paper. Chlorine bleaches the litmus paper and turns it white.

Flame Emission Spectroscopy

This is an instrumental method used to analyse metal ions in solutions. The sample is put into a flame and the light given out is passed through a spectroscope. The output is a line spectrum that can then be analysed to identify the metal ions in the solution and measure their concentrations. It is accurate, sensitive and quick.

Setting Up Chromatography

Draw an origin line in pencil on the paper and put a spot of the sample on this along with other known pigments to be used as a comparison. Place this in the solvent with the line kept above and leave for the solvent to rise up the paper. Remove when the solvent front is near the top and compare the position of your different samples.

Chromatography

Chromatography can be used to separate mixtures and can be used to help identify substances. It involves a stationary phase (chromatography paper) and a mobile phase (solvent). Separation depends on the distribution of substances between the phases. If a substance is more soluble it will spend more time dissolved in the solvent and so will move further up the paper while if a substance is less soluble it will spend more time on the stationary phase and will not move as far up. Different compounds have different R_f values in different solvents, which can be used to help identify the compounds. The R_f value is calculated using the formula:

$$R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent front}}$$

The R_f value is always a number less than 1. If a substance is a mixture it will separate into different spots depending but if the substance is pure will produce a single spot in all solvents. If a substance is insoluble it will not move from the origin line.

Testing Negative Ions

Carbonates

They react with dilute acids to make carbon dioxide gas. This can be identified with limewater turning cloudy.

Halides

Add dilute nitric acid then silver nitrate.
 Chloride – White Precipitate
 Bromide – Cream Precipitate
 Iodide – Yellow Precipitate

Sulfates

Add dilute hydrochloric acid and then barium chloride. Sulfates make a white precipitate.

Instrumental Analysis

Elements and compounds can be detected and identified using instrumental methods. These methods are accurate, sensitive and quick.

C13: The Earth's Atmosphere: Chemistry Specification

Gases in the Atmosphere

For the last 200 million years the proportion of different gases in the Earth's atmosphere have been around 80% nitrogen and 20% oxygen with small amounts of other gases including carbon dioxide, water vapour and noble gases.

Earth Atmosphere

The theories about what the Earth's early atmosphere was like and how it formed have changed over the years and evidence is very limited because of how long ago the atmosphere formed. It is thought that the Earth had lots of volcanic activity in the first billion years and this released gases such as water vapour and carbon dioxide. The atmosphere may have been like the atmosphere of Mars and Venus today. The volcanoes also made nitrogen which built up in the atmosphere and there may have been small amounts of methane and ammonia. As the Earth cooled the water vapour condensed and the oceans formed. The carbon dioxide dissolved into the water and the dissolved carbonates formed sediments.

Greenhouse Gases

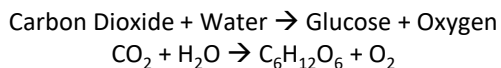
Greenhouse gases maintain temperatures on the Earth high enough to support life. Examples of greenhouse gases include water vapour, carbon dioxide and methane. The molecules of a greenhouse gas absorb the energy radiated by the Earth as it cools down at night. This increases the store of energy of the gases in the atmosphere and causes the Earth to warm up.

Climate Change

An increase in average global temperature is a major cause of climate change and there are some serious consequences of it. These consequences include rising sea levels which is caused by melting ice caps and the expansion of warmer oceans. This has increased flooding and has caused coasts to erode. Also extreme weather is becoming more frequent and there are changes to rainfall. Dry areas will get dryer while wet areas will become wetter. Climate change has also been linked to changes in the distribution of animals. This means that some ecosystems will be put under stress and some animals may become extinct.

Changes in Oxygen

When plants and algae evolved they produced oxygen through photosynthesis.



Once oxygen increased in the atmosphere animals were able to evolve.

Changes in Carbon Dioxide

Firstly carbon dioxide dissolved into the oceans to make carbonate ions. Sedimentary rocks formed. Once plants evolved carbon dioxide was further removed from the atmosphere and over time the carbon became locked within fossil fuels.

Changes in Greenhouse Gases

Human activity increase the amount of greenhouse gases in the atmosphere. The increased combustion of fuels and increased deforestation are causing an increase in carbon dioxide levels while the production of human waste, increase in agriculture and increase in rice fields is leading to the increase in methane.

Climate Change

It is difficult to model climate change due to the complex systems and this had led to oversimplified models causing models to be formed that are biased. Due to peer reviewed evidence many scientists believe that human activities will cause an increase of the Earth's atmosphere.

Carbon Footprint

This is the total amount of carbon dioxide and other greenhouse gases emitted over the life cycle of a product, service or event. This can be reduced by reducing emissions of carbon dioxide and methane.

Pollutants

The combustion of fuels is a huge source of pollutants. Many of these fuels contain carbon hydrogen and some sulfur. Pollutants include:

- Carbon Monoxide – this is made during the incomplete combustion of fuels. It is a toxic colourless and odourless and so not easily detected if it is around. This is a toxic gas.
- Sulfur Dioxide – this is made during the combustion of fuels. It can cause acidic rain when it dissolves in water and it can cause respiratory problems.
- Nitrogen Oxides – this is made when burning fossil fuels. The nitrogen in the air reacts with the oxygen in the air due to the high temperatures. It can cause acidic rain when it dissolves in water and it can cause respiratory problems.
- Soot – these are also called particulates and they can cause global dimming and health problems for humans.

C14: The Earths Resources: Chemistry Specification

Using the Earths Resources

Humans use the Earth's resources to provide warmth, shelter, food and transport. There are some resources which are natural and others which are finite.

Potable Water

Water that is safe to drink is called potable water. This water is essential for life. Drinking water needs low levels of dissolved salts and microbes in it. This water is not pure because it does still contain dissolved substances. In the UK, rain, which has low levels of dissolved substances collects in the ground, in lakes and rivers, and most potable water is produced from this by selecting an appropriate source of fresh water, passing it through filter beds and then sterilising it. Water can be sterilised using chlorine, ozone or UV light. If supplies of fresh water are limited, desalination of salty water or sea water will be done. Desalination can be done by distillation or by processes that use membranes such as reverse osmosis. These processes require large amounts of energy.

Electrolysis of Copper Sulfate Solution

A circuit can be set up with a power supply and a cathode and an anode. These are put into a solution of copper sulfate. The anode can be made of impure copper while the cathode can be made of pure copper. The positive copper ions are attracted to the cathode (negative electrode) and over time the impure copper anode gets smaller and smaller. At the electrodes the following reactions take place:

Anode (positive electrode made of impure copper)
$$\text{Cu (s)} \rightarrow \text{Cu}^{2+} \text{ (aq)} + 2\text{e}^{-}$$

Cathode (negative electrode made of pure copper)
$$\text{Cu}^{2+} \text{ (aq)} + 2\text{e}^{-} \rightarrow \text{Cu (s)}$$

Waste Water Treatment

Waste water is produced through urban lifestyles and industrial processes. This water needs treatment before it is released into the environment. Waste water will need the removal of organic matter and harmful microbes while industrial waste water may require removal of organic matter and harmful chemicals also. This is done by screening and grit removal followed by sedimentation. This makes sewage sludge (more solid) and effluent (liquid sewage). The sewage sludge is digested anaerobically (without oxygen) by bacteria and the effluent is digested aerobically (with oxygen) by bacteria.

Life Cycle Assessment

These assessments are carried out to assess the environmental impact of products when extracting and processing the raw materials, when manufacturing and packaging them and in their use and operation during its lifetime. The disposal at the end of its useful life including transport and distribution at each stage is also assessed. Within the assessments the use of water, resource, energy sources, production of waste and pollutants is all considered.

Sustainable Development

This is development that meets the needs of current generations without compromising the ability of future generations to meet their own needs.

Reducing Use of Resources

Reducing the use of resources reduces the use of limited resources, use of energy sources, waste and environmental impacts. Materials such as metals, glass building materials, clay ceramics, plastics are all made using limited raw materials and use energy from limited resources also. Some products can be reused. For example, glass bottles can be crushed and melted to make other glassware. Other materials are recycled for a different use. For example, metals can be melted and recast into different products.

Extracting Metals (Alternative Methods)

The Earth's resources of metal ores are limited and copper ores in particular are becoming scarce and so new ways of extracting copper from low-grade ores are being developed and used. Methods to extract metal from low-grade ores include phytomining, and bioleaching. Both of these methods avoid traditional mining methods of digging, moving and disposing of large amounts of rock.

Phytomining

In this process plants are used to absorb metal compounds from the earth that contain low grade ores. The plants are harvested and then burned to make ash. Sulfuric acid is added to this to make a solution of copper sulfate called leachate.

Bioleaching

In this process bacteria feed on low-grade metal ores and they produce leachate solutions.

Finite Resources

Finite resources from the Earth, oceans and atmosphere are processed to provide energy and materials. These are resources that are used up at a faster rate than they can be replaced. Examples of finite resources include metal ores and crude oil.

Natural Resources

Natural resources are used to provide food, timber, clothing and fuels. These natural resources can be supplemented by agriculture. Examples of natural resources include wool, cotton, silk, linseed oil, rubber and wood. Many of these resources are supplemented or replaced by agricultural and synthetic products. For example, an alternative product to cotton is polyester, nylon is an alternative product to silk and PVC is an alternative product to wood.

C15: Using Our Resources: Chemistry Specification

Corrosion

Corrosion is the destruction of materials by chemical reactions with substances in the environment. Rusting is an example of corrosion. Both air and water are necessary for iron to rust. To prove this you could place an iron nail in a sealed test tube with some anhydrous calcium chloride to absorb water. The nail would not rust as there is no water. If you placed a nail in sealed test tube of boiled water (this means air has been removed) and placed a layer of oil on this to stop any air getting in the nail would not rust. However, if you placed a nail in an open test tube in a bit of water it would rust.

Preventing Corrosion

Corrosion can be prevented by applying a coating that acts as a barrier to water and air. This can be done by:

- Greasing
- Painting
- Electroplating.

Aluminium has an oxide coating that protects the metal from further corrosion. Some coatings are reactive and contain a more reactive metal to provide what is known as sacrificial protection. For example zinc is used to galvanise iron. This works because zinc is more reactive than iron and so will react first and so “protect” the iron from reacting.

NPK Fertilisers

Compounds of nitrogen, phosphorus and potassium are used as fertilisers to improve agricultural productivity and NPK fertilisers contain compounds of all three elements. These fertilisers are formulations of different salts containing appropriate percentages of the elements. Ammonia can be used to make ammonium salts and nitric acid while potassium chloride, potassium sulfate and phosphate rock are obtained by mining. Phosphate rock cannot be used as a fertiliser but needs to be reacted with nitric acid or sulfuric acid to make soluble salts that can be used as fertilisers.

Composites

Most are made of two materials:

- A matrix or binder surrounding
- Fibres or fragments of the other material

Examples of composites include:

- Plywood – thin layers of wood glued together in layers running at right angles.
- MDF – woodchips, shavings of sawdust compressed together and bound together with resin.
- Concrete – cement, sand and gravel mixed with water.

Ceramics

These include pottery and bricks and are made by shaping wet clay and then heating it in a furnace.

Glass

Most of the glass we use is soda-lime glass. This is made by heating a mixture of sand, sodium carbonate and limestone. There is another type of glass called borosilicate glass. This is made from sand and boron trioxide. It melts at higher temperatures than soda-lime glass and so is used in ovenware and test tubes.

Thermosoftening Polymers

These melt when they are heated. This is because they are made of a tangled chain of polymers that are tangled together and the bonds between them are weak. This means not much energy is needed to overcome this.

Thermosetting Polymers

These do not melt when they are heated. This is because they are made of a chains of polymers that have strong covalent bonds linking them together. These crosslinks do not let them separate even when heated strongly.

Alloys

Most metals in everyday use are alloys, they have desirable properties.. Alloys you need to know include:

- Bronze - an alloy of copper and tin.
- Brass - an alloy of copper and zinc.
- Gold used as jewellery is usually an alloy with silver, copper and zinc. The proportion of gold in the alloy is measured in carats. 24 carat being 100% (pure gold), and 18 carat being 75% gold.
- Steels are alloys of iron that contain certain amounts of carbon and other metals. High carbon steel is strong but brittle while low carbon steel is softer and more easily shaped. Steels containing chromium and nickel (these are known as stainless steels) are hard and resistant to corrosion.
- Aluminium alloys are low density.

Polymers

These are made from monomers during polymerisation. The properties of the polymer depend partly on the monomer that you use. Polyethene can be low density or high density, but both are made from ethene monomers. Low density Polyethene has lots of branches and is made at high pressures in trace amounts of oxygen while high density Polyethene is made of monomer chains with no branches and packed closely together. This is done by making the polymer at a slightly raised temperature at 50°C in the presence of a catalyst.

Haber Process

This is used to make ammonia, which can be used to make nitrogen-based fertilisers. The reaction is:



Nitrogen is obtained from the air while hydrogen is obtained from methane reacting with steam. In the Haber process the pure gases are passed over a catalyst of iron at a high temperature (450°C) and a high pressure (200 atmospheres). The ammonia mixture is cooled to around -34°C so that the liquid ammonia can be removed. The remaining hydrogen and nitrogen are recycled back into the reaction.

The English Martyrs Catholic School and Sixth Form College

Triple Science

Physics



Triple Science: Physics Paper 1

Summary Sheets Higher

Physics Paper 1	
	1h 45min
Topics in the Paper:	
P1	Conservation and Dissipation of Energy
P2	Energy Transfer By Heating
P3	Energy Resources
P4	Electric Circuits
P5	Electricity in the Home
P6	Molecules and Matter
P7	Radioactivity

P1: Conservation and Dissipation of Energy

Energy Stores and Systems

A system is an object or group of objects. There are changes in the way energy is stored when a system changes. You need to be able to describe all the changes involved in the way energy is stored when a system changes, for common situations. For example:

An object projected upwards by a slingshot: Elastic potential energy is transferred to gravitational potential energy and kinetic energy.

A moving object hitting an obstacle: Kinetic energy is transferred to thermal energy and sound waves.

An object accelerated by a constant force: There will be an increase in kinetic energy.

A vehicle slowing down: There will be a decrease in kinetic energy.

Bringing water to a boil in an electric kettle: The current in the kettles heating element transfers energy to the thermal store of the water and kettle.

Energy Transfers in a System

Energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed. When there are energy transfers in a closed system, that there is no net change to the total energy. In all system changes energy is dissipated, so that it is stored in less useful ways. This energy is described as being 'wasted'. For example, in a car engine chemical energy from the fuel is transferred to increase the kinetic energy of the car. However, the rest of the energy is wasted as the engine and surroundings heat up and some of the energy is transferred as sound waves created by the engine vibration. To reduce unwanted energy transfers in you could use lubrication to reduce the friction between moving parts, could tighten loose parts to reduce vibrations to reduce noise and you would streamline the shape of an object.

Efficiency

The energy efficiency for any energy transfer can be calculated using the equations:

Efficiency = useful output energy / total input energy

Efficiency = useful power output / total power input

Kinetic Energy

Kinetic energy stores describe the energy that an object has because it is moving. It is calculated using the formula:

$$\text{Kinetic Energy} = 0.5 \times \text{mass} \times (\text{speed})^2$$

Elastic Potential Energy

Elastic potential energy stores describe the energy that is stored in a springy object when you squash or stretch it. It is calculated using the formula:

$$\text{Elastic Potential Energy} = 0.5 \times \text{spring constant} \times (\text{extension})^2$$

This assumes the limit of proportionality has not been exceeded.

Gravitational Potential Energy

Gravitational potential energy stores describe the energy that is stored in an object because of its position above the ground. It is calculated using the formula:

$$\text{g.p.e} = \text{Mass} \times \text{Gravitational Field Strength} \times \text{Height}$$

Objects with mass have weight due to gravitational field strength. It can be calculated using the formula:

$$\text{Weight} = \text{Mass} \times \text{Gravitational Field Strength}$$

This means that:

$$\text{g.p.e} = \text{Weight} \times \text{Height}$$

Change in Thermal Energy

Thermal energy stores describe the energy a substance has because of its temperature. It is calculated using the formula:

$$\text{Change in Thermal Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Temperature Change}$$

The specific heat capacity of a substance is the amount of energy required to raise the temperature of 1kg of the substance by 1°C.

Power

Power is the rate at which energy is transferred or the rate at which work is done. It is calculated using the formulas:

$$\text{Power} = \text{Energy Transferred} / \text{Time}$$

$$\text{Power} = \text{Work Done} / \text{Time}$$

An energy transfer of 1 joule per second is equal to a power of 1 watt.

Quantity	Symbol	Unit
Kinetic Energy	E_k	J
Elastic Potential Energy	E_e	J
Gravitational Potential Energy	E_p	J
Change in Thermal Energy	ΔE	J
Energy Transferred	E	J
Work Done	W	J
Mass	m	Kg
Speed	v	m/s
Spring Constant	k	N/m
Extension	e	m
Height	h	m
Gravitational Field Strength	g	N/kg
Weight	w	N
Specific Heat Capacity	c	J/kg°C
Temperature Change	$\Delta\theta$	°C
Power	P	W
Time	t	s

P2: Energy Transfer By Heating

Specific Heat Capacity

The specific heat capacity of a substance is the amount of energy required to raise the temperature of one kilogram of the substance by 1°C. The amount of energy stored in or released from a system as its temperature changes can be calculated using the equation:

$$\text{Change in Thermal Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Temperature Change}$$

Quantity	Symbol	Unit
Change in Thermal Energy	ΔE	J
Mass	m	Kg
Specific Heat Capacity	c	J/kg°C
Temperature Change	$\Delta\theta$	°C

Investigating Thermal Insulators

To test different materials as insulators you could wrap different materials around identical cans of hot water. Record the starting temperature and record the temperature again after a fixed period of time. This can be used to calculate the temperature change. The larger the temperature change, the poorer the material is as an insulator. The volume of water and the thickness of the material wrapping the can would need to be controlled.

Determining Specific Heat Capacity

Heat a metal block of a known mass. The mass can be measured using a balance. Record the temperature of the metal block before heating and then use an energy meter (or Joulemeter) to measure the energy supplied to the block. Measure the temperature again and use this to calculate the temperature change. To then find the specific heat capacity of the block use and rearrange the equation:

$$\text{Change in Thermal Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Temperature Change}$$

Conduction

This is the process by which energy is transferred through a material. The higher the thermal conductivity of a material the higher the rate of energy transfer by conduction across the material. Metals are good conductors while non metals are poor conductors.

Insulators

Materials that are poor conductors are known as insulators. The energy transferred through them is low. The energy transfer per second through a layer of insulating material depends on the temperature difference across the material, the thickness of the material and its thermal conductivity.

Insulating Buildings

To reduce the energy transfers in buildings they can be insulated. Insulation can include:

- Loft insulation – this reduces energy transferred through the roof. The air between the fibres in the insulation also reduces the energy transferred even more.
- Cavity Wall Insulation - this reduces energy transferred through the walls. This insulation is placed between the outer wall and the bricks of the inner wall.
- Double Glazing - these are windows made of two glass panes with a space in-between. This can be a vacuum or filled with dry air. Both of these reduce the energy transferred through the window.

P3: Energy Resources

Renewable Energy This is a resource that is replenished at the same rate as it is used.			Non Renewable Energy This is a resource that is replenished slower than the rate as which is used.		
Energy Resource	Description	Renewable/ Non Renewable	Way Used	Reliability	Environmental Impact
Fossil Fuel	Coal, oil and natural gas that are extracted from the Earth and burned.	Non-Renewable	Transport, electricity generation and heating.	Reliable	Produce greenhouse gases.
Nuclear Fuel	Energy from atoms. Uranium is a nuclear fuel and transfers energy when the nucleus splits in two.	Non-Renewable	Electricity generation.	Reliable	No greenhouse gases, but radioactive waste is made.
Biofuel	A fuel taken from living or recently living things. An example of a biofuel is animal waste.	Renewable	Transport, electricity generation and heating.	Reliable	It is carbon neutral.
Wind	The force of wind turns blades and a generator at the top of a narrow tower.	Renewable	Electricity generation.	Unreliable as when there is no wind they don't work.	Unpleasant and make a noise. Don't produce greenhouse gases.
Hydroelectricity	Can be generated when rainwater collects behind a reservoir and flows downhill. This turns a turbine.	Renewable	Electricity generation.	Affected by droughts if the reservoirs dry up.	Large reservoirs of water needed and habitats can be flooded to do this. Don't produce greenhouse gases.
Geothermal	Water is pumped under the Earth and turns to steam. This turns a turbine to turn a generator.	Renewable	Electricity generation and heating.	Reliable	Don't produce greenhouse gases.
Tidal	Water is trapped from high tide behind a barrage and then released into the sea through turbines.	Renewable	Electricity generation.	Reliable	Affect river estuaries and the habitats of animals. Don't produce greenhouse gases.
The Sun	Transfers energy from the Sun using solar panels. They can be used to generate electricity or heat water.	Renewable	Electricity generation and heating.	No energy produced at night and affected by windy weather.	Cover large areas to generate enough power. Don't produce greenhouse gases.
Water Waves	The waves make a floating generator move up and down to generate electricity.	Renewable	Electricity generation.	Affected by storms and don't make a constant supply of electricity.	Can spoil the coastline and affect habitats. Don't produce greenhouse gases.

P4: Electric Circuits

Component	Symbol	Component	Symbol
Open Switch		LED	
Closed Switch		Lamp	
Cell		Fuse	
Battery		Voltmeter	
Diode		Ammeter	
Resistor		Thermistor	
Variable Resistor		LDR	

Electric Fields

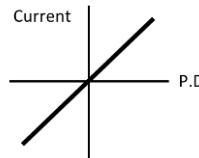
A charged object creates an electric field around itself. The electric field is strongest close to the charged object and when you move the object further away the field becomes weaker. If a second charged object placed in the field it experiences a force. The force gets weaker as the distance between the objects increases.

Static Charge

When some insulating materials are rubbed against each other they become charged. This is because electrons are rubbed off one material and on to the other. The material that gains electrons becomes negatively charged while the material that loses electrons is left with an equal positive charge. When two charged objects are brought close together they exert a force on each other. Two objects that have the same charge repel while objects that have opposite charges attract each other.

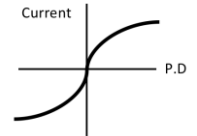
Resistors

for some resistors, the value of R remains constant but that in others it can change as the current changes. The current through an ohmic conductor (at a constant temperature) is directly proportional to the potential difference across the resistor. This means that the resistance remains constant as the current changes. The resistance of components such as lamps, diodes, thermistors and LDRs is not constant; it changes with the current through the component.



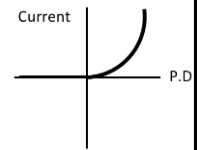
Filament Lamp

The resistance of a filament lamp increases as the temperature of the filament increases.



Diode

The current through a diode flows in one direction only. The diode has a very high resistance in the reverse direction.



Current, Resistance and Potential Difference

The current through a component depends on the resistance of the component and the potential difference across the component. The greater the resistance of the component the smaller the current for a given potential difference across the component. They are linked with the equation:

$$\text{Potential Difference} = \text{Current} \times \text{Resistance}$$

Series Circuits

For components connected in series there is the same current through each component and the total potential difference of the power supply is shared between the components. When in series the total resistance of two components is the sum of the resistance of each component: $R_{\text{total}} = R_1 + R_2$

Parallel Circuits

For components connected in parallel the potential difference across each component is the same and the total current through the whole circuit is the sum of the currents through the separate components. In a parallel circuit the total resistance of two resistors is less than the resistance of the smallest individual resistor.

Thermistors and Light Dependent Resistors

The resistance of a thermistor decreases as the temperature increases. Thermistors can be used in thermostats. The resistance of an LDR decreases as light intensity increases. The application of LDRs in circuits includes switching lights on when it gets dark.

Electrical Charge and Current

For electrical charge to flow through a closed circuit the circuit must include a source of potential difference. Electric current is a flow of electrical charge. The size of the electric current is the rate of flow of electrical charge. Charge flow is calculated using the formula:

$$\text{Charge Flow} = \text{Current} \times \text{Time}$$

Quantity	Symbol	Unit
Charge	Q	C
Current	I	A
Time	t	s
Potential Difference	V	V
Resistance	R	Ω

P4: Electric Circuits

Electric Fields

A charged object creates an electric field around itself. The electric field is strongest close to the charged object and when you move the object further away the field becomes weaker. If a second charged object placed in the field it experiences a force. The force gets weaker as the distance between the objects increases.

Static Charge

When some insulating materials are rubbed against each other they become charged. This is because electrons are rubbed off one material and on to the other. The material that gains electrons becomes negatively charged while the material that loses electrons is left with an equal positive charge. When two charged objects are brought close together they exert a force on each other. Two objects that have the same charge repel while objects that have opposite charges attract each other.

P5: Electricity in the Home

Direct and Alternating Potential Difference

Mains electricity is an ac supply. In the United Kingdom the domestic electricity supply has a frequency of 50 Hz and is about 230 V.

Mains electricity

Most electrical appliances are connected to the mains using three-core cable. The insulation covering each wire is colour coded for easy identification:

- Live Wire – Brown
- Neutral Wire – Blue
- Earth Wire – Green and Yellow Stripes

The live wire carries the alternating potential difference from the supply. The neutral wire completes the circuit. The earth wire is a safety wire to stop the appliance becoming live. The potential difference between the live wire and earth (0 V) is about 230 V. The neutral wire is at, or close to, earth potential (0 V). The earth wire is at 0 V, it only carries a current if there is a fault.

Energy Transfers in Everyday Appliances

Everyday appliances are designed to transfer energy. The amount of energy an appliance transfers depends on how long the appliance is switched on for and the power output of the appliance. The amount of energy transferred by an appliance can be calculated using the equations:

$$\text{Energy Transferred} = \text{Power} \times \text{Time}$$

$$\text{Energy Transferred} = \text{Charge} \times \text{Potential Difference}$$

Often the power of a domestic appliance is measured in kW. There are 1000W in 1kW.

Quantity	Symbol	Unit
Energy Transferred	E	J
Power	P	W
Charge	Q	C
Potential Difference	V	V
Current	I	A
Resistance	R	Ω

National Grid

The National Grid is a system of cables and transformers that links power stations to consumers (homes, factories, schools, businesses). Electrical Power is transferred from power stations, where electricity is generated, using the National Grid. Step-up transformers increase the potential difference from the power station before reaching the transmission cables. Increasing the potential difference decreases the current, meaning less energy is wasted as heat in the wires. This increases the efficiency of the National Grid. The transmission cables have a low resistance, meaning less energy is wasted as heat. This increases the efficiency of the National Grid. Step-down transformers decrease the potential difference. This must happen before the supply reaches consumer for safety. For domestic homes the potential difference is decreased to 230V.

Power

The rate of energy transfer (power) in any circuit is related to the potential difference across the circuit and the current through it. It can be calculated using the formulas:

$$\text{Power} = \text{Potential Difference} \times \text{Current}$$

$$\text{Power} = (\text{Current})^2 \times \text{Resistance}$$

P6: Molecules and Matter

Quantity	Symbol	Unit
Density	ρ	kg/m ³
Mass	m	kg
Volume	V	m ³
Change in Thermal Energy	ΔE	J
Specific Heat Capacity	c	J/kg°C
Temperature Change	$\Delta\theta$	°C
Energy	E	J
Specific Latent Heat	L	J/kg
Pressure	p	Pa
Volume	V	m ³
Constant	<i>constant</i>	

Density

Density is the measure of the mass per unit volume of a substance. It is calculated using the formula: Density = Mass/Volume

Measuring the Density of a Liquid

Use a measuring cylinder to measure the volume and measure the mass of the liquid by place a beaker on scales, set it to zero and add the liquid.

Pressure in Gases

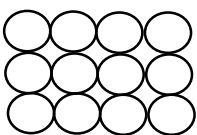
A gas can be compressed or expanded by pressure changes. The pressure produces a net force at right angles to the wall of the gas container. If the volume of the container is increased then the space the molecules move in is larger and so they travel further between each impact with the surface of the container. This decreases the pressure. For a fixed mass of gas held at a constant temperature:

$$\text{pressure} \times \text{volume} = \text{constant}$$

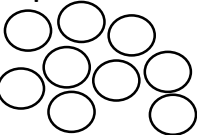
Internal Energy

Internal energy is the energy that is stored inside a system by the particles that make up the system. Internal energy is the total kinetic and potential energy of all the particles that make up a system. When you heat something the energy stored by the particles in the system increases. This will raise the temperature of the system or will cause a change in state.

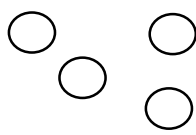
Solids



Liquids



Gases



Particle Motion in Gases

The molecules of a gas are constantly moving randomly. The temperature of the gas is related to the average kinetic energy of the molecules. Changing the temperature of a gas, held at constant volume, changes the pressure exerted by the gas. The pressure of a gas on a solid surface is caused by the impact of the gas particles with the surface. When a gas is heated the particles gain kinetic energy and so pressure increases.

Particles in a Liquid

In a liquid there are weaker forces of attraction between the particles and so they are not held together in a regular structure, but the forces are strong enough to stop them moving away from each other completely. When heated, particles obtain enough energy to break away from other particles and they become a gas.

Particles in a Solid

In a solid particles are arranged in a regular structure. There are strong forces of attraction between the particles and they vibrate about fixed positions. When a solid is heated the particles energy increases and vibrate more. If the solid is heated up enough, it will melt.

Measuring the Density of a Solid Object

Measure the mass using a balance. If the object is a regular shape measure its dimensions and calculate the volume. For an irregular shaped object lower it on a thread into a measuring cylinder partly filled with water and record the displacement. This is the volume.

Temperature Change

When the temperature of the system increases, how much it increases depends on the mass of the substance heated, the type of material and the energy input to the system.

$$\text{Change in Thermal Energy} = \text{Mass} \times \text{Specific Heat Capacity} \times \text{Temperature Change}$$

The specific heat capacity of a substance is the amount of energy required to raise the temperature of 1kg of the substance by 1°C.

Changes in State

When substances change state mass is conserved. Changes of state are physical changes which are different from chemical changes because the material recovers its original properties if the change is reversed. Melting is when substances change from a solid to liquid while freezing is when a substance changes from a liquid to a solid. These changes take place at the substances melting point. Boiling is when a substance changes from a liquid to a gas while condensation is when a substance changes from a gas to a liquid. These changes take place at the boiling point.

Changes of Heat and Specific Latent Heat

The energy needed for a substance to change state is called latent heat. When a change of state occurs, the energy supplied changes the energy stored but not the temperature. The specific latent heat of a substance is the amount of energy required to change the state of one kilogram of the substance with no change in temperature. The formula to calculate this is:

$$\text{energy for a change of state} = \text{mass} \times \text{specific latent heat}$$

Specific latent heat of fusion is the change of state from solid to liquid while specific latent heat of vaporisation is the change of state from liquid to vapour.

Increasing the Pressure of Gases

Doing work on a gas increases the internal energy of the gas and can cause an increase in the temperature of the gas. Work is the transfer of energy by a force. For example, if a tyre were to be inflated further with a bicycle pump there would be work done and so the internal energy of the gas increases which in turn causes an increase of the temperature of the gas.

P7: Radioactivity

The Structure of an Atom

Atoms are very small and they have a radius of about $1 \times 10^{-10} \text{m}$. The basic structure of an atom is a positively charged nucleus made of protons and neutrons surrounded by negatively charged electrons. The radius of a nucleus is less than 1/10000 of the size of the radius of an atom. Most of the mass of an atom is concentrated in the nucleus. The electrons are arranged at different distances from the nucleus. The electron arrangements may change with the absorption of electromagnetic radiation. When they absorb radiation electrons move further from the nucleus to a higher energy. When electrons emit radiation they move closer to the nucleus to a lower energy level.

Mass Number and Atomic Number

In an atom the number of electrons is equal to the number of protons in the nucleus and atoms have no overall electrical charge. Atomic number is the number of protons in an atom while the atomic mass is the total number of protons and number of neutrons.

Isotopes

An isotope is an atom of the same element with a different number of neutrons.

Ions

A positive ion can be created if an atom loses one or more electrons.

Gamma Decay

The emission of a gamma ray does not cause the mass or the charge of the nucleus to change.

Radioactive Decay and Nuclear Radiation

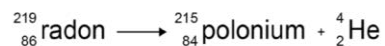
Some atomic nuclei are unstable. A nucleus can give out radiation in order to become more stable. This is a random process called radioactive decay. The nuclear radiation emitted can be in the form of alpha, beta or gamma radiation.

Half-Life

The half-life of a radioactive isotope is the time it takes for the number of nuclei of the isotope in a sample to halve, or the time it takes for the count rate from a isotope sample to fall to half its start level. Different radioactive substances have different half lives. Those with longer half lives are more hazardous because they are radioactive for longer.

Alpha Decay

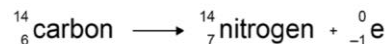
An alpha particle (helium nucleus) is emitted from the nucleus. It can be represented by equations such as:



The ${}_2^4\text{He}$ is the symbol for the alpha particle. Notice that the mass number and atomic number are balanced on each side.

Beta Decay

A beta particle (electron) is emitted from the nucleus when a neutron turns into a proton. It can be represented by equations such as:



The ${}_{-1}^0\text{e}$ is the symbol for the beta particle. Notice that the mass number and atomic number are balanced on each side. The element has mutated because it now has an extra proton.

Contamination

Contamination is the unwanted presence of materials containing radioactive atoms ending up on other materials. The hazard from contamination is due to the decay of the contaminating atoms. The type of radiation emitted affects the level of hazard.

Irradiation

Irradiation is the process of exposing an object to nuclear radiation. The irradiated object does not become radioactive. Suitable precautions must be taken to protect against any hazard that the radioactive source used in the process of irradiation may present.

Background radiation

Background radiation is around us all of the time. It comes from:

- Natural sources such as rocks and cosmic rays from space.
- Man-made sources such as the fallout from nuclear weapons testing and nuclear accidents.

The level of background radiation and radiation dose may be affected by occupation and/or location.

Development of the Model of the Atom

Dalton suggested that atoms were tiny spheres that could not be divided. JJ Thompson then discovered the electron. He also suggested the Plum Pudding Model. This was the idea that the atom was a ball of positive charge with negative electrons embedded in it. Then due to results from the alpha particle scattering experiment the nuclear model of the atom was suggested. Discovered the electron. Suggested the Plum Pudding Model. This was the idea that the atom was a ball of positive charge with negative electrons embedded in it. Niels Bohr then adapted this model by suggesting that electrons orbit the nucleus at specific distances and then James Chadwick proved the existence of neutrons.

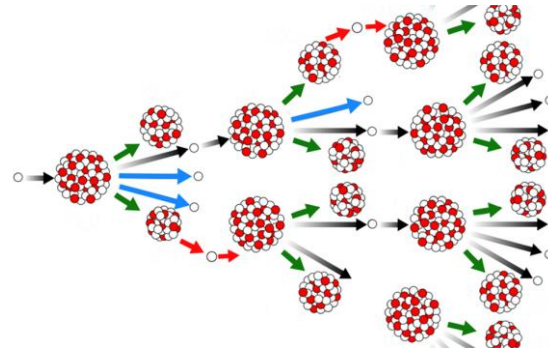
Radiation	Symbol	Consists of..	Blocked By..	Range in Air	Ionising Power
Alpha	α	2 neutrons and 2 protons	Paper	5cm	High
Beta	β	High speed electron	Thin Aluminium	1m	Medium
Gamma	γ	Electromagnetic Radiation	Thick Lead/Concrete	Infinite	Low

P7: Radioactivity

Nuclear Fission

This is the splitting of a large and unstable nucleus such as uranium's or plutonium's. Spontaneous fission is rare. Usually, for fission to occur the unstable nucleus must first absorb a neutron. This is called induced fission. The nucleus splits into two smaller nuclei, roughly equal in size, and emits two or three neutrons plus gamma rays. In this process energy is released and the particles have kinetic energy. The neutrons released may go on to start a chain reaction. This chain reaction is controlled in a nuclear reactor to control the energy released. The explosion caused by a nuclear weapon is caused by an uncontrolled chain reaction.

Model of Nuclear Fusion



Nuclear Fusion

Nuclear fusion is the joining of two light nuclei to form a heavier nucleus. The heavier nucleus will be a new element. In this process some of the mass may be converted into the energy of radiation. Nuclear fusion takes place in stars.

Separate Science: Physics Paper 2

Summary Sheets

Higher

Physics Paper 2		
		1hr45
Topics in the Paper:		
P8	Forces in Balance	
P9	Motion	
P10	Force and Motion	
P11	Force and Pressure	
P12	Wave Properties	
P13	Electromagnetic Waves	
P14	Light	
P15	Electromagnetism	
P16	Space	

P8: Forces in Balance: Physics Specification

Newton's First Law

If the resultant force acting on an object is zero and the object is stationary, the object will stay stationary. However, if the object is moving, the object continues to move at the same speed and in the same direction. This means the object continues to move at the same velocity. The velocity of an object will only change if there is a resultant force acting on the object. **The tendency of objects to continue in their state of rest or of uniform motion is called inertia.**

Contact and Non contact Forces

A force is a push or pull that acts on an object due to the interaction with another object. All forces between objects are either contact forces in which the objects are physically touching or non-contact forces in which the objects are physically separated. Examples of contact forces include friction, air resistance, tension and normal contact force. Examples of non-contact forces are gravitational force, electrostatic force and magnetic force. Force is a vector quantity as it acts in a direction.

Centre of Mass

The weight of an object acts at a single point called the centre of mass. This idea is very important for designers and engineers to make sure that they design something that won't tip over. The centre of mass of an object is the point at which its mass can be concentrated. If you suspend any object it will come to rest with its centre of mass directly below the point of suspension.

Friction

A force that acts in the opposite direction of a moving object. Examples include air resistance and water resistance.

Scalar and Vector Quantities

Scalar quantities have magnitude only while vector quantities have magnitude and an associated direction. Scalars include time and speed while vectors include velocity. A vector quantity may be represented by an arrow. The length of the arrow represents the magnitude, and the direction of the arrow the direction of the vector.

Newton's Third Law

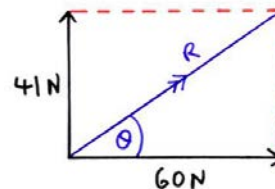
Whenever two objects interact, the forces they exert on each other are equal and opposite. For example a man pushes on a wall with 100N and experiences a force of 100N in the opposite direction from the wall.

Resultant Force

A single force that has the same effect as all the forces acting on the object. For example if there is a force of 100N to the right and 50N to the left then overall there will be a resultant force of 50N to the right. If forces are acting in the same direction add them together, if they are acting in opposite directions subtract them from each other.

Resolution of Forces

You need to be able to draw vector diagrams to illustrate resolution of forces and determine the magnitude and direction of this force. You will need a protractor and a ruler. Use a ruler to draw the forces to scale and use a protractor to measure the angle between these forces. Draw the resolving force line to complete the diagram. This should make a triangle. Measure the size of this line to measure the magnitude of this force.



Distance

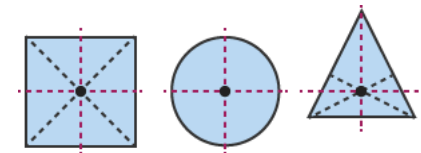
Distance is how far an object moves. Distance does not involve direction. Distance is a scalar quantity.

Displacement

Displacement includes both the distance an object moves, measured in a straight line from the start point to the finish point and the direction of that straight line. Displacement is a vector quantity.

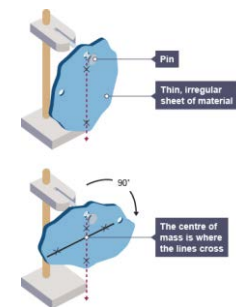
Determining Centre of Mass of a Symmetrical Object

For a flat object that is symmetrical its centre of mass is along the axis of symmetry. If the object has more than one axis of symmetry then its centre of mass is at the point that these axes meet.



Determining Centre of Mass of an Irregular Shaped Piece of Card

Put a hole in one corner of the card and suspend the card from a rod. Use a plumb line to draw a vertical line on the card from the rod. Repeat this again hanging the object from different corners. The point at which the lines meet is the centre of mass.



P8: Forces in Balance: Physics Specification

Moments

A force of a system of forces which may cause an object to rotate. The turning effect of a force is called the moment force and it can be calculated using the equation below:

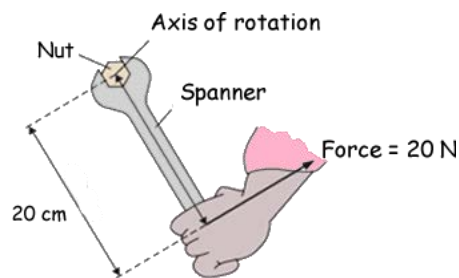
$$\text{Moment of Force} = \text{Force} \times \text{Distance}$$

Distance is the distance from the pivot to the line of action of the force.

Quantity	Symbol	Unit
Moment of Force	M	N/m
Force	F	N
Distance	d	m

Levers

A simple lever and a simple gear system can both be used to transmit the rotational effects of forces. A spanner is an example of a lever. It can be used to produce a turning effect and unscrew a bolt. The weight of the object is called the load and the force that the person applies is called the effort. The point at which the object turns is called the pivot. To increase the moment of the force you could increase the size of the force or increase the distance between the effort and the pivot (use a spanner with a longer handle)



Gears

Gears are like levers as they can multiply the effect of a turning force. When a car is in low gear a small gear wheel turns a larger gear wheel multiplying the turning effect of the engine force producing a bigger turning effect on the car wheels.

Low Gear = Low Speed and a High Turning Effect

When a car is in a high gear a large gear wheel turns a smaller gear wheel on the output shaft. This causes the output shaft to spin faster causing a higher speeds but the turning effect is lower.

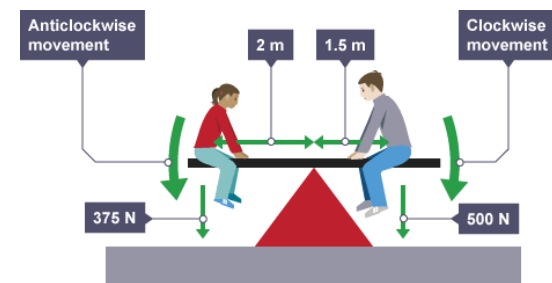
High Gear = High Speed and a Low Turning Effect.

Balanced Moments

If an object is balanced the total clockwise moment about a pivot equals the total anticlockwise moment about the pivot.

This means that:

The sum of all of the clockwise moments about any point = the sum of all the anticlockwise moments about the point.



P9: Motion: Physics Specification

Speed

Speed is a scalar quantity as it does not involve direction. The speed of a moving object is normally changing and so is rarely constant. The speed a person travels at can depend on their age, terrain (is it hilly or flat) fitness and distance travelled. Typically people travel at 1.5m/s when walking, 3m/s when running and 6m/s when cycling. The speed of sound and of the wind may change also. Sound typically travels at 330m/s. The formula to calculate the speed of an object is:

$$\text{Distance Travelled} = \text{Speed} \times \text{Time}$$

Acceleration

This is a measurement of the rate in which an objects velocity changes. If an object is slowing down than it is said to be decelerating. It can be calculated using the equation:

$$\text{Acceleration} = \text{change in velocity} / \text{time taken.}$$

Be careful when calculating change in velocity. For example if you are told an object from standing accelerates to 12m/s then the change in velocity is 12m/s. However if you are told that the object was moving at 5m/s and accelerates to 12m/s the change in velocity is now 7m/s.

Velocity

The velocity of an object is its speed in a particular direction. This means velocity is a vector quantity. If you are travelling around a roundabout (in a circle) your speed may be constant, but the velocity will be changing as you are constantly changing direction.

Uniform Acceleration

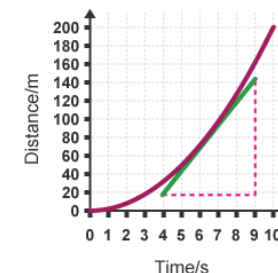
The following equation applies to uniform acceleration (you are given this one on your data sheet):

$$(\text{final velocity})^2 - (\text{initial velocity})^2 = 2 \times \text{acceleration} \times \text{distance}$$

Near the Earth's surface any object falling freely under gravity has an acceleration of about 9.8m/s²

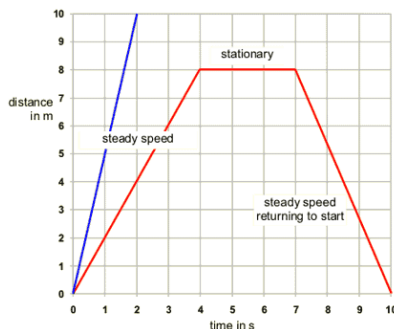
Quantity	Symbol	Unit
Speed	v	m/s
Distance	s	m
Time	t	s
Change in Velocity	Δv	m/s
Initial Velocity	u	m/s
Final Velocity	v	m/s
Acceleration	a	m/s ²

Drawing a Tangent on a Point of Acceleration of a Distance Time Graph



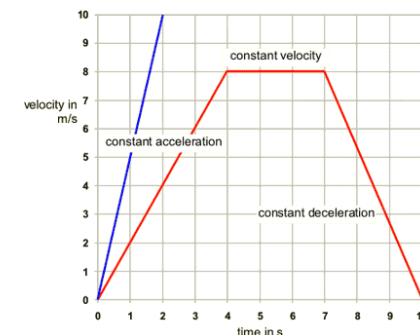
Distance Time Graphs

If an object moves along a straight line, the distance travelled can be represented by a distance-time graph. The speed of an object can be calculated from the gradient of its distance-time graph. If an object is accelerating, its speed at any particular time can be determined by drawing a tangent and measuring the gradient of the distance-time graph at that time.



Velocity Time Graphs

The acceleration of an object can be calculated from the gradient of a velocity-time graph. The distance travelled by the object can be calculated by measuring the area underneath the line of a velocity time graph.



P10: Force and Motion: Physics Specification

<p>Newtons Second Law This is the rule that the acceleration of an object is proportional to the resultant force acting on an object, and inversely proportional to the mass of the object. The equation for this is:</p> <p style="text-align: center;">Resultant Force = Mass x Acceleration</p> <p>Inertial mass is a measure of how difficult it is to change the velocity of an object and is defined as the ration of force over acceleration.</p>	<p>Changing Speed The velocity of an object increases if the resultant force is in the same direction as the velocity while an object will slow down if the resultant force acts in the opposite direction to its velocity.</p>	<table border="1"> <thead> <tr> <th>Quantity</th> <th>Symbol</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Resultant Force</td> <td>F</td> <td>N</td> </tr> <tr> <td>Mass</td> <td>m</td> <td>kg</td> </tr> <tr> <td>Acceleration</td> <td>a</td> <td>m/s²</td> </tr> <tr> <td>Weight</td> <td>W</td> <td>N</td> </tr> <tr> <td>Gravitational Field Strength</td> <td>g</td> <td>N/kg</td> </tr> <tr> <td>Velocity</td> <td>v</td> <td>m/s</td> </tr> <tr> <td>Momentum</td> <td>p</td> <td>Kg m/s</td> </tr> <tr> <td>Spring Constant</td> <td>k</td> <td>N/m</td> </tr> <tr> <td>Extension</td> <td>e</td> <td>m</td> </tr> </tbody> </table>			Quantity	Symbol	Unit	Resultant Force	F	N	Mass	m	kg	Acceleration	a	m/s ²	Weight	W	N	Gravitational Field Strength	g	N/kg	Velocity	v	m/s	Momentum	p	Kg m/s	Spring Constant	k	N/m	Extension	e	m
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Velocity	v	m/s																																
Momentum	p	Kg m/s																																
Spring Constant	k	N/m																																
Extension	e	m																																
<p>Stopping Distance The stopping distance of a vehicle is the sum of the distance the vehicle travels during the driver's reaction time (thinking distance) and the distance it travels under the braking force (braking distance). For a given braking force the greater the speed of the vehicle, the greater the stopping distance.</p>	<p>Reaction Times People have different reaction times. Typically people have a range between 0.2s and 0.9s. A persons reaction time can be affected by a persons tiredness and their use of drugs and alcohol. Distractions can also affect a drivers reaction time. To measure a persons reaction time in the science lab you could use a ruler. You would place the ruler just the finger and thumb of a friend and without warning drop the ruler. You would record the distance the ruler dropper before your friend caught it. You can then use this to find a reaction time.</p>	<p>Hooke's Law The extension of a spring is directly proportional to the force applied as long as the limit of proportionality is not exceeded.</p> <p style="text-align: center;">Force Applied = Spring Constant x Extension</p>																																
<p>Momentum Momentum can be calculated using the equation: Momentum = Mass x Velocity</p> <p>In a closed system, the total momentum before an event is equal to the total momentum after the event. This is called conservation of momentum.</p>	<p>Symbol for Proportionality</p> <p style="text-align: center;">\propto</p>	<p>Weight The weight of an object can be calculated using the equation:</p> <p style="text-align: center;">Weight = mass x gravitational field strength</p> <p>The weight of an object and the mass o an object are directly proportional and weight is measured using a calibrated spring-balance otherwise known as a newtonmeter.</p>																																
<p>Braking Braking distance of a vehicle can be affected by the road and weather conditions as well as the condition of the vehicle. Poor road conditions include wet or icy conditions while poor condition of the vehicle could include the brakes or tyres. of a vehicle, work done by the friction force between the brakes and the wheel reduces the kinetic energy of the vehicle and the temperature of the brakes increases. The greater the speed of a vehicle the greater the braking force needed to stop the vehicle in a certain distance. The greater the braking force the greater the deceleration of the vehicle. Large decelerations may lead to brakes overheating and/or loss of control.</p>	<p>Forces and Elasticity To change the shape of an object (by stretching, bending or compressing), more than one force has to be applied. If an object is elastic it will return to its original shape when the forces deforming it re removed.</p>																																	

P11: Pressure and Surfaces: Physics Specification

Pressure in a Fluid

A fluid can either be a liquid or a gas and the pressure in fluids causes a force normal (at right angles) to any surface. The pressure of a fluid can be calculating using the equation:

$$\text{Pressure} = \text{Force} / \text{Area}$$

The pressure due to a column of liquid can be calculated using the equation:

$$\text{Pressure} = \text{Height of Column} \times \text{Density of Liquid} \times \text{Gravitational Field Strength}$$

Pressure of a Liquid Column

The pressure due to a column of liquid can be calculated using the equation:

$$\text{Pressure} = \text{Height of Column} \times \text{Density of Liquid} \times \text{Gravitational Field Strength}$$

This equation shows that the pressure of a liquid depends on depth and also depends on the density of the liquid. The greater the height of fluid above a point the greater the pressure. This is because there is a greater mass of fluid above which means that there will be a greater weight of fluid exerting a force on that point. The greater the density of the fluid above a point the greater the pressure. This is because there is more mass per unit volume of fluid.

Upthrust

A partially submerged object experiences a greater pressure on the bottom surface than on the top. This creates a resultant force acting upwards. This resultant force is called upthrust. This is also the case for objects that are fully submerged underwater.

Floating

An object floats when its weight acting downwards is equal to the upthrust acting upwards. If you have a floating object loaded with additional mass it will float lower and lower in the water. More water will be displaced and so the upthrust will increase. The upthrust and weight will still be of equal sizes acting in opposite directions.

Quantity	Symbol	Unit
Pressure	p	Pa
Force	F	N
Area	A	m^2
Height of Column	h	m
Density	ρ	kg/m^3
Gravitational Field Strength	g	N/kg

Atmospheric Pressure

The atmosphere is a thin layer of air around the Earth and it gets less dense with increasing altitude. Atmospheric pressure occurs because air molecules collide with a surface. As the distance from the ground increases the number of air molecules decreases. This means that at a higher height there is always less air above a surface than there is at a lower height. This explains where atmospheric pressure decreases with an increase in height.

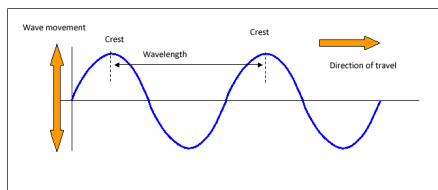
Sinking

An object sinks when its weight is greater than the upthrust. If you have a floating object and load on too much extra weight it will sink. This occurs because the object has displaced as much water as it can and the upthrust can no longer support the total weight.

P12: Wave Properties: Physics Specification

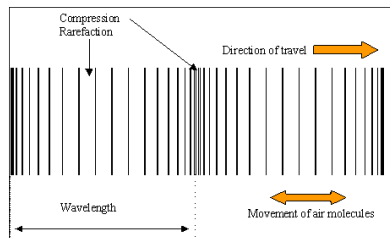
Transverse and Longitudinal Waves

Waves can be either Transverse or Longitudinal. Transverse Waves. All waves transfer energy.



In a transverse waves the particles oscillate perpendicular to the direction of energy transfer. Examples of transverse waves include water waves and electromagnetic waves.

In a longitudinal wave the particles oscillate parallel to the direction of energy transfer. Examples of longitudinal waves include sound waves.



Wave Properties

The frequency of a wave is the number of waves passing through a fixed point each second.

The amplitude of a wave is the maximum displacement of a point on a wave from its undisturbed position.

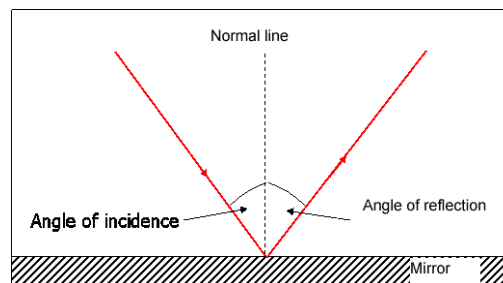
The wavelength of a wave is the distance from a point on one wave to the equivalent point on the adjacent wave.

The wave speed is the speed at which the wave moves through the medium. This is also the speed at which the energy is transferred through the medium.

Reflection of waves

Waves can be reflected at a boundary between two different materials. They could also be transmitted or absorbed at a boundary between two different materials.

A ray diagram illustrates the reflection of a wave at a boundary. All ray diagrams should be drawn with a pencil and arrows clearly indicate the direction the light is travelling. These arrows must be included in all ray diagrams.



Sound Waves

Sound waves can travel through solids causing vibrations in the solid.

In the human ear, sound waves cause the ear drum to vibrate which allows us to detect sound. The conversion of sound waves to vibrations of solids only works over a limited frequency range. This restricts the range of human hearing. The range of human hearing is from 20Hz to 20kHz.

Waves for detection and exploration

Ultrasound waves are waves that have a higher frequency than 20kHz. This is a wave with a frequency above the range of human hearing. Ultrasound waves are partially reflected when they meet a boundary between two different media. The time taken for an ultrasound detector to pick up these reflections can determine the distance of the boundary. This allows ultrasound waves to construct an image and they are used in medicine.

Seismic waves are produced by Earthquakes. P-waves are longitudinal seismic waves. S-waves are transverse seismic waves. S waves cannot travel through a liquid. P-waves and S-waves both provide evidence for the structure and size of the Earth's core. Echo Sounding uses high frequency sound waves to detect objects deep underwater and can also measure the depth of water.

Wave Equation

$$\text{Period} = 1/\text{frequency (you do not need to recall)}$$

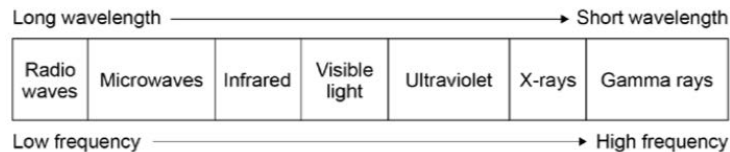
$$\text{Wave speed} = \text{frequency} \times \text{wavelength}$$

Quantity	Symbol	Unit
Frequency	f	Hz
Wave Speed	v	m/s
Wavelength	λ	m
period	T	s

P13: Electromagnetic Waves: Physics Specification

Types of Electromagnetic Waves

Electromagnetic waves are transverse waves that transfer energy from the source to an absorber. All electromagnetic waves travel at the same speed, $3 \times 10^8 \text{ m/s}$. Electromagnetic waves form a continuous spectrum. The spectrum is grouped by order of their wavelength and frequency. Humans can only detect the visible light part of the spectrum with their eyes.



Properties of Electromagnetic Waves

Radio waves can be produced by oscillations in electric circuits. When radio waves are absorbed they can create an alternating current with the same frequency as the radio wave itself, so radio waves can themselves induce oscillations in an electrical circuit.

Changes in atoms and the nuclei of atoms can result in electromagnetic waves being generated or absorbed over a wide frequency range. Gamma rays originate from changes in the nucleus of an atom.

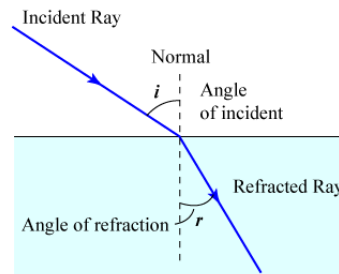
Ultraviolet waves, X-rays and gamma rays can have hazardous effects on human body tissue. The effects depend on the type of radiation and the size of the dose. Radiation dose is a measure of the risk of harm resulting from an exposure of the body to the radiation.

Ultraviolet waves can cause skin to age prematurely and increase the risk of skin cancer. X-rays and gamma rays are ionising radiation that can cause the mutation of genes and cancer.

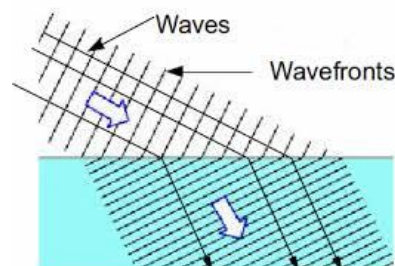
Component	Use
Radio Waves	Television and radio signal
Microwaves	Satellite communication, cooking food
Infrared	Electrical heaters, cooking food, infrared cameras
Visible Light	Fibre optic communication
Ultraviolet	Sun tanning, detecting forged notes
X-Rays	Medical imaging and treatment
Gamma Rays	Kill cancer cells, sterilization.

Properties of Electromagnetic Waves

Electromagnetic Waves can be absorbed, transmit, refract or reflect. Refraction is due to the difference in velocity that the waves travel in the different substances. A ray diagram can be used to illustrate refraction.



A wave front diagram can also be used to explain the change of speed that happens when the wave travels from one medium into another.



P14: Light: Physics Specification

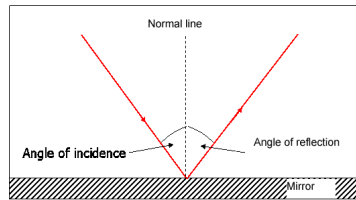
Light

Each colour of light in the visible spectrum has its own narrow band of wavelength and frequency. Colour filters can be used by absorbing certain wavelengths (and colour) and transmitting other wavelengths (and colours). The colour of an opaque object is determined by which wavelengths of light are more strongly reflected. Wavelengths that are not reflected are absorbed. An object appears white because all of the wavelengths of light are reflected equally off the object. If all of the wavelengths are absorbed the object appears black. Objects that transmit light are transparent if they transmit all light through or translucent if they transmit some light through.

Reflection of Light

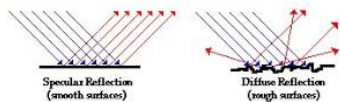
Waves can be reflected at a boundary between two different materials.

A ray diagram can be used to show the law of reflection.



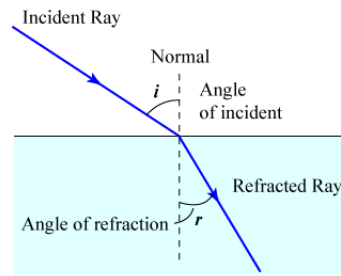
The normal line is a perpendicular line from the surface. All angles are measured to the normal. The angle of incidence is equal to the angle of reflection when light is reflected by a plane mirror.

Reflection from a smooth surface in a single direction is called specular reflection. Reflection from a rough surface causes scattering. This is called diffuse reflection.

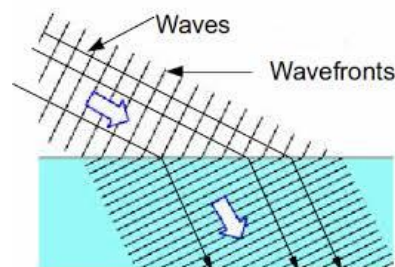


Refraction of Light

Refraction of light takes place when light travels from a more dense substance to a less dense one and vice versa. When light travels from air (less dense) into glass (more dense) the light will change direction and move towards the normal. When going from glass into air the light will move away from the normal. This can be shown by measuring the angle of incidence and angle of refraction using a ray diagram.



A wave front diagram can also be used to explain the change of speed that happens when the wave travels from one medium into another.



Lenses

A lens will form an image by refracting light. In a convex lens parallel light rays are brought to focus at a point by the principal focus. The distance to the principal focus is called the focal length. Images produced by convex lenses can be either real or virtual. Concave lenses always produce virtual images.

In ray diagrams a convex lens will be represented by:



A concave lens will be represented by:



An image is 'real' if the image is formed on a ray diagram on the right hand side of the lens on a ray diagram. i.e. the rays actually meet. This is an example of a ray diagram of a convex lens.



A virtual image is formed by rays diverging after passing through the lens and being traced back to a principal focus on the left hand side of a ray diagram. The image height of an object can be measured using a ray diagram, as well as the object height. This can be used to calculate the magnification of an object.

$$\text{magnification} = \frac{\text{image height}}{\text{object height}}$$

Magnification does not have any units. You do not need to remember this equation.

P15: Electromagnetism: Physics Specification: Higher

Poles of a Magnet

The poles of a magnet are the places where the magnetic forces are strongest. When two magnets are brought close together they exert a force on each other. Two like poles repel each other. Two unlike poles attract each other. Attraction and repulsion between two magnetic poles are examples of non-contact force.

Permanent Magnets

A permanent magnet produces its own magnetic field.

Induced Magnets

An induced magnet is a material that becomes a magnet when it is placed in a magnetic field. Induced magnetism always causes a force of attraction. When removed from the magnetic field an induced magnet loses most/all of its magnetism quickly.

Electromagnetism

When a current flows through a conducting wire a magnetic field is produced around the wire. The strength of the magnetic field depends on the current through the wire and the distance from the wire. Shaping a wire to form a solenoid increases the strength of the magnetic field created by a current through the wire. The magnetic field inside a solenoid is strong and uniform. The magnetic field around a solenoid has a similar shape to that of a bar magnet. Adding an iron core increases the strength of the magnetic field of a solenoid. An electromagnet is a solenoid with an iron core.

Motors

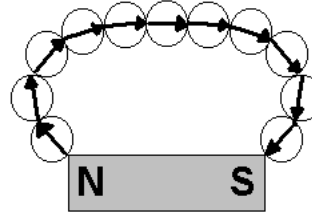
A coil of wire carrying a current in a magnetic field tends to rotate. This is the basis of an electric motor. The size of the force can be increased by increasing the current or using a stronger magnet. The size of the force depends on the angle between the wire and the magnetic field. The force is greatest when the wire is perpendicular to the magnetic field and zero when the wire is parallel.

Magnetic Fields

The region around a magnet where a force acts on another magnet or on a magnetic material (iron, steel, cobalt and nickel) is called the magnetic field. The force between a magnet and a magnetic material is always one of attraction. The strength of the magnetic field depends on the distance from the magnet. The field is strongest at the poles of the magnet. The direction of the magnetic field at any point is given by the direction of the force that would act on another north pole placed at that point. The direction of a magnetic field line is from the north (seeking) pole of a magnet to the south (seeking) pole of the magnet.

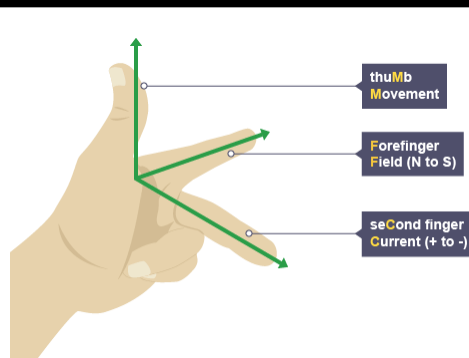
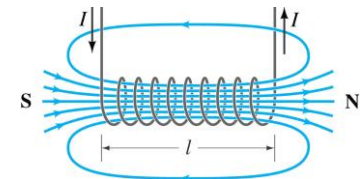
Plotting a Magnetic Field

Mark a dot near the north pole of a bar magnet and place the tail of the compass needle above the dot and mark a second dot at the tip of the needle. Repeat this with the tail of the next compass over the new dot until you reach the south pole. Repeat this with further lines.



Solenoids

A solenoid is a long coil of insulating wire and they are used in lots of electrical devices where a strong magnetic field is needed. When a current is passed through the wire the magnetic field increases in strength if the current is increased and reverses in direction if the current is reversed.



Flemings Left Hand Rule

When a conductor carrying a current is placed in a magnetic field the magnet producing the field and the conductor exert a force on each other. This is called the motor effect. You need to be able to show that Fleming's left-hand rule represents the relative orientation of the force, the current in the conductor and the magnetic field.

Magnetic Flux Density

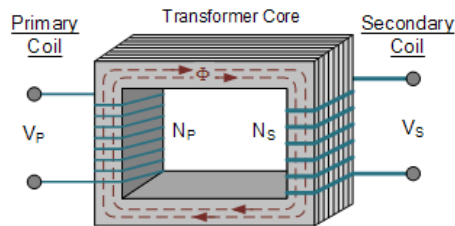
For a conductor at right angles to a magnetic field and carrying a current:

$$\text{Force} = \text{Magnetic Flux Density} \times \text{Current} \times \text{Length}$$

Quantity	Symbol	Unit
Force	F	N
Magnetic Flux Density	B	T
Current	I	A
Length	l	m

P15: Electromagnetism: Physics Specification: Higher

Uses of the Generator Effect The generator effect is used in an alternator to generate ac and in a dynamo to generate dc.	Loudspeakers Loudspeakers and headphones use the motor effect to convert variations in current in electrical circuits to the pressure variations in sound waves.	How Transformers Work Two coils of insulated wire are wound around an iron core. The primary coil is connected to ac and when the current passes through the primary coil potential difference is induced in the secondary coil.	Quantity	Symbol	Unit			
Efficiency of a Transformer. If transformers were 100% efficient the electrical power output would equal the electrical power input. This is represented by the equation: $V \times I = V \times I$			Potential Difference Across Primary Coil	V_p	V			
			Potential Difference Across Secondary Coil	V_s	V			
Induced Potential If an electrical conductor moves relative to a magnetic field or if there is a change in the magnetic field around a conductor, a potential difference is induced across the ends of the conductors. If the conductor is part of a complete circuit a current is induced in the conductor. This is called the generator effect. An induced current generates a magnetic field that opposes the original change, either the movement of the conductor or the change in magnetic field. The size of an induced potential current/potential difference is affected by the strength of a magnetic field, the speed at which the conductor crosses through the lines of the magnetic field.			Transformers A basic transformer is made up of a primary coil and a secondary coil wound on an iron core. Iron is used as the core as it is easily magnetised. For each of these coils they have a number of turns and a potential difference across the coil. You can calculate the number of turns or potential difference for either of these coils using the equation: $\frac{\text{Potential Difference Across Primary Coil}}{\text{Potential Difference Across Secondary Coil}} = \frac{\text{Number of Turns On Primary Coil}}{\text{Number of Turns On Secondary Coil}}$ In a step up transformer the voltage of the secondary coil is greater than the voltage of the primary coil while in a step down transformer the voltage of the secondary coil is less than the voltage of the primary coil.					
						Primary Coil Number of Turns	N_p	
						Secondary Coil Number of Turns	N_s	
						Primary Coil Current	I_p	A
Secondary Coil Current	I_s	A						



P16: Space: Physics Specification

Fusion

Fusion leads to the formation of new elements. In this process two nuclei fuse together releasing energy making a larger element.

Supernova

A supernova is an explosion of a massive star and it distributes the elements throughout the universe. The explosion compresses the core of a star into a neutron star.

Birth of a Star

Stars (including our Sun) are formed when a cloud of dust and gas called a nebula are pulled together by gravitational attraction. This causes fusion reactions. This fusion leads to an equilibrium between the gravitational collapse of the star and its expansion due to fusion energy.

Our Solar System

In our solar system there is one star called the Sun. 8 planets and the dwarf planets orbit the Sun and each of these are orbited by Moons. Our solar system is part of a galaxy called the Milky Way.

Big Bang

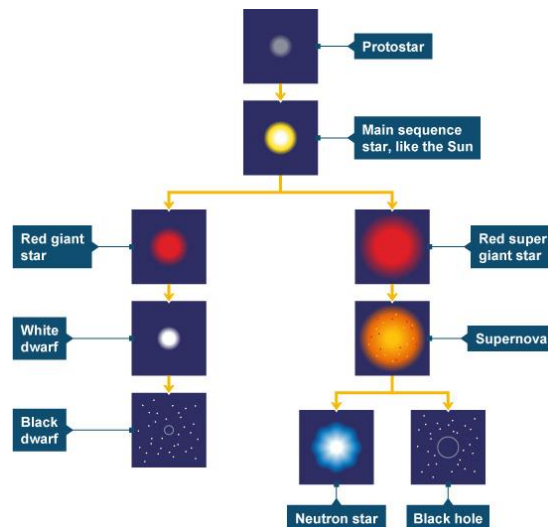
This is a theory that suggests that the universe began from a very small region that was extremely hot and dense. Red shift provides evidence for this theory. Cosmic microwave background radiation was first detected in 1965 and provides further evidence for the big bang. High energy gamma radiation would have been produced just after the Big Bang and this has stretched to microwave radiation due to red shift.

Red Shift

There is an observed increase in the wavelength of light from most distant galaxies. The further away the galaxies, the faster they are moving and the bigger the observed increase in wavelength. This effect is called red-shift. This occurs because when a star or galaxy is moving away from you the light waves are stretched towards the red part of the spectrum. The observed red shift provides us with evidence that space is expanding and supports the Big Bang theory.

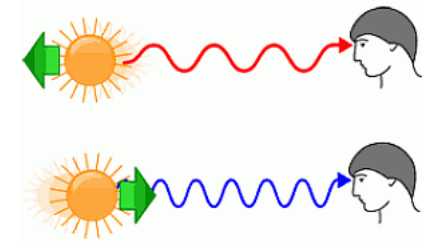
Life Cycle of a Star

The life cycle is determined by the size of a star. Stars about the same size as our Sun will become red giants while stars much larger than our Sun will become Red super giants.



Circular Orbits

Gravity provides the force that allows planets and satellites to maintain their circular orbits. The force of gravity on the planet from the Sun acts towards the centre of the Sun. This force is the resultant force on the planet because no other forces act on it. The force is a centripetal force because it acts towards the centre of a circle. For circular orbits the force of gravity can lead to changing velocity (as direction is changing), but unchanged speed. The speed does not change because the force acting on the object is at right angles to its direction of motion. This means that no work is done by the force on the planet so the kinetic energy and the speed of the planet does not change. For a stable orbit if the speed changes the radius must change also.



Dark Mass and Dark Energy

There is still much of the universe that is not understood including dark mass and dark energy. Dark mass is mass in the universe that can't be seen while dark energy is energy in the universe that can't be seen.

The English Martyrs Catholic School and Sixth Form College

Religious Education



Foundational Catholic Theology

Origins and Meaning

1. The Bible
2. Genesis 1: Creation
3. Genesis 2: Creation
4. What do the creation accounts tell us?
5. St Augustine: Creation ex nihilo
6. The Big Bang Theory
7. The Theory of Evolution
8. Imago Dei
9. Abortion
10. Humanism and the Value of Life
11. Stewardship
12. Humanism and the environment
13. Michelangelo: Creation of Adam
14. Tree of Life Apse Mosaic
15. Peace and Justice
16. Catholic Social Teaching (CST)
17. Inter-faith dialogue
18. The Work of Catholic Charities
19. St Vincent de Paul Society (SVP)
20. CAFOD

Good and Evil

1. The Problem of Evil
2. Genesis 3: Original Sin
3. Evil and suffering is not a problem for Christians
4. The Book of Job
5. John Mackie: Evil and suffering is a problem for believers!
6. Trinity
7. Incarnation
8. Jesus and Moral Authority
9. Other Sources of Moral Authority
10. Sculpture and Statuary
11. Michelangelo's Pieta
12. The Rosary
13. Pilgrimage

THE BIBLE



Canon of Scripture

The Bible is the source of Christianity's main beliefs and is considered to have been inspired in some way by God. Although it is usually referred to as one book, it is in fact a collection of different books written by many authors over a period of more than a thousand years.

In early times there was no need for a written holy book as religious accounts were passed on by the oral tradition because most people could not read or write. The stories were shared by word of mouth. Scribes began to write down parts of the oral tradition from around 1,000 BC. Similarly, the accounts of the life of Jesus were not recorded straight away as there was a strong belief that Jesus would return to earth very soon. The realisation that this was not the case and that eye witnesses were dying out, prompted the writing of the first New Testament writings. What became the accepted version of the Bible was agreed, after much discussion, by Pope Damasus I in the fourth century. The accepted list of the books that make up the Bible in the Catholic tradition is called the Canon of Scripture.



Source of Wisdom and Authority

"In order to discover the sacred authors' intention, the reader must take into account the conditions of their time and culture, the literary genres in use at the time, and the modes of feeling, speaking and narrating then current." CCC110

How the Bible is structured

The Bible is divided into two large sections called the Old and New Testament. The word 'testament' means 'covenant', which is an agreement between two different groups.

Revelation and Inspiration

Christians describe the Bible as the Word of God. They believe that through the Bible God is making himself known to them; he is speaking to his people, providing them with a way to live and be holy. Christians believe that God reveals himself to humans in other forms too, for example, through creation, through other people and most importantly, in the person of Jesus. This is known as revelation. In Genesis, it is described how God breathed into Adam so that he could live. God's spirit was shared with human beings. Christians believe that God continues to send his spirit to guide people towards goodness and truth today, and this is known as inspiration. God's Holy Spirit guided the writers of the Bible, so that Bible is 'the Word of God'; meaning that the Holy Spirit inspired believers to accept God's message in their lives and in turn to share it with others.

Literary Forms

Living in the current age provides us with a greater variety of forms of communication than our ancestors could have ever dreamed of: email, text messages, online newspapers as well as traditional books full of examples of poetry, fiction, non fiction and plays. It is very easy to misunderstand writing. Think about text messages; we sometimes get offended needlessly because we can't hear the tone of the persons writing, we only see the words themselves. To understand any piece of writing fully it is helpful to know who wrote it, when, why, what life was like at the time and the reason they wrote it in the first place. This is also true of the books contained in the Bible as there is a whole library full of variety included within it.

Interpreting the Bible – The Catholic View

Not all Christians read or understand the Bible in the same way. The Catholic Church teaches that the authors of the Bible were inspired and gained truthful insights about God but that not everything they wrote was historically or literally accurate, for example, their understanding of science was very limited. The Church, therefore, asks that in order to fully understand what God wanted to reveal to humanity, readers should consider the context in which it was written and the meaning of the literary form used; a poem is very different from a piece of historical writing. For Catholics, the accounts given in Genesis 1-3 can be considered myths; stories that, whilst not being 'true', contain great 'truths'.

46 books

The Old Testament

The Old Testament has 46 books according to the Catholic Canon; it begins with the origins of the universe and human beings. It traces the relationship between God and the Jewish people before the arrival of Jesus. It is made up of:

- ✓ **Law** – the first five books form the Pentateuch. These books give instructions on how to live life according to God and contain the Ten Commandments.
- ✓ **History** – Joshua, Samuel and Chronicles are some of the books that trace the history of God's people from when they entered the Promised Land, detailing how they were guided by God and encouraged to keep the Covenant God had made with Abraham and later with Moses.
- ✓ **Prophets** – a prophet is a messenger sent by God to inspire and challenge those who are failing to stay faithful to God; Isaiah, Jeremiah and Daniel are some of the most famous prophets.
- ✓ **Wisdom** – these books encourage people to stay close to God in their lives and come in the form of songs, poetry, prayers and sayings.

27 books

The New Testament

The New Testament has 27 books according to the Catholic Canon; it contains the accounts of the life of Jesus and the growth of the Church after he had returned to heaven. This section of the Bible contains:

- ✓ **Gospels** – The books of 'Good News' that detail the life of Jesus. The four Gospel writers were Matthew, Mark, Luke and John.
- ✓ **Acts of the Apostles** – these document the growth of the early Church.
- ✓ **Letters** – these were written by early Christian leaders, like Peter and Paul, to encourage, guide and sometimes criticise people in the Church.
- ✓ **Book of Revelation** – written by John, this is full of symbolism that some Christians believe refers to the end of the world.

Other Christian Views

Other Christians, such as Fundamentalists, believe that God inspired the biblical writers, so the Bible does not contain any errors. It is just as accurate in today's world as it was when it was written, even if it seems to conflict with the modern world. Some Fundamentalists are literalists, taking everything in the Bible as being literally true.



Fundamentalist Christians would reject the discovery of fossils as evidence of evolution

Knowledge Check

1. How many books in the Bible are there?
2. What does 'testament' translate to?
3. Christians believe that the authors of the Bible were guided. What were they guided by?
4. How do Catholics interpret the Bible?
5. Initially there was no need for the books of the Bible to be written. Why is this?
6. What is the term used to describe the accepted list of books that make up the Bible in the Catholic tradition?
7. What are the four types of writing in the Old Testament?
8. What are the four types of writing in the New Testament?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

- b) Describe Catholic beliefs on the structure and origins of the Bible [5]
b) Describe different Christian views on the interpretation of the Bible [5]

Summary

- The Bible was inspired by God and is an important source of authority for Christians
- God has made himself known through the Bible; he has revealed his love for all humanity and has given them guidance on how to live a life according to his laws
- The Bible contains many different kinds of literature, written by many different people over a very long period of time
- Christians have different views about how to interpret the writings in the Bible; Catholics accept the idea of a biblical myth, while most Fundamentalist Christians do not.
- The Catholic Church teaches that the Bible should be read in context. However, because it is divinely inspired, it is always much more than a piece of historical writing.
- There is also a diversity within Judaism regarding the nature of divinely inspired scripture.

GENESIS 1 CREATION

450 BCE

Genesis 1 was written down about 450 B.C.E. as a poem and it tells of the six days of Creation, with God resting of the seventh, making the day holy.

Day 1
God created night and day

Day 2
God created heavens

Day 3
God created land and plants

Day 4
God created sun, moon & stars

Day 5
God created birds and fish

Day 6
God created living creatures and man

Day 7
God rested

1 In the beginning God created the heavens and the earth. Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters.

2 And God said, "Let there be light," and there was light. **3** God saw that the light was good, and he separated the light from the darkness. **4** God called the light "day," and the darkness he called "night." And there was evening, and there was morning—the first day.

5 And God said, "Let there be a vault between the waters to separate water from water." **6** So God made the vault and separated the water under the vault from the water above it. And it was so. **7** God called the vault "sky." And there was evening, and there was morning—the second day.

8 And God said, "Let the water under the sky be gathered to one place, and let dry ground appear." And it was so. **9** God called the dry ground "land," and the gathered waters he called "seas." And God saw that it was good.

10 Then God said, "Let the land produce vegetation: seed-bearing plants and trees on the land that bear fruit with seed in it, according to their various kinds." And it was so. **11** The land produced vegetation: plants bearing seed according to their kinds and trees bearing fruit with seed in it according to their kinds. And God saw that it was good. **12** And there was evening, and there was morning—the third day.

13 And God said, "Let there be lights in the vault of the sky to separate the day from the night, and let them serve as signs to mark sacred times, and days and years, **14** and let them be lights in the vault of the sky to give light on the earth." And it was so. **15** God made two great lights—the greater light to govern the day and the lesser light to govern the night. He also made the stars. **16** God set them in the vault of the sky to give light on the earth, **17** to govern the day and the night, and to separate light from darkness. And God saw that it was good. **18** And there was evening, and there was morning—the fourth day.

19 And God said, "Let the water teem with living creatures, and let birds fly above the earth across the vault of the sky." **20** So God created the great creatures of the sea and every living thing with which the water teems and that moves about in it, according to their kinds, and every winged bird according to its kind. And God saw that it was good. **21** God blessed them and said, "Be fruitful and increase in number and fill the water in the seas, and let the birds increase on the earth." **22** And there was evening, and there was morning—the fifth day.

23 And God said, "Let the land produce living creatures according to their kinds: the livestock, the creatures that move along the ground, and the wild animals, each according to its kind." And it was so. **24** God made the wild animals according to their kinds, the livestock according to their kinds, and all the creatures that move along the ground according to their kinds. And God saw that it was good.

25 Then God said, "Let us make mankind in our image, in our likeness, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground."

26 So God created mankind in his own image, in the image of God he created them; male and female he created them.

27 God blessed them and said to them, "Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground."

28 Then God said, "I give you every seed-bearing plant on the face of the whole earth and every tree that has fruit with seed in it. They will be yours for food. **29** And to all the beasts of the earth and all the birds in the sky and all the creatures that move along the ground—everything that has the breath of life in it—I give every green plant for food." And it was so.

30 God saw all that he had made, and it was very good. And there was evening, and there was morning—the sixth day.

2 Thus the heavens and the earth were completed in all their vast array. By the seventh day God had finished the work he had been doing; so on the seventh day he rested from all his work. **3** Then God blessed the seventh day and made it holy, because on it he rested from all the work of creating that he had done.



GOD'S OMNIPOTENCE

God is omnipotent. He can create using speech alone. "and God said".



Humans were the final act of God's creation, but the most important.



Humans must procreate (have children).



God rested on the seventh day. Christians and Jews are ordered to 'keep the sabbath' and 'make it holy' in the Ten Commandments.



GOD'S OMNIPOTENCE
God made everything that exists.



GOD'S OMNIBENEVOLENCE
Everything that God made was good. This suggests that God himself must be good (benevolent).



Humans have dominion (rule) over creation. They must rule all animals, creatures and birds.

Knowledge Check

1. According to Genesis 1, how many days did God create the world in?
2. What did God create on each of these days?
3. What style of writing is Genesis 1?
4. How is God portrayed as Omnipotent? (find a quote to support)
5. How is God's omnibenevolence portrayed? (find a quote to support)
6. Which quote shows that humans were the most important part of God's creation?
7. What is meant by "Be fruitful and increase in number"?
8. Why do Christians and Jews observe the Sabbath?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe the account of creation in Genesis 1 [5]

GENESIS 2 CREATION

950
BCE

Genesis 2 was written earlier than Genesis 1 in about 950 B.C.E. and focuses on the story of the creation of Adam and Eve in some detail.



GOD'S OMNIPOTENCE

God made everything that exists.



HUMANS

Humans were the final act of God's creation, but the most important.



GOD'S OMNIBENEVOLENCE

God shows that he is loving in making a companion for man. He does not want man to be lonely.



IT IS BELIEVED THIS ACCOUNT WAS WRITTEN BEFORE THE GENESIS 1 ACCOUNT

⁴This is the account of the heavens and the earth when they were created, when the Lord God made the earth and the heavens.

⁵Now no shrub had yet appeared on the earth and no plant had yet sprung up, for the Lord God had not sent rain on the earth and there was no one to work the ground, ⁶but streams came up from the earth and watered the whole surface of the ground. ⁷Then the Lord God formed a man from the dust of the ground and breathed into his nostrils the breath of life, and the man became a living being.

⁸Now the Lord God had planted a garden in the east, in Eden; and there he put the man he had formed. ⁹The Lord God made all kinds of trees grow out of the ground—trees that were pleasing to the eye and good for food. In the middle of the garden were the tree of life and the tree of the knowledge of good and evil.

¹⁰A river watering the garden flowed from Eden; from there it was separated into four headwaters. ¹¹The name of the first is the Pishon; it winds through the entire land of Havilah, where there is gold. ¹²(The gold of that land is good; aromatic resin and onyx are also there.) ¹³The name of the second river is the Gihon; it winds through the entire land of Cush. ¹⁴The name of the third river is the Tigris; it runs along the east side of Ashur. And the fourth river is the Euphrates.

¹⁵The Lord God took the man and put him in the Garden of Eden to work it and take care of it. ¹⁶And the Lord God commanded the man, "You are free to eat from any tree in the garden; ¹⁷but you must not eat from the tree of the knowledge of good and evil, for when you eat from it you will certainly die."

¹⁸The Lord God said, "It is not good for the man to be alone. I will make a helper, suitable for him."

¹⁹Now the Lord God had formed out of the ground all the wild animals and all the birds in the sky. He brought them to the man to see what he would name them; and whatever the man called each living creature, that was its name. ²⁰So the man gave names to all the livestock, the birds in the sky and all the wild animals.

But for Adam no suitable helper was found. ²¹So the Lord God caused the man to fall into a deep sleep; and while he was sleeping, he took one of the man's ribs and then closed up the place with flesh. ²²Then the Lord God made a woman from the rib he had taken out of the man, and he brought her to the man.

²³The man said, "This is now bone of my bones and flesh of my flesh; she shall be called 'woman,' for she was taken out of man."

²⁴That is why a man leaves his father and mother and is united to his wife, and they become one flesh.

²⁵Adam and his wife were both naked, and they felt no shame.

FORESHADOWING CHAPTER 3: ORIGINAL SIN

In Genesis chapter 3 Eve is tempted by the serpent and eats from the tree. She then convinces Adam to do so also. They have wisdom that they did not have before, including the realisation that they are naked. They are banished from the garden, along with many other punishments.

Knowledge Check

1. When was Genesis 2 written?
2. What does Adam translate to?
3. How is God shown to be omnipotent?
4. How is God shown to be omnibenevolent?
5. How are Adam and Eve created?
6. How do fundamentalist Christians interpret the accounts?
7. How do Catholic Christians interpret the accounts?
8. Although Christians interpret the Bible differently, what beliefs do they agree upon?

Choose a Task

1. Create a detailed mind-map (try to make this visual).
2. Create a multiple-choice quiz (aim for at least 10 questions).
3. Create a poster/leaflet.

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain how two Christian traditions interpret Genesis 1 and 2. [8]

Scientific Explanations

Whilst it is important to realise that Christians are united in their beliefs that God created the universe, that everything he made was good and that humans are the high point of his Creation, the fact that Christians interpret the Creation accounts differently is going to matter when it comes to exploring what scientists say about the origins of the universe.

Interpreting the accounts

Not all Christians interpret (to find an explanation of the meaning of the Bible) the Bible in the same way and, therefore, they understand the Creation accounts differently. Christians are, however, united in that they believe:

- In God
- That the people who wrote the biblical accounts were inspired by God
- That God makes himself known to human beings through the Bible
- That the Bible is the Word of God and helps us to live our lives today.

Catholic Interpretation

Catholics today accept that the two creation stories were written as myths (a story that isn't literally true, but has deeper, hidden or symbolic meanings.) When Catholics talk about a myth in religious terms, they do not mean it is a made up story or an untruth, but rather, it is a story with an underlying truth. A myth is often a symbolic story that conveys a hidden truth and shouldn't be taken as literally true. The message that the stories convey is what is of greatest importance. Although the two accounts of Creation in Genesis have different details, they share the same truths.

Fundamentalists/ Creationists/ Literalists:

Factual. True.
Historical.

Catholics:

Myth. Deeper, hidden,
symbolic meanings

Fundamentalist Christians/ Literalist Christians Interpretation

Another way of interpreting the Bible is to believe that it is a factual record that describes events exactly as they happened. This is the view of those that we would describe as fundamentalist or 'literalist' Christians. The Genesis accounts, from this point of view, are therefore historical accounts of what actually happened at the beginning of everything. So, a fundamentalist reading of the Bible leads to the belief that the universe was created in six days; Christians who believe this are called Creationists. Likewise, Eve was created from Adam's rib exactly as it says in the Bible.

WHAT DO THE CREATION ACCOUNTS TELL US...

ABOUT GOD

Genesis 1 – Emphasis is on the **greatness** of God as the creator of the universe

TRANSCENDENCE

'In the beginning God created the heavens and the earth.'
(Genesis 1:1)



ETERNAL

The fact that God creates heaven and earth *'In the beginning'* shows that he already existed, God has no beginning.



OMNIPOTENT

God is all powerful, creation happens just by him commanding it: *'And God said, "Let there be light," and there was light.'*
(Genesis 1:3)

OMNIBENEVOLENT (ALL LOVING)

God shows that he loves humans as he creates everything that they need to live. *'Now the LORD God planted a garden in the east, in Eden; and there he put the man he had formed. The LORD God made all kinds of trees grow out of the ground—trees that were pleasing to the eye and good for food.'*

OMNIBENEVOLENT

God shows that he loves humans as he creates Eve so that Adam is not lonely.



ABOUT HUMANS

In both Genesis 1 and 2 the messages given about human beings are the same and reinforce the belief that **human life is PRECIOUS and SACRED.**

Humans have been created to have a **CLOSE RELATIONSHIP WITH GOD** but they also have a **DUTY TO CARE** for everything that God created.

SANCTITY OF LIFE

- Humans are created last in Genesis 1 and are the high point of God's creation.
- In Genesis 2 God personally creates Adam and Eve. (Adam from the dust and Eve from the rib)
- He breathes life into Adam which demonstrates how precious and sacred human lives are compared to everything else in creation.
- God reflects that all that he has made is good, including human beings.



STEWARDS OF GOD'S CREATION **stewardship**

- Genesis 1 – God creates humans to rule over the creatures
- Genesis 2 – Adam is put in the garden to *'work it and take care of it'*. Adam's authority is seen when he is asked to name all the animals.



IMAGO DEI

'So God created man in his own image, in the image of God he created them.'
(Genesis 1: 27) which makes them sacred and holy.



MALE AND FEMALE

- God deliberately creates humans male and female.
- He wants Adam to have a companion in the second story. In Genesis 1 humans are encouraged to have children. *'Be fruitful and increase in number.'*

FREE WILL

- God gives Adam and Eve freedom to do God's will and choose not to.
- 'And the LORD God commanded the man, *'You are free to eat from any tree in the garden, but you must not eat from the tree of knowledge of good and evil, for when you eat from it you will certainly die.'* (Genesis 2: 16-17).
- Although God gives Adam the instruction not to eat from the tree, He gives him the choice to disobey Him.



Knowledge Check

1. What does Genesis 1 emphasise?
2. Define the key concept: 'transcendence'
3. Which quote supports God's transcendence?
4. How does Genesis portray the sanctity of human life?
5. How does Genesis portray stewardship?
6. How does Genesis support belief in Imago Dei?
7. Why does God create humans both male and female?
8. How is free will portrayed in Genesis 2?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe what the Genesis accounts teach about the nature of God [5]

b) Describe what the Genesis accounts teach about the nature of human life [5]

When we think about creating something we generally are talking about making something new from things that already exist, for example, making a cake out of flour, eggs and sugar. Catholics believe the way that God created the universe was different to this because he created it

OUT OF NOTHING (*ex nihilo*). In other words, there were no 'ingredients' already in existence for him to use, as he created everything. Not only was there no water, land, light or dark, there wasn't even any time or space. God is solely responsible for everything that exists. Only God can create out of nothing because he is **omnipotent** (all powerful). St Augustine, an early Christian thinker, explored this idea in his writings, *Confessions* XII, 7.

ST AUGUSTINE: CREATION EX NIHILO

St Augustine best expresses the Christian belief that the universe was created out of nothing (*ex nihilo*).

By "heaven" he meant God's dwelling place, referred to in the bible. Heaven is more important/significant because it is close to God.

Catholics gain their beliefs and understanding of the Creation of the Universe from a variety of sources, most obviously the Bible. Catholics also look to the teachings of religious people such as St Augustine of Hippo to help us know more about the Creation of the Universe:

By "earth" he meant the "formless void" mentioned in Genesis, from which all of the Universe is made.



Confessions XII, 7

"you, O Lord... You created **heaven** and **earth** but you did not make them of your own substance. If you had done so, they would have been equal to yourself. But besides yourself, O God, who are Trinity in Unity, Unity in Trinity, **there was nothing from which you could make heaven and earth. Therefore you must have created them from nothing, the one great, the other small. For there is nothing that you cannot do.** You are good and all that you make must be good, both the great Heaven of Heavens and this little earth. You were, and besides you nothing was. **From nothing, then, you created heaven and earth, distinct from one another; the one close to yourself, the other close to being nothing; the one surpassed only by yourself, the other little more than nothing.**"

There was only God in the beginning, and he made the heavens and the earth, but he didn't make them out of his OWN substance...

The world would be perfect if it had been made FROM God, because God is perfect. The world ISN'T perfect therefore it logically makes sense to say it was not made from His own 'substance' (self).

THIS is called "**creation ex nihilo**" - a Latin phrase literally meaning "**creation out of nothing**"

Key Points:

- ✓ God created heaven and earth
- ✓ Heaven and earth cannot be made from the same substance as God BECAUSE they are not equal to his greatness!
- ✓ So heaven and earth must have been created out of nothing BECAUSE there was nothing else in existence at the time of creation!
- ✓ Heaven is much more important and significant than earth BECAUSE God is close to heaven but not to Earth - he is "transcendent" (outside our time & space)

...then he MUST have made them out of nothing (because there WAS nothing else!!!)

Who was St Augustine?

- ✓ He was born in 354AD in Hippo, North Africa. In his early life he was a great sinner, obsessed with wealth, fame & partying!
- ✓ At 17 he had a sexual relationship with an unnamed woman and they had a son called Adeodatus.
- ✓ His mother, St Monica was a Christian and begged him to change...she prayed for him constantly!
- ✓ At about 32, he saw the error of his ways, felt great shame and converted to a life aimed at pleasing God.
- ✓ He gave up his wealth and wrote much about his experiences and beliefs.
- ✓ His most famous writings are contained within his book called "confessions". These are his experiences - his confession of sin but also his confession of his love for God.

Confessions

- ✓ *Confessions* is the name of an autobiographical work, consisting of 13 books, by St. Augustine of Hippo, written in Latin between AD 397 and 400.
- ✓ The work outlines St. Augustine's sinful youth and his conversion to Christianity.
- ✓ It is widely seen as the first Western autobiography ever written, and was an influential model for Christian writers throughout the following 1,000 years, through the Middle Ages. It is generally considered one of Augustine's most important texts.

From Augustine's writings in *Confessions* XII, 7, we learn many things about the **NATURE OF GOD**



Creator

God created heaven and earth. The Nicene creed has statements where Catholics profess their belief in God the father almighty as 'maker of heaven and earth.'



Trinity

There is something that is 'born of' Gods own substance. This 'something' is Gods **only begotten son**. Augustine here refers to it as the trinity in unity, unity in trinity.



Eternal

'**you were, and besides you nothing was**': in the beginning before the creation of the universe, before time and space exists, only God exists. Catholics believe that God is **ETERNAL without beginning or end**, the ultimate reality, the only reality that has always existed, that simply is.



Transcendent

Beyond time and space. God is not part of the universe, on top of a mountain or living in the sky, but neither is God 'absent from' creation - the whole cosmos is kept in existence by Gods existence.



Omnipotent

God is all powerful and able to create something out of nothing (*ex nihilo*) there is **nothing God cannot do**.

Knowledge Check

1. Define the key concept: Creation ex nihilo
2. What language is the term 'ex nihilo'?
3. Which Catholic Christian best expresses the belief that the universe was created ex nihilo?
4. How was this person characterised in his early life?
5. Which book are his most famous writings contained in?
6. Which quote supports the idea that the universe was created ex nihilo?
7. Why does the author of Confessions XII, 7 insist that the world must have been created out of nothing (ex nihilo)?
8. Which quote supports the belief that God is eternal?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe St Augustine's teaching on creation ex nihilo [5]

THE BIG BANG THEORY

1960's

13 billion years old

THE UNIVERSE

The Universe is defined as "...everything we can touch, feel, sense, measure or detect. It includes living things, planets, stars, galaxies, dust clouds, light, and even time. Before the birth of the Universe, time, space and matter did not exist."

The Big Bang

Before the Big Bang, the universe was inside a bubble that was smaller than a pinhead.

When the universe exploded (Big Bang), nearly 14 billion years ago, it created time, space and galaxies.



Seconds after the Big Bang, particles began to form

A particle is a tiny amount of matter. These were called protons and neutrons. The protons and neutrons began to join to make simple chemical elements.



300,000 years later

Years later, the universe had cooled down after the Big Bang and was cool enough for more chemical elements to form. The first stars also began to form.

10 Billion Years Later

Our solar system and the Sun were formed.

The Earth was formed by rocks colliding and merging with one another. The impact of the rocks colliding created an incredible amount of heat. Radioactive material was delivered to the Earth as well. When the outer layer of the Earth cooled, this radioactive heat was trapped inside. The Earth's core is as warm as the Sun!

Conclusion → We don't need God!

The Big Bang theory has led Hawking and many other scientists to conclude that there is no evidence to suggest that there is a Creator responsible for the origin of the universe; instead things may have happened by themselves.

The theory was first put forward by a Catholic priest, Father Georges Lemaitre, and then much later built on by Professor Stephen Hawking. The theory arose as a result of various observations made about the universe.

The best known theory explaining how the world began is the Big Bang theory which became widely accepted in the 1960s.



Father Georges Lemaitre



Stephen Hawking

The laws of physics are enough to trigger the Big Bang, God is not needed for this.

Before we understood science, it was natural to believe that God created the universe, but now science offers a more convincing explanation.

Evidence for the Big Bang

One big piece of evidence to support the Big Bang theory is that galaxies and stars are now moving further away from us. This supports the idea that the Universe was once trapped inside a tiny bubble.

The Catholic Church

The Catholic Church has no reason to question the evidence that scientists present about the origins of the universe. There is a long history of the Catholic Church being interested in, and leading on, areas of scientific discovery. In fact, it doesn't have to be a choice between religion and science because both are perfectly possible.



AUTHORS OF GENESIS: WHY?

The story was told in a non-scientific age to explain that God was the creator of everything and that he had a special role for humanity to play in the world. These stories express meaning rather than presenting a factual account of historical events.

SCIENTISTS: HOW?

Scientists are answering the question of HOW the universe was created. The conclusion for Catholics, therefore, is that if the Big Bang theory is correct then perhaps that is the way God chose to create the world.

Moment of singularity...

As you observe these galaxies and their stage of development, it seems to suggest that the universe is about 15 billion years old, which has led scientists to believe that there was a one-off moment when it all began, and before which nothing existed.

Hawking calls this a 'moment of singularity'.

Religion Versus Science

Today, many think of science and religion as being in opposition to each other, but this view is far too simplistic. *Up until the sixteenth century, the philosophers and theologians were the scientists; it was from their work that science was born.* In Medieval times belief about the structure of the universe was based on what scholars observed and mathematics. Any scientific reasoning was in line with the Christian faith and the accounts of Creation in Genesis. Scholars at this time were more interested in how you should live your life so that you could enter heaven rather than knowing how the universe worked. The accepted view at this time was that the earth had been created by God, as described in Genesis.

Since those times, science has developed and, as a result, some theories that have been put forward appear to contradict the biblical accounts of creation. The study of the origin of the universe is called cosmology. One of the first challenging ideas for many religious believers was the discovery that the earth went around the sun along with the other planets, rather than being the centre of the universe, as had previously been believed.

Furthermore, scientists have concluded that the world is a lot older than we first thought and *today it is believed that the universe is more than 13 billion years old*, with our sun forming about 4.6 billion years ago.

The theory raises almost as many questions as answers

Where did the matter come from that caused the Big Bang?

Hawking suggests that since gravity exists, the universe can and will create itself from nothing, but the question is, *where did the law of gravity come from?* Gravity and matter are not 'nothing', so if either of these existed before the universe, then the universe has not come from nothing.

Did the universe come from nothing? (ex nihilo)

Knowledge Check

- Who first put forward the theory of the Big Bang?
- What is the Universe defined as?
- Why does Stephen Hawking say that God is not needed to trigger the Big Bang?
- What happened when the universe exploded?
- What evidence is there to support the Big Bang?
- How does the Catholic Church interpret the Big Bang theory?
- What is meant by a 'moment of singularity'?
- What big questions does the Big Bang theory raise?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

- Describe the scientific theory of the Big Bang [5]
- Explain two different Christian attitudes towards the Big Bang [8]

THE THEORY OF EVOLUTION

Charles Darwin



The Big Bang theory has provided a scientific explanation for the origin of the universe without a need to believe that God is responsible. Similarly, various theories have been proposed to explain how new species develop. Darwin's observations of variation in the beaks of finches led to his theory of evolution.

Charles Darwin rocked the Christian world in 1859 when he published his book called

On the Origin of the Species by means of Natural Selection.

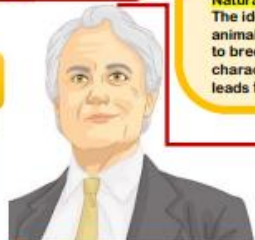
He worked as a naturalist on HMS Beagle and spent a long time studying the animals and birds on the **Galapagos Islands** which are a thousand miles off the coast of South America. He noticed major differences in some of the animals across the different islands, particularly in relation to a type of bird called finches. **Some of the finches had thin, sharp beaks whereas those on other island had short, fat beaks.** The size and shape of their beaks were best suited to the food source that was available to them on each island.

He concluded that these variations happened naturally by chance when a species produced offspring. However, in some cases **the variation was very useful and made it more likely that these animals would survive and breed, producing the next generation.** So, over time the useful variation was passed down and became more common, which eventually led to different variations of animal and eventually to whole new species. **This process is referred to as natural selection or 'survival of the fittest'.**

Darwin proposed that this process had repeated itself many times over a long period of time, leading to completely new species of animals emerging. This process is known as evolution. This was highly controversial at the time; according to this theory one species is descended from another species from which it is different. If we are to work backwards, **human beings have descended from ape-like species** which itself came from a species of mammal, and these mammals descended from a reptile who had come from a fish until **eventually all life can be traced back to simple bacterium.**

The theory of evolution is **supported by fossil records** which reveal that a large number of species have not survived and also that earlier forms of animals have survived by in a mutated form (for example, elephants are closely related to the extinct woolly mammoth). DNA research also seems to suggest that there are very close similarities between many species, which further reinforces evolutionary theory.

Catholics believe...
Our bodies may have evolved but our souls stay the same!



Richard Dawkins

Professor Richard Dawkins is a British scientist who is referred to as **'the most famous atheist in the world'**. He has been outspoken about his support for Darwin's theory of evolution, **atheism, humanism** and is in opposition to religion. **Dawkins believes that the theory of evolution and natural selection explain the origins of the universe much better than the idea of a creator God.** He famously said that you could not be sane and well-educated and disbelieve the theory of evolution.

Dawkins is well known for the work that he has done to build on Darwin's theory of natural selection. In his book, **The Selfish Gene (1976)**, he argues that **it is the individual genes within organisms that adapt and evolve, not organisms themselves.** Dawkins argues that each living organism's body is just a survival machine for its genes and does not serve any other purpose. He described life as just: **'bytes and bytes and bytes of digital information'.**

Therefore, humans are no more than carriers of DNA whereby over time, good genes survive and bad genes die out. Dawkins, therefore, rejects:

- Any notion of a creator God who has a plan for the universe
- The concept of an immortal soul given by God

WORD BANK

Atheism
Believing there is no God

Humanism
A belief system based on rational and scientific thought and the importance of humans rather than a supernatural Gods.

Natural Selection (Survival of the Fittest)
The idea that certain characteristics help animals survive, so that animals with that characteristic are more likely to live long enough to breed and pass that characteristic on. This leads to a certain characteristic becoming more common over time and eventually leads to new species developing.



Source of Wisdom and Authority

Dawkins described life as just 'bytes and bytes and bytes of digital information.'

'If methodical investigation within every branch of learning is carried out in a genuinely scientific manner and in accord with moral norms, it never truly conflicts with faith, for earthly matters and the concerns of faith derive from the same God.' (Gaudium et Spes 36)

'...In his encyclical Humani Generis (1950), my predecessor Pius XII has already affirmed that there is no conflict between evolution and the doctrine of faith regarding man and his vocation.' (Pope St John Paul II in his Message to the Pontifical Academy of Sciences: On Evolution.

Is evolution compatible with Catholic beliefs?

For many, Darwin's and Dawkins' views are challenging because they appear to conflict with the Catholic idea that human beings have a special role in God's creation. Dawkins argues that evolution means that:

- The creation of humans was just a lucky genetic mutation
- Humans are merely another slightly more advanced form of animals
- Humans have no greater importance on this earth than other animals

However, Catholics accept the theory of evolution but disagree with the idea that it means that humans aren't special and all life developed by chance. Pope St John Paul II restated the view of Pope Pius XII, that the Church saw no conflict between evolution and the teachings of the Christian faith. He went on to encourage theologians and scholars of Scripture to be informed by scientific research in their ongoing work.

The Catholic Church does not expect Catholics to believe that humans were created on the sixth day looking exactly as they do today. What is important to the Catholic Church is not whether God chose to create through a Big Bang and a process of evolution over many millions of years, but that in Genesis, God created with purpose and so everything that exists is part of his loving plan. This is what is important for Christians to understand; not HOW it happened but WHY it happened.

'If methodical investigation within every branch of learning is carried out in a genuinely scientific manner and in accord with moral norms, it never truly conflicts with faith, for earthly matters and the concerns of faith derive from the same God.' (Gaudium et Spes 36)

Pope St John Paul II in his Message to the Pontifical Academy of Sciences: On Evolution (22 October 1996)

'...In his encyclical Humani Generis (1950), my predecessor Pius XII has already affirmed that there is no conflict between evolution and the doctrine of faith regarding man and his vocation.'

What do other Christians believe about the Big Bang theory and evolution?

Whereas the Catholic Church and other Liberal Christians support these theories, some Christian denominations, most notably some Fundamentalist and Evangelical Christians, see them as an attack on their beliefs. These Christians interpret Scripture literally and believe that the Bible has come directly from God and that every word is historically true and accurate. Any scientific account of creation that conflicts with the Genesis account is, therefore, considered wrong. Their views would include:

- The actions of the creator God brought about all life
 - A great variety of life forms suddenly appeared on earth at the time of creation
 - Plant and animal species were created with their own characteristics complete at the time of creation
 - Human life was created last, with characteristics that were complete at the time of creation
- The last two points, therefore, rule out the idea of evolution.

Knowledge Check

1. Define the key concept: evolution
2. Who first discovered the theory of evolution and in which book is it first forward?
3. How did he discover the theory?
4. What is natural selection?
5. What is Richard Dawkins known as?
6. What is the Catholic Christian view on evolution?
7. What does Gaudium et Spes 36 say about evolution?
8. How do other Christians, such as fundamentalists, interpret the theory of evolution?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

- a) Describe the scientific theory of evolution [5]
- b) Describe two different Christian attitudes towards Evolution [8]

IMAGO DEI

WORD BANK
Imago Dei - In the image of God. The belief that human beings are uniquely a reflection of God's personhood. Unlike other animals, human beings are rational, free and moral.
Sanctity of life: The Christian belief that life is precious or sacred because it has been given by God.
Dignity - Being worthy of honour or respect
Destiny - The events that will happen to someone

Source of Wisdom and Authority

"Human life is sacred because from its beginning it involves the creative action of God and it remains forever in a special relationship with the Creator, who is its sole end..." (Catechism of the Catholic Church 2258)

*"Then God said, Let us make mankind in our own **image**, in our **likeness**, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground. So God created mankind in his own image, **in the image of God he created them**: Male and female he created them."* (Genesis 1:26-27).

"You are free to eat from any tree in the garden; but you must not eat from the tree of knowledge of good and evil. For when you eat from it you will certainly die." (Genesis 2:16-17)

"Her dignity is that of her creation, seeing that she is in the image of God." (The Dialogue of Divine Providence)

"In that same mirror of the goodness of God, the soul knows her own indignity, which is the consequence of her own fault." (The Dialogue of Divine Providence)

"You are taken with love for her; for by love indeed you created her." (The Dialogue of Divine Providence)

St Catherine of Siena: The Dialogue of Divine Providence

In her Dialogue, she said that **when we know we are made in the image of God (IMAGO DEI), it gives our soul a great dignity and we should be thankful to God for this.**

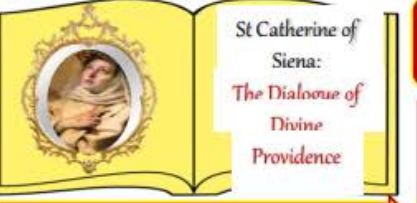
St Catherine said that **looking at God is like looking in a mirror**. A mirror shows up our imperfections clearly - they are the first thing we see! Looking on the perfection of God highlights our soul's imperfections to us clearly. We are clearly stained, compared to His purity. Catherine ends her Dialogue by proclaiming her surprise and delight that God loved humans so much that he made them with dignity, worth and the possibility to experience His great goodness.

Why is human life special?

The fact that humans appear to be the only creatures capable of using reason to make moral decisions, has led many people, whether they are religious or not, to believe that human life has more value than other kinds of life and is precious. For those with no religious faith, life is special because it is the only life we have. For Christians, human life has special value because they believe that each person is unique because God made them and there is no one quite like them. Sadly we know this when those we love die, because they leave a space that can't be filled by anyone else. We might have another sister, son or friend but they can't ever replace the person that we have lost. **All Christian denominations believe that human life is special and a gift from God.** The Catholic Church teaches that all human life is sacred (holy) and the everyone has a right to life which should be protected and valued at every stage.

The creation of humans in both Genesis accounts is different to the way that we are told that other living things are created for **three main reasons:**

- NUMBER 1:** Humans are special. In Genesis 1, it states that humans were not just created by God but in his image. *"Then God said, Let us make mankind in our own **image**, in our **likeness**, so that they may rule over the fish in the sea and the birds in the sky, over the livestock and all the wild animals, and over all the creatures that move along the ground. So God created mankind in his own image, **in the image of God he created them**. Male and female he created them."* (Genesis 1:26-27).
- NUMBER 2:** In Genesis 2, God creates Adam from the earth and breathes life into him so that he can live. These accounts demonstrate that the creation of humans was unlike the rest of creation because they were made in a unique way and most importantly in the image of God. The Latin term for 'in the image of God' is imago Dei. Catholics believe that since only humans have been made in God's image, they, therefore, have a special DIGNITY which should be recognised in everyone that they meet whatever their gender, colour, status or belief.
- NUMBER 3:** Humans have an immortal SOUL which has come from God and will go back to God, so their DESTINY is to share eternal joy with God in heaven. Humans have freedom to make moral choices. In Genesis 2, it says: *"And the LORD God commanded the man, "You are free to eat from any tree in the garden; but you must not eat from the tree of knowledge of good and evil. For when you eat from it you will certainly die."* (Genesis 2:16-17)



There are **three** important messages that come from St Catherine's writing:

Her most famous work is called *The Dialogue of Divine Providence* and is a conversation between God and a soul trying to make *her* way to God. The soul is referred to as 'her'. This is a Latin tradition.

Humans originate from God

In the same way that children originate from their parents or your reflection in the mirror originates from you: **'Her dignity is that of her creation, seeing that she is in the image of God.'** (The Dialogue of Divine Providence)

Catechism of the Catholic Church

Both of the Creation accounts in Genesis 1 and 2 describe how God planned and made the world. Everything that exists does so because God created it, including plants and animals and his final creation, humans, who were his most important.

'Human life is sacred because from its beginning it involves the creative action of God and it remains forever in a special relationship with the Creator, who is its sole end...' (Catechism of the Catholic Church 2258)

This means that God is involved in the process of conception...whether an egg is fertilised or not lies in his hands! It also means that God is the sole being who can end human life.

Non-religious views about the value of human life

Most human beings are in agreement that human life is special and worthy of protection.

'The child, by reason of its physical and mental immaturity, needs special safeguard and care, including appropriate legal protection before as well as after birth.' (United Nations Universal Declaration of Human Rights)

Fundamentalist Christian views

For religious believers, human life is considered to be sacred or holy because it has come from God. This idea is known as the sanctity of life. Since all life originates from God and is precious, it should be valued and protected, not destroyed.

- ### LIFE IS SACRED BECAUSE...
- ORIGIN:** Life is a gift from God - it originates from Him so is holy.
 - DIGNITY:** Humans are made in God's image and have immortal souls (immortal means they will never 'die').
 - DESTINY:** The goal of this life is eternal joy with God in heaven.

Knowledge Check

- Define the key concept: Imago Dei
- Define the term: Sanctity of life
- What does the following quote mean: *'Human life is sacred because from its beginning it involves the creative action of God and it remains forever in a special relationship with the Creator, who is its sole end...'* (Catechism of the Catholic Church 2258)
- According to the book of Genesis, why are humans different to any other living beings that were created?
- Give three reasons why life is sacred
- What is the name of Catherine of Siena's text about imago dei?
- What does Catherine of Siena mean when she says that looking at God is like looking in a mirror?
- What are the three main messages that come from *The Dialogue of Divine Providence*?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe Catholic belief on the teaching of imago Dei [5]

c) Explain from two different religions/religious traditions belief in humanity as created imago Dei [8]

Love

St Catherine reflects that the reason that humans have been made with such dignity in the image of God is because he loves them immeasurably. He created them out of love. **'You are taken with love for her; for by love indeed you created her.'**

Conscience

When we look in a mirror we see our face, the good and the bad; freckles, spots, wrinkles! Since humans have God's truth in their lives, they have an inner conscience that tells them when their actions are right or wrong, just like looking in a mirror: **'In that same mirror of the goodness of God, the soul knows her own indignity, which is the consequence of her own fault.'**

1967

ABORTION

24
Weeks

Abortion is the deliberate ending of a pregnancy.

Pro-Life



People who believe that the child has a right to life and abortion is wrong are called pro-life.

People who believe that the mother should be able to choose whether to have an abortion are called pro-choice.

Pro-Choice



Before 1967, abortion was illegal in Britain, however this doesn't mean abortions didn't take place. Instead thousands of illegal or 'back street' abortions were carried out each year and led to serious injury and sometimes the death of the woman.

In 1967, abortion was legalised up to 28 weeks, as long as certain criteria were met. Two doctors must agree to the procedure for it to go ahead and decide that, if the pregnancy were to continue, it would be a risk to the physical or mental health of the mother or her existing family. Other grounds on which an abortion can be granted is if the woman's life is in danger or there is a substantial risk that the baby might be born with a physical or mental disability.

The 1990 Abortion Act lowered the number of weeks to 24, however in rare cases where the woman's life is at risk or there is the likelihood of severe abnormality in the baby, there is no time limit on abortion.

Abortion and the Law

- ✓ Conception: Some believe that life begins at conception because the egg and sperm are a living source of life
- ✓ Some people believe that life begins when the fertilised egg attaches to the wall of the womb
- ✓ Some believe that when the first movements in the womb can be felt (called quickening) from nine weeks onwards, perceptible life has begun
- ✓ At 24 weeks the developing baby reaches viability – the stage at which it could survive outside the womb
- ✓ Many believe that life properly starts at birth (about 40 weeks after conception)

Attitudes towards abortion

The Catholic Church is against abortion in all circumstances because human life is sacred. The Catholic Church teaches that life begins at conception. It is God who gives life at this moment and it is the start of a human being's relationship with God. This life is often described as 'a life with potential' rather than a potential life.

"Before I formed you in the womb I knew you, before you were born I set you apart; I appointed you as a prophet to the nations." (Jeremiah 1:5)

This means that God knew us even BEFORE birth!

Therefore abortion must be wrong.

Abortion is, therefore, seen as murder and a great moral evil, which is against one of the Ten Commandments: **"Do not murder."**

The Church values the life of both mother and child. If a mother's life is in danger during the pregnancy then it supports some of the treatments which could save the life of the mother even if it threatens or destroys the life of the unborn child. For example, when the mother might need treatment for cancer, such as chemotherapy. This is known as the principle of double effect.



In the UK abortion can take place up to 24 weeks into pregnancy with the consent of two doctors

It all centres around:
WHEN DOES LIFE BEGIN?



Abortion is a **highly controversial** issue and has been widely debated since its legalisation. Arguments on both side of the debate centre around **three main issues.**

Preserving Life

When does life begin?

There are those who believe it is always wrong to take a human life and that includes the life of unborn babies. However, there are widely held views on when life actually does begin. Is it the moment of conception? When implantation occurs? When the first movements can be felt in the womb? The instant the heart starts to beat? When a baby is born?

Quality of Life

Is it the kind thing to do?

There are those who argue that the issue isn't whether the unborn baby is a life or not, but whether having the child will adversely affect the quality of life of the mother or the child. If the mother is going to suffer mentally or physically by having the child, for example, if the mother has been raped or if the child will be born with severe disabilities, then some argue that, in these circumstances, it is kinder to have an abortion.

Rights and Responsibilities

Pro-Life
Pro-Choice

Some people believe that every human has a right to life, even an embryo, and potential parents should take responsibility for bringing new life into the world. This view is usually referred to as 'Pro-Life'. On the other side of the debate there are those who believe that the important issue is that the woman has rights. She has the right to do what she wants with her body and that includes having an abortion. Some who take this view accept that an unborn baby has rights but would argue that the woman's right to do what she wants with her body takes priority. This standpoint is referred to as 'Pro-choice'. Currently, in law, the father has no legal rights.

Roman Catholics: The Principle of the Double Effect

Some actions have more than one effect – the intended effect and a side effect (double effect). Sometimes even if the intended effect of an action is good, the side effect can be bad. The Catholic Church teaches the principle of double effect – where an action that is intended to have a good effect, but has a bad side-effect can be morally right if it meets the following principles: the action itself must be morally good or morally indifferent, not morally wrong; the bad effect/result must not be directly intended; the intended good effect/result must be a direct result of the action taken and not a result of the bad result/effect. The good effect/result must be 'proportionate' to the bad effect/result. **The Catholic Church permits medical procedures that will also end a pregnancy, if it is a side effect of saving the life of the mother. This is NOT abortion!!! Catholics do not agree with abortion under any circumstances.**

The Anglican Church and abortion

The Anglican Church is also strongly opposed to abortion and agrees with the Catholic Church that it is a great moral evil. They also **encourage adoption** as the alternative course of action. Anglicans uphold the sanctity of human life. However, where they differ from the Catholic Church is that many Anglicans believe there are strictly limited conditions when having an abortion would be preferable to having the child. This is sometimes referred to as **'the lesser of two evils'**. The Anglican Church also calls for **better sex education** as a solution to unwanted pregnancies.

To summarise, Anglican Christians:

- ✓ Disagree with abortion BUT believe that in extreme cases, it may be the most loving thing to do.
- ✓ Most believers accept human life begins at conception, but some do not.
- ✓ Jesus taught us to "love our neighbour" – abortion can sometimes be most loving to "our neighbour".
- ✓ It is a Christian duty to relieve suffering – abortion often does this.

Jewish Attitudes

For many Jews, God is believed to be the sole creator, giver and taker of life, Genesis (the first book of the Torah) teaches that humans are created in the image of God and life is precious. In the Tenakh, there are references to a relationship with God ever before birth (Jeremiah 1). The Ten Commandments forbid the taking of a life. The Talmud discusses a number of cases in which mitzvot in the Torah can be disregarded in order to save a life (Pikuach Nefesh). There are many different Jewish views concerning abortion:

- ✓ As God is Creator, only he can take life.
- ✓ It is taught that 'Anyone who destroys a human life is considered as if he had destroyed an entire world.'
- ✓ 10 Commandments – 'Do not murder'
- ✓ Most Jews believe that the unborn foetus is not a person until it is born.
- ✓ Abortion is permitted but only for serious reasons (e.g. mother's life at risk).

Knowledge Check

1. What is meant by the term 'pro-life'?
2. What is meant by the term 'pro-choice'?
3. When and why was abortion legalised in Britain?
4. Initially abortion was legalised up to 28 weeks in the pregnancy. What did this change to in 1990?
5. Why is abortion controversial?
6. What is the Catholic Christian view on abortion?
7. What is meant by the Principle of Double Effect?
8. How do Anglican Christians respond to abortion?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the attitudes of two different religions/religious traditions towards abortion [8]

The Catholic Church NEVER accept abortion



HUMANISM & THE VALUE OF LIFE

There is no one humanist view on abortion but they tend to take a more liberal 'pro-choice approach' and accept abortion as a morally acceptable choice.



Promote adoption as a possible alternative that might bring about greater happiness



Encourage careful consideration of both long-term and short-term effects before a decision is made

Quality of life

Humanists do not consider life sacred (though they do believe it is special) but instead they think that 'quality of life' is an important consideration and that this outweighs preservation of life



Do not think an unborn baby is a person until well after conception



Support the legalization of abortion so that unsafe, illegal abortions don't take place



Consider that better sex education and easier access to contraception would reduce the number of abortions

biological

Non-human persons



Peter Singer and non-person humans

Singer agrees with the Catholic position that life begins at conception. However, he describes this life as 'biological' and denies that embryos are 'persons'.

Singer defines a human person as a being that can feel, hope and make moral choices. Therefore, embryos, new born babies, those in a coma and the elderly with dementia are all examples of biological, but 'non-human' persons. It is morally acceptable to take the lives of these 'non-human' persons if it will bring about less suffering and greater happiness for all involved.

A Catholic response to Singer's views....

Catholics would argue that since God gives humans a soul, they are and remain 'persons' whether they are conscious or not, even when they are asleep, in a coma or haven't yet been born.

With regard to Singer's views on speciesism, Catholics would agree that human beings should respect and care for animals, since they are God's creatures and part of his Creation. However, they make a distinction between animals and humans because humans have been made in the image of God. Humans, therefore, have a special dignity that animals don't. Human beings should care for animals and must not inflict unnecessary cruelty, but they can use animals for food and clothing.

Humans have a soul they are therefore 'persons'



Humans have been made imago dei. They have a special dignity animals don't.

Knowledge Check

- Which view do humanists tend to take on abortion? (pro life/pro choice?)
- What do humanists suggest for women who are considering having an abortion?
- What do humanists suggest our society does to avoid unwanted pregnancies?
- Peter Singer says that 'biological' persons do not have the same right to life. Who does he categorise as 'biological non-human persons'?
- How does the Catholic Church respond to this?
- According to the Catholic Church, why do humans have a special dignity that animals do not?
- What is Peter Singer's view on speciesism?
- What makes African Grey Parrots unique?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe humanist views on the value of life [5]



Peter Singer and Speciesism



African Grey Parrots

They are very intelligent and in some experiments have been shown to have the same cognitive ability as a 4-6 year old child. Should they have the same rights as humans?

Singer is critical of the Catholic view that human life is more special than any other type of life. He believes that treating animals as less important than humans is discriminatory and 'speciesist', in the same way that discriminating against people because of their colour is racist.

Singer argues that animals have similar responses to humans, in that they feel pleasure and pain and, therefore, their interests must be taken into account. A conscious animal, such as a cat, has more mental capacity and is more of a 'person' than an infant baby or an elderly person with dementia. Singer argues that speciesism is, therefore, morally wrong.

Was it right to kill Harambe?

On May 28, 2016, a three-year-old boy climbed into a gorilla enclosure at the Cincinnati Zoo and Botanical Garden and was grabbed and dragged by **Harambe**, a 17-year-old Western lowland gorilla. Fearing for the boy's life, a zoo worker shot and killed Harambe. The incident was recorded on video and received broad international coverage and commentary, including controversy over the choice to kill Harambe. A number of primatologists and conservationists wrote later that the zoo had no other choice under the circumstances, and that it highlighted the danger of zoo animals in close proximity to humans and the need for better standards of care.

Gorillas are highly intelligent. They use tools and have various methods of communication, including some 25 different sounds.



One famous captive-born individual, Koko, has been taught sign language since she was a year old. By the age of 40, she had a library of about 1,000 signs and could understand some 2,000 words of English.

STEWARDSHIP

The duty to care for creation responsibly, as stewards rather than consumers, and to protect it for future generations



Christians believe that the earth belongs to God and not to human beings; we are just the 'caretakers' of God's world.

Catholic beliefs about humans and their relationship with creation

Catholics believe that all of creation is holy because it comes from God. It is a sign of his love because he created the earth in a way that is sustainable for human life. One important way of showing love for God is by valuing what God has created.

Humans must rule and protect the world

- In the Genesis creation stories humans are given the **AUTHORITY** to **RULE** over all living things.
- The very **FIRST LAW** that seems to be given to humanity was that they should be **STEWARDS OF THE EARTH**.
- An important aspect of looking after the earth is **PROTECTING** it for **FUTURE GENERATIONS** so that they can enjoy God's creation.
- In return for good stewardship, the earth provides humans with everything they need to survive, but they do not have the right to **ABUSE** the **NATURAL WORLD**; instead they must live in a sustainable way.



Dominion:
To rule over, to be in charge of

Laudato Si – Pope Francis' Encyclical

Catholics can take care of the planet in many different ways, at an individual, local and global level. In Laudato Si, Pope Francis has highlighted sound, practical ways that people can do this:

"Education in environmental responsibility can encourage ways of acting which directly and significantly affect the world around us, such as avoiding the use of plastic and paper, reducing water consumption, separating refuse, cooking only what can reasonably be consumed, showing care for other living beings, using public transport or car-pooling, planting trees, turning off unnecessary lights, or any number of other practices."

Pope Francis, in his encyclical* (a letter sent by the Pope to all Catholic bishops) Laudato Si, encourages Catholics to think about the gift they have been given and to consider what type of world they will be passing on to future generations. This will mean that humanity needs to look beyond personal gain and instead consider the effects of its actions on the environment.

"Once we start to think about the kind of world we are leaving to future generations, we look at things differently;

We realise that the world is a gift which we have freely received and must share with others. Since the world has been given to us, we can no longer view the world in a purely utilitarian way, in which efficiency and productivity are entirely geared to individual benefit."

What does good stewardship look like according to Pope Francis: *Laudato Si*



Education in environmental sustainability



Laudato Si



Use less paper and plastic



Turning off lights



Less water consumption



Using public transport



Planting Trees



Using renewable resources



Realise that the world is a gift and treat it as such!

Encyclical:
A letter sent by the Pope to all Catholic bishops.

The common good

- The Catholic Church teaches that every individual has a duty to contribute to the good of society, the common good
- As individuals, Catholics should act justly and seek justice for others, especially the poor
- This approach is most likely to lead to good things for everyone because if all individuals are cared for, everyone will benefit from living in an orderly, prosperous and healthy environment

Love your neighbour as yourself

- This is the **GREATEST COMMANDMENT**, to love God and to love others.
- For Catholics this means everyone we know and even those we don't.
- This means that Catholics need to be concerned about those in other countries who bear the brunt of the most devastating effects of a climate change through floods, storms and drought.

Universal destination of goods

- Do we ever really own possessions, or is it more likely that we own them for a time before they become somebody else's when we recycle them or give them away?
- The Catholic Church sees the earth in this way – the current generation does not own it. They are looking after it to pass on to future generations.
- A refusal to look after the planet is stealing from future generations.

Knowledge Check

- Define the key concept: Stewardship
- What are Catholic Christian beliefs about humans and their relationship with creation?
- Why do Catholic Christians believe humans must rule and protect the world?
- What is meant by the term 'dominion'?
- What is meant by the term 'the common good'?
- What is meant by 'universal destination of goods'?
- What is an encyclical?
- What does Pope Francis highlight in Laudato Si?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the importance of stewardship in Christianity [8]

There is no God!

HUMANISM AND THE ENVIRONMENT



1 Good WITHOUT God

Most humanists agree with the idea of stewardship and see the world as beautiful and valuable.

They believe that:

1. More should be done to preserve habitats and species because if they are lost then we may be damaging ourselves without realising it.
2. We should care about the future of our planet because we should care about other human beings, even those not born yet.

What makes humanists different to Catholics or other religions:

They seek to live a good life because they believe it is the ONLY LIFE WE HAVE.

Whereas, Catholics look after the earth because they believe that it is what God wishes.



Speciesism and

Peter Singer

'Speciesism' is the idea that being human is a good enough reason for human animals to have greater moral rights than non-human animals. Peter Singer believes this is WRONG.

Humanists have much in common with Catholics with respect to their concerns about the environment and the future of the planet. **However, there are three main ways that their views would DIFFER from that of a Catholic**



2 Population Control



Humanists see population growth and overcrowding of the planet as a major threat to life on earth.

They recognise that a growing population increases the demand for food, water, shelter and fuel as well as more material possessions and wealth.

1. DEMAND FOR THE EARTH'S RESOURCES can increase tension and even lead to war which then threatens the happiness and safety of humans
2. BIRTH CONTROL PROGRAMMES are an option to limit population growth. (This is contrary to the Catholic view which holds that God wants humans to flourish and multiply, as seen in Genesis.)

We are running out of resources!!!



3 Speciesism

This is the view that humans are prejudiced in favour of their own species and that we discriminate against animals because we believe that being humans sets us above other animals. Increasingly humanists see this view as WRONG, in the same way that racism or sexism is wrong.

A famous humanist who takes this view is Peter Singer.



For example:

a humanist might ask us to consider a bee

Bees are threatened globally and in many areas their numbers are declining alarmingly. **It is estimated that a third of all the food we eat, such as fruit and vegetables, have been pollinated by bees.**

If this is the case, are humans really superior to bees, or are we reliant on them for our food source?

Treating animals equally and our future survival

One reason a humanist would give for treating animals equally is that it makes sense to us as humans for our **FUTURE SURVIVAL.**

Other humanists might go further and say that animals have **EQUAL RIGHTS TO HUMANS.**

This is contrary to Catholic views which hold that HUMANS ARE SPECIAL AND HOLY because of the way they were created by God, in his image, as described in Genesis.

Knowledge Check



1. Are humanists theists or atheists?
2. Define the key concept: Stewardship
3. Humanists believe that there can be 'good without God'. What does this mean?
4. Humanists see population growth and overcrowding of the planet as a major threat to life on earth. **Why is this?**
5. What do humanists suggest we do to solve/lessen this problem?
6. What is meant by speciesism?
7. How might humanists use the example of the bee?
8. Some humanists suggest that animals should have equal rights to humans. What is the Catholic response to this?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain humanist views on caring for the environment [8]

Stewardship Summary

- Christians believe the earth belongs to God, not humans
- The two accounts of creation in Genesis 1 and 2 show different aspects of God
- Humans should act as good stewards of the earth to preserve God's gift for future generations
- Humanists also believe that humans should respect and protect the planet, though they do not accept the concept of being a steward for God
- Jews also believe in the importance of respecting and protecting the planet for God and for the benefits of future generations



MICHELANGELO: CREATION OF ADAM

Adam



Genesis
Young
Handsome
Strong
Not fully alive
Resembles God
Imago Dei

- Adam is seen on the left of the painting, lying back on the earth from which he has been formed, as described in Genesis
- He is portrayed as a perfect human being: young, handsome and strong. This reflects the Catholic belief that everything that God created was good.
- The youthfulness of Adam is a reminder that in comparison to God, humanity and the earth itself are new.
- Adam appears quite a laid back figure, his arm resting on his knee, barely reaching out to God, suggesting that he is not fully alive yet. This symbolises that humans need God to give them life.
- Adam resembles God. He has the same physical build, is striking a similar pose and details such as the arms, shoulders and feet are almost identical.
- **All this is a reminder that humans are made in the image of God: imago Dei.**

Michelangelo has expressed Catholic beliefs about creation, God and human beings in his Creation of Adam, by including allusions to the idea that God is the **ETERNAL, ALL-POWERFUL, Creator EX NIHILO**, that creation is good, and that humans are God's greatest creation.

The Creation of Adam is one of the nine scenes painting on the ceiling of the Sistine Chapel in Rome. The scenes depict stories from Genesis. The Sistine Chapel is important for Catholic Christians. It is part of the Vatican (the centre of the Catholic world) and is also the place that new popes are chosen.



God



Dynamic
Active
Hard at work
Older being
Bearded
Strong
Eternal
Omnipotent
Ex nihilo
Parent-child relationship

- Unlike Adam, God is presented as a **dynamic, active figure** as if he is hard at work at his greatest creation.
- God reaches out to the more passive figure of Adam because he loves him, reflecting the Christian belief that God creates the world.
- Michelangelo's God is portrayed as a much older being; bearded yet strong and powerful in his body.
- The difference in age between Adam and God signifies the parent-child relationship that exists between God and humanity; indeed God is the Father of all Creation.
- **The viewer is reminded of the belief that God is ETERNAL and OMNIPOTENT; he is responsible for all of creation which he made from nothing, because nothing existed before God.**



The Cloud



- The shape behind God that shows him being carried towards earth by a group of angels has caused much debate.
- On a simple level this detail shows the **TRANSCENDENCE** of God and conveys his greatness in sharp contrast to the earth bound figure of Adam.
- Some believe the cloud resembles the Brain and that the message being expressed is that **GOD IS THE SOURCE OF ALL KNOWLEDGE AND WISDOM** – he is **OMNISCIENT**.
- Others believe that the cloud represents a womb because of the red background.
- Furthermore, the green cloth hanging down could be the umbilical cord. This interpretation of the cloud reinforces the idea that **GOD GIVES LIFE**, in the same way the womb gives life to a new child. God is the Father of all humanity, who are his loving children.
- The **FEMALE FIGURE** under the arm of God seems to be an important figure because: a) he has his arm round her, and b) she in turn has her arm around a child.
- Some believe the figure represents Eve who has not yet been created for Adam, but is already in the mind of God.
- If this is true then it is reinforcing the great love that God has for humanity because he does not want to be lonely but to experience the gift of love (God creates Eve as a 'companion' for Adam).
- Others believe that the figure is the Virgin Mary, and the child on her left is her son Jesus. Those who take this view describe Mary as the 'new Eve' and Jesus as the 'new Adam'. Michelangelo may be expressing the idea that Adam will soon sin and that Jesus will come in the future to bring humans back to God.

TWO ELEMENTS of the cloud-like shape have **PROVOKED MUCH DISCUSSION**:

1. What does the shape of the cloud represent?
2. Who is the female looking figure under the left arm of God?

Debate
Transcendence
Brain:
Knowledge,
Wisdom
Womb: God
gives life
Umbilical Cord:
God gives life
Female Figure:
Eve/Virgin Mary
'New Eve'

The Hands



Reaching to
touch
Close
Loving
Spark of Life
Life is sacred
Life is a gift
Genesis 2:
God breathes
life



This painting is displayed on the ceiling of the Sistine Chapel

- Adam and God are shown reaching out to touch each other with their fingertips.
- Not to be overlooked in the painting is that there appears to be a close, loving relationship between God and man.
- The touch of fingertips represents the spark of life given to all humans by God – human life is sacred and a gift from God.
- In the painting Adam's fingertips are bent, signaling that they have **NOT YET RECEIVED LIFE** from God in order to straighten them.
- **The viewer is reminded here of the second account in Genesis where God breathes life into Adam.**

Knowledge Check

1. Where is this painting displayed?
2. The painting expresses different ideas about the nature of God, such as the idea that He created *ex nihilo*. What else does it suggest?
3. How is Adam portrayed in this image?
4. How is God portrayed in this image?
5. What does the difference in age between Adam and God signify?
6. Two elements of the cloud-like shape have provoked much discussion. What are they?
7. Two key figures in the Church have been suggested for the female figure under the left arm of God. Who are they?
8. What does the image of the hands remind the viewer of?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

Exam Question

b) Describe how Michelangelo's 'Creation of Adam' demonstrates Catholic belief in God as creator [5]

b) Describe how Michelangelo's 'Creation of Adam' demonstrates Catholic belief in the nature of the relationship between God and humanity [5]

Who? Masolino da Panicale



What? The central image is one of Christ on the cross, but an interesting feature of this piece of art is that there are many other symbolic images surrounding the main frame.



When? Twelfth Century.



Where? San Clemente church in Rome

To depict the following:

1. God is the first and the last.
2. The battle against evil is won by the Cross of Christ.
3. Jesus sacrificed himself to save humankind.
4. The importance of peace for a Christian.
5. The importance of the four Gospels as a means to hear Jesus' word.

Why?



The Alpha & Omega

- **Alpha and Omega** - the first and last letters of the Greek alphabet. This is used to symbolise the belief that God is the beginning and the end of all that can be seen and all that can't.
- In the book of Revelation, the Greek letters Alpha and Omega are used several times to symbolise Christ.
- They are the first and last letters of the Greek alphabet which expresses the idea of something being complete.
- In the book of Revelation, God speaks of himself as the Alpha and Omega.
- From early Christian times Alpha and Omega were used to refer to Jesus.
- We are therefore being reminded that Jesus is eternal, because he is God!

Chi-Rho

- This symbol is frequently used in Catholic Churches today on baptismal candles and the priest's vestments (their clothing).
- The symbol looks like the letters X and P which are the first two letters of the word Christ in Greek.
- With the use of both of these symbols the artist is emphasising the importance of Christ.

TREE OF LIFE APSE MOSAIC



What is a mosaic?

It is a picture or pattern produced by arranging together small pieces of stone, tile, glass, etc.

What is an apse?

An area with curved walls and a domed roof at the end of a church.

Areas to Discuss

1. The Alpha & Omega
2. Chi-Rho
3. The twelve apostles
4. The lamb
5. The doves
6. The four evangelists
7. The cross
8. The tree of life
9. The Vine

Knowledge Check

1. Who painted the Tree of Life?
2. What is the purpose of the painting? (What key ideas does it convey?)
3. Where is the painting displayed?
4. What is an apse?
5. What is a mosaic?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

Exam Question

c) Explain the rich Christian symbolism that you will find in the Tree Of Life Apse mosaic. [8]

The Lamb



- At the bottom of the cross there are 12 lambs who are pointing towards a thirteenth lamb at the centre of the picture directly under the cross.
- *This central lamb has a halo and is representing Christ, whom Christians refer to as the 'Lamb of God'.*
- In the story of the Passover in the Old Testament book of Exodus, a lamb was sacrificed and its blood put on the doorposts of the homes of the Israelites.
- The angel of death 'passed over' these houses and instead killed the first born sons of the Egyptians. The event is celebrated by Jews every year in the feast of the Passover. The Israelites had been saved from their slavery.
- *Jesus is described as the 'Lamb of God' because his death saved humanity from their sin and death.* just like the sacrificed lamb had saved the Israelites. It is, therefore, fitting that this sacrificed lamb is placed under the cross in the mosaic.

The Twelve Apostles

- There is reference made to the twelve Apostles who were specially chosen by Jesus to continue to spread the Good News once he had left them.
- The apostles also lived a sacrificial life; they gave up their homes and families to follow Jesus and spread the word after his death. St Peter quite literally lost his life - he was executed in Rome. This is why they are also depicted as lambs.



The Doves

- The twelve doves on the cross not only represent the twelve apostles but also the Holy Spirit.
- The Holy Spirit is often depicted as a dove.
- The Holy Spirit came to the apostles at Pentecost, and filled them with courage and they began to spread the word.
- This is often described as the 'Birthday of the Church' because without this event Christianity might not have spread.



The four evangelists

- The four evangelists (Matthew, Mark, Luke and John) appear throughout the scene. They are the authors of the four Gospels of the New Testament. They tell us about Jesus' life and were instrumental in spreading the Good News.
- They appear at the top of the mosaic, next to the image of a living, risen Jesus.

The Vine

- One of the most predominant features, apart from the cross itself, is the green vine that wraps around the entire scene and emerges from the tree of life.
- This is another reminder of the Garden of Eden and the green paradise God created for all humanity.
- The vine can also represent Christ himself who, in John's gospel said, 'I am the vine' (John 15:5).
- The vine is labelled as the Church by an inscription along the band just above the sheep: **'We have likened the Church of Christ to this vine; the Law made it wither but the Cross made it bloom.'**

The Cross

- Christian art often focuses on the suffering and death of Jesus but **THIS IMAGE IS DIFFERENT.**
- Jesus is placed on a black cross but this **EMPHASISES THE BRIGHTNESS OF THE FIGURE** against it. Jesus' sacrifice is about life and hope, not death and despair.
- The cross is a complete crucifixion scene with Mary and St John present either side of the cross, but this symbolic creation goes far beyond just depicting the death of Jesus.
- The hand of God the Father can be seen at the top of the cross reaching down to earth from heaven handing a crown to Christ. This symbolises how the **TRANSCENDANT God** become an **IMMANENT God** (in the person of Jesus).

The Tree of Life

- The cross emerges from a tree at its base. This is considered to be the tree of life.
- The image is, therefore, a reminder that all people are saved through the crucifixion of Jesus; his death 'healed the nations' because he came not just for Jews but for everyone.
- Through his death all sins are forgiven and humans can look forward to life after death with God.
- There are also lots of references to Genesis in the image; the tree at the base of the cross is perhaps a reminder of the tree of knowledge of good and evil in the garden of Eden. Adam and Eve eating the fruit from this tree against the wishes of God was the **FIRST SIN OF HUMANITY.**
- The presence of the serpent wrapped around a fawn this is drinking from the rivers of life seems to confirm the link, as a serpent tempted Eve to taste the fruit.
- The message is that sin ruins life on earth as well as the relationship between God and humans.

PEACE & JUSTICE

People experience a lack of peace in their lives in different ways, for example:

Lack of Peace: War and Conflict

- People who live in places of war and conflict often lose their homes, jobs, their chance at education
- Many become refugees because they are running away to try and find somewhere peaceful and safe to live
- Wars also cost people their lives and health, and many will be maimed due to violence or suffer from conditions such as post-traumatic stress disorder

Lack of Peace: Personal Conflict

Many people suffer from their own personal traumas caused by a range of factors including: bullying, racial hate crime, anxiety, depression, fear and mental health issues

This can lead to people being too scared to go to school or work, personal attacks, mental breakdowns or even suicides

Lack of Peace: In Families

There can be tension and conflict within families due to the pressures of life, for example:

- Money worries
- Abuse of drugs and alcohol
- Effects of adultery which sometimes result in separation and divorce

These situations bring about much heartache and pain for everyone involved.

Equality for all

It is estimated that every second of every day four more babies are born across the world. The question is, are they all born equal? Sadly, the answer to this is 'no.'

Babies are born every day into poverty, war, neglect and even slavery. Very soon after birth, the future for these children begins to look very different. Whereas some will be happy, safe, warm and well looked after, others will face a lack of peace due to fear, disease, injustice and death. This situation is seen as unacceptable for Catholics, as every human being is equally important to God. Therefore, every effort must be made to ensure that everyone, no matter where they are born, experiences peace and is treated justly.



The Universal Declaration of Human Rights

This is an international document that states basic rights and fundamental freedoms which all humans should have.

The declaration contains **30 'articles' that state the rights that all humans should have.**

They include the right to:

- ✓ Life, freedom and personal safety
- ✓ A standard of living that ensures good health and well-being, including access to food, clothing, housing and medical care and social services
- ✓ An education, employment and leisure time
- ✓ Freedom of movement and residence in their own country, the right to seek and experience asylum from persecution in other countries

All 30 articles are based on the first:

All human beings are born free and equal in dignity and rights.

They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood.

- ✓ All countries are **legally required** to uphold the United Nations Universal Declaration of Human Rights and have **formally agreed to do so.**
- ✓ When any of these articles have been **denied** other countries and international organisations will **intervene** and try and **restore** these basic human rights. They do this because they aspire to **social justice for everyone** in society.

For many Christians, the UN declaration reflects the main principles of Christianity and what 'Loving your neighbour' looks like in practice.

What is social justice?

It is the desire to achieve a **JUST AND FAIR SOCIETY** where everyone, regardless of their sex, age, race, religion or country of origin has **ACCESS TO THE SAME BASIC PROVISIONS** to live and can look forward to **EQUAL OPPORTUNITIES AND HUMAN RIGHTS.**

The Catholic Church Peace, Justice & Reconciliation

The Catholic Church emphasises the importance of peace and reminds all people that they have a Christian duty to promote it. Peace begins with individuals.

At every Catholic Mass, churchgoers are reminded of this as they give each other the sign of peace and say the words 'peace be with you'. This means they have to think about the relationships with others and how they treat them.

Popes over the centuries have called for peace:

Pope Francis: "Every human being desires communion and peace. Everyone needs peaceful co-existence. But this can grow only when we also build inner peace in our heart."

Pope Benedict XVI – "Finally, I wish to make an urgent appeal to the People of God: let every Christian be committed to tireless peace-making and strenuous defence of the dignity of the human person and his inalienable rights." - (Message of His Holiness Pope Benedict XVI for the celebration of the world day of peace)

Pope John XXIII – "There will be no peace in the world until we return to a sense of our dignity as creatures and children of God."

Pope Francis has spoken on the matter, calling war a 'madness' than 'ruins the most beautiful work of his (God's) hands; human beings.'

Every week when Pope Francis appears at St Peter's to lead the people in prayer, he mentions ongoing conflicts and asks those gathered to pray for peace.

The pope leads by example; the Vatican provided homes for two refugee families recently and he called for all parishes to host a family.

There are many Catholic organisations that have been influenced by the Church's calls for peace, such as Pax Christi and the Justice and Peace Commission.

Knowledge Check

1. How many 'articles' does the *Universal Declaration of Human Rights* contain?
2. What is the first of these articles?
3. What are the three main ways people experience a lack of peace?
4. What can cause conflict in families?
5. What is social justice?
6. What does Pax Christi translate to?
7. What does Pax Christi work for?
8. What does the Catholic Church say in regards to peace, justice and reconciliation?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe Catholic belief in the notion of peace, justice and reconciliation [5]

PAX CHRISTI:
(The Peace of Christ)

The work of **Pax Christi – the Peace of Christ** – is based on the gospel and inspired by faith. Our vision is of a world where people can live in peace, without fear of violence in any form. Pax Christi is rooted in Catholic Christianity but is open to all who share its values and work.

- Pax Christi works for:**
- **Peace** – based on justice. A world where human rights are respected, basic needs are met and people feel safe and valued in their communities.
 - **Reconciliation** – a process which begins when people try to mend relationships – between individuals or whole countries after times of violence or dispute.
 - **Nonviolence** – a way of living and making choices that respects others, challenges what is not fair or just, and offers alternatives to violence and war.





CATHOLIC SOCIAL TEACHING (CST)



Summary

What is Catholic Social Teaching?

Over the centuries many popes have spoken out about the social issues of their day and have reflected on God's word in the scriptures.

They have often chosen to do this through various encyclicals, and these have become known as Catholic Social Teaching.

The first modern instance of this was in 1891, when Pope Leo XIII spoke out in favour of oppressed factory workers.



Working for Justice

There can't be true peace in the world unless there is justice first. The reason for this is that a lack of peace is usually caused by some form of injustice.

Many people in our world today have their human rights abused and they are not treated with dignity and respect. Consequently the Catholic Church calls on believers to challenge these situations in the world and to not rest until all of God's children experience peace and justice and every type of discrimination is eliminated.



Working for Reconciliation

When people are faced with unjust situations, they can understandably become angry with the way they have been treated and this can lead to an attempt to get revenge, as well as violence and conflict.

Christians argue that sometimes **anger is justified if it is directed towards tackling injustice** – this is often known as righteous indignation or anger. Jesus himself got angry in the temple and overturned the tables when he found that the sellers there were cheating the poor.

How can Catholics help to bring about peace, justice and reconciliation?

Catholic Social Teaching asks everyone to treat other people with dignity and to take action when needed by:

- ✓ Upholding the rights of individuals
- ✓ Standing in solidarity alongside those who are oppressed and treated unjustly
- ✓ Caring for and respecting the planet and the environment
- ✓ Praying for justice and peace for all

The Second Vatican Council: *Gaudium et Spes*

During the Second Vatican Council in the 1960s the Church published an influential document called 'Gaudium et Spes'. **This reflected on the ROLE OF THE CHURCH IN THE MODERN WORLD.** The document **drew on the CREATION ACCOUNTS IN GENESIS** which outline how humans have been created in the image and likeness of God, *imago Dei*. This belief (*imago Dei*) is at the heart of Catholic Social Teaching! Since humans are made in the image of God they are all God's children, sacred and holy, and possess special dignity. The Church, therefore, calls on people to not rest until there is equality for all.



CST is about speaking out against social injustices

Gaudium et Spes 29

Since all men possess a rational soul and are created in God's likeness, since they have the same nature and origin, have been redeemed by Christ and enjoy the same divine calling and destiny, the basic equality of all must receive increasingly greater recognition... **with respect to the fundamental rights of the person, every type of discrimination, whether social or cultural, whether based on sex, race, color, social condition, language or religion, is to be overcome and eradicated as contrary to God's intent. For in truth it must still be regretted that fundamental personal rights are still not being universally honored...** Therefore, although rightful differences exist between men, the equal dignity of persons demands that a more humane and just condition of life be brought about... **Human institutions, both private and public, must labor to minister to the dignity and purpose of man.** At the same time let them put up a stubborn fight against any kind of slavery, whether social or political, and **safeguard the basic rights of man under every political system.**



Imago Dei is at the heart of CST

GAUDIUM ET SPES = JOY AND HOPE



"...peace is likewise the fruit of love, which goes beyond what justice can provide."

Gaudium et Spes 78

Peace is not merely the absence of war; nor can it be reduced solely to the maintenance of a balance of power between enemies; nor is it brought about by dictatorship. Instead, it is rightly and appropriately called **an enterprise of justice.** Peace results from that order structured into human society by its divine Founder, and actualized by men as they thirst after ever greater justice. The common good of humanity finds its ultimate meaning in the eternal law... **peace on earth cannot be obtained unless personal well-being is safeguarded and men freely and trustingly share with one another the riches of their inner spirits and their talents.** A firm determination to **respect other men and peoples and their dignity,** as well as the studied practice of brotherhood are absolutely necessary for the establishment of peace. **Hence peace is likewise the fruit of love, which goes beyond what justice can provide.**

- Over the centuries the Church has spoken out about issues of social justice
- Since all humans are made in God's image, the Catholic Church calls on people to not rest until equality and justice for all is achieved
- The Catholic Church calls people of all faiths to listen to each other, respect differences and recognise their shared values
- Catholics are active members of inter-faith committees and organisations
- CAFOD and the SVP are showing God's love to the world in their work with the poor and vulnerable. Their work is based on the idea that all humans deserve respect and dignity because they are made *imago Dei*, that Jesus taught the importance of love of your neighbour and that the world is a gift from God that we care for on a temporary basis

Knowledge Check



1. What is Catholic Social Teaching?
2. What does the Catholic Church say about justice?
3. What does the Catholic Church say about reconciliation?
4. What does the Latin term *Gaudium et Spes* translate to?
5. How can Catholics help to bring about peace, justice and reconciliation?
6. When was the Second Vatican Council held?
7. What is the main message in *Gaudium et Spes 29*?
8. What is the main message in *Gaudium et Spes 78*?

Choose a Task



1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question



c) Explain how Catholics can help to bring about peace, justice and reconciliation [8]



INTER-FAITH DIALOGUE



What is inter-faith dialogue?

In this context, 'dialogue' means co-operative, constructive and positive engagement between people of different faiths and people of no faith such as humanists and atheists.

Inter-path Dialogue

This term has become more common, and is favoured by some humanists, atheists and agnostics because this term does not exclude them.



Benefits of Multi-faith societies

Different religious cultures and traditions bring with them a variety of...



By living and working alongside those from other religious backgrounds we can gain greater tolerance, respect and understanding towards those who have a different viewpoint to us. This leads to harmony and a safe, happy society.

Promoting Community Cohesion

- ✓ The aim of community cohesion is to establish a better society where all groups feel that they belong and can live peacefully together
- ✓ To achieve community cohesion requires all those involved to: listen to each other, respect differences, recognise common features between faiths and promote shared values of tolerance and respect
- ✓ Over the last few decades there have been many initiatives involving religious groups promoting community cohesion
- ✓ This includes the Inter Faith Network, the Forum of Faiths, the Council of Christians and Jews and the Muslim Council of Britain



Referendum on the United Kingdom's membership of the European Union

Vote only once by putting a cross (X) in the box next to your choice

Should the United Kingdom remain a member of the European Union or leave the European Union?

Remain a member of the European Union

Leave the European Union

The European Union (EU) is a political and economic union of 28 member states, set up after World War 2 with the purpose of promoting peace on the continent.

There are many reasons why some people wanted to leave the EU. For example: fears of immigration and lack of control over the way the EU was governed.

Pope Francis Maundy Thursday and the Washing of the Feet



On 13 March 2013, Argentinian Jorge Mario Bergoglio became Pope Francis, the 266th leader of the Catholic Church, the first non-European pope since the eighth century, the first from the Americas and in fact the first from the southern hemisphere.

He gained a reputation for breaking convention, preferring to live in a guesthouse in the Vatican rather than the papal apartments and choosing to travel on public transport.



The actions of Pope Francis in his first days as Pope sends a clear message out to the world that all people are called to serve, inspired by the great command Jesus gave to 'love one another'. This call extends to people from every walk of life regardless of gender, faith or standing in society.

Young Offenders Institute

Eighteen days after becoming Pope he made headlines again as he entered a young offenders' institute in Rome on Maundy Thursday to wash the feet of ten young men and two women at the Mass of the Lord's Supper. He knelt before them and washed, dried and kissed their feet in a symbolic act of service. Eight of the 12 were Catholic; two were Muslim; one was Orthodox; and one was Buddhist.

Before washing the feet of 12 prisoners, Pope Francis told them and hundreds of inmates to remember that Jesus constantly stands before them with love, ready to cleanse their sins and forgive them.

"Jesus takes a risk on each of us. Know this: Jesus is called Jesus, not Pontius Pilate. Jesus does not know how to wash his hands of us; he only knows how to take a risk on us," the pope said on March 29 during his homily at Rome's Regina Coeli prison.

What was the reaction to this event?

What surprised the world's press and many onlookers was not just that he chose a prison to celebrate Mass in, but that he washed the feet of inmates of different nationalities and faiths, including at least two Muslims. Why did the Pope's actions cause such surprise? Certainly, the notion that the pope would enter a prison to perform the service would challenge some - they might question whether this was a suitable place for the pope to be. However, his actions were a powerful reminder of the first Mass where Jesus performed this same action on the twelve Apostles, who were equally surprised by his actions and did not feel worthy enough to receive this sign of love.

What was his Message?

Pope Francis reminded those gathered that the person who is most high among them must be at the service of others and that they were all called to help one another. He explained that he performed this act of service out of love for them.

On another level, the Pope's actions surprised many because included among those whose feet he washed were young people from other faiths.

The Catholic Church and inter-faith dialogue

Although Pope Francis' actions on his first Maundy Thursday as Head of the Catholic Church may have surprised some, they should not have done so.

Recent popes have had much to say about the need for understanding, tolerance and respect between the different faith groups and Catholics play an active role on many inter-faith committees.

Pope Benedict XVI

"Together with all people of good will, we aspire to peace. That is why I insist once again: interreligious and intercultural research and dialogue are not an option but a vital need for our time."



NOSTRA AETATE

Pope Paul VI

Latin: In Our Time

This document was a declaration on the relationship of the Catholic Church to non-Christian religions.



Nostra Aetate (1960s)

"The Church regards with esteem also the Muslims. They adore the one God, living and subsisting in Himself, merciful and all-powerful, the Creator of heaven and earth, who has spoken to men... We cannot truly call on God, the Father of all, if we refuse to treat in a brotherly way any man, created as he is in the image of God."



Nostra Aetate (1960s)

One very important statement that this document made was that Jews should not be blamed for the death of Christ.

Over the centuries and even today, many Jews experienced prejudice and persecution, which is partly fuelled by the belief of some that they should be held accountable for the death of Jesus on the cross.



John 13

"Do you understand what I have done for you?" Jesus asked them.¹³ "You call me 'Teacher' and 'Lord,' and rightly so, for that is what I am."¹⁴ Now that I, your Lord and Teacher, have washed your feet, you also should wash one another's feet.¹⁵ I have set you an example that you should do as I have done for you.¹⁶ Very truly I tell you, no servant is greater than his master, nor is a messenger greater than the one who sent him.¹⁷ Now that you know these things, you will be blessed if you do them.

The Task of Slaves

In his brief homily before the foot-washing ritual, Pope Francis explained to the prisoners that in Jesus' day, the job of washing feet was the task of a slave. "There wasn't asphalt or cobblestones, there was dust and people's feet got dirty," so before they went into a house, the slaves would wash the person's feet. The Gospel recounts Jesus washing the feet of his own disciples "to give us an example of how we must serve one another," the Pope said.

Knowledge Check

1. What is the difference between inter-faith dialogue and inter-path dialogue?
2. What are the benefits of multi-faith societies?
3. What are the challenges of multi-faith societies?
4. Why was the European Union (EU) established?
5. What has Pope Francis gained a reputation for?
6. What did Pope Francis do on Maundy Thursday that surprised many?
7. Why did Pope Francis do this? (What was his message?)
8. What does *Nostra Aetate* declare?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe how the Catholic Church work to promote community cohesion (5 marks)

THE WORK OF CATHOLIC CHARITIES

1.3 billion people around the world live in absolute poverty, which means they live on **LESS THAN £1** a day



Around 22,000 children die every day due to the effects of poverty; hunger, lack of sanitation and access to clean water



1.1 billion in developing countries don't have access to clean water



1.6 billion live without electricity



Infectious diseases that can easily be cured, such as malaria, cause the death of 1.8 million children each year



In the UK, in a classroom of 30 children, 9 are living in poverty

Pope Francis, June 2016

'Poverty has a face! It has the face of a child; it has the face of a family; it has the face of people, young and old. It has the face of widespread unemployment and lack of opportunity. It has the face of forced migrations, and of empty or destroyed homes.'

Matthew's Gospel

Jesus said:

'feed the hungry, care for the sick, welcome the stranger.'

'Whatever you do for the least of my brothers and sisters, you do for me.'

Gaudium et Spes 29

'Feed the people dying of hunger, because if you do not feed them you are killing them.'

The Final Judgement (also known as the Parable of the Sheep and Goats) Matthew 25:31-46



SHEEP



31 "When the Son of Man comes as King and all the angels with him, he will sit on his royal throne, and the people of all the nations will be gathered before him. Then he will divide them into two groups, just as a shepherd separates the sheep from the goats. 32 He will put the righteous people at his right and the others at his left. 33 Then the King will say to the people on his right, 'Come, you that are blessed by my Father! Come and possess the kingdom which has been prepared for you ever since the creation of the world. 34 I was hungry and you fed me, thirsty and you gave me a drink, I was a stranger and you received me in your homes, 35 naked and you clothed me; I was sick and you took care of me, in prison and you visited me.' 37 The righteous will then answer him, 'When, Lord, did we ever see you hungry and feed you, or thirsty and give you a drink? 38 When did we ever see you a stranger and welcome you in our homes, or naked and clothe you? 39 When did we ever see you sick or in prison, and visit you?' 40 The King will reply, 'I tell you, whenever you did this for one of the least important of these followers of mine, you did it for me!'

41 "Then he will say to those on his left, 'Away from me, you that are under God's curse! Away to the eternal fire which has been prepared for the Devil and his angels! 42 I was hungry but you would not feed me, thirsty but you would not give me a drink, 43 I was a stranger but you would not welcome me in your homes, naked but you would not clothe me; I was sick and in prison but you would not take care of me.' 44 Then they will answer him, 'When, Lord, did we ever see you hungry or thirsty or a stranger or naked or sick or in prison, and we would not help you?' 45 The King will reply, 'I tell you, whenever you refused to help one of these least important ones, you refused to help me.' 46 These, then, will be sent off to eternal punishment, but the righteous will go to eternal life."

Key Teachings in the Parable of the Sheep and Goats

- ✓ At the end of the world God will judge people on their behaviour and the choices they have made.
- ✓ God will separate the good from the bad like a shepherd separates the sheep from the goats.
- ✓ On his right will be the GOOD (sheep). They will be with him in heaven.
- ✓ On his left will be the bad (goats). They will be sent away from him to hell.
- ✓ God judges us on how we treat our fellow humans, as we are all created in His image.

"The preferential option for the poor"

- The Catholic Church teaches that Catholics have a duty to **work against the forces in society that create poverty**
- This duty comes before many other acts of Christian love and service that a Catholic might perform because the Church asks its followers to **put the poorest and most vulnerable people first**
- This is what the perm 'preferential option for the poor' means.



The National association of prison visitors

They visit those who do not normally receive domestic visits, but we also visit those who wish to have someone independent. Inmates' families may live abroad, far away in this country.



Amnesty International
Working to protect human rights.



The Red Cross
Helps people in crisis wherever, wherever they are



International medical organisation
working in nearly 70 countries



St John's Ambulance teach as many people first aid as possible so they can be the difference between a life lost and a life saved.



The Women's refuge helps to look after women and children who have been the victims of domestic abuse



GOATS

What is a parable?

A parable is a story with a meaning. There are many parables in the New Testament section of the Bible. Jesus used parables to help teach about complicated ideas using simple stories.

Why sheep and goats?

Sheep are reliant on the guidance of a shepherd (we are the sheep and Jesus/God is our shepherd), whereas Goats are stubborn and self reliant. They will eat anything and so are seen as dirty.

Knowledge Check

1. According to recent statistics, how many people around the world live on less than £1 a day?
2. What is a parable?
3. What did the sheep do in the parable of the Sheep and Goats?
4. How are the sheep rewarded?
5. What can Christians learn from this parable?
6. What is meant by the "preferential option for the poor"?
7. What does *Gaudium et Spes 29* say about our responsibility for feeding the hungry?
8. Who are *Amnesty International*?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the teachings found in the parable of the sheep and goats [8]



ST VINCENT DE PAUL (SVP)



The SVP takes its inspiration from Christ's message to *'love our neighbour as ourselves'*. They do this by:

Visiting and befriending individuals and

families at home, in hospitals or hospices, residential homes and young offender institutes.

The aim of the visits is to show they care and ensure that people who are vulnerable don't feel lonely or isolated.



Contributing to protecting the environment by

encouraging people to **donate pieces of furniture**, instead of throwing them away, so they can be repaired and recycled and redistributed to those who need them



Visitors may also **help with practical tasks**

such as shopping, gardening or filling out official forms.



Being **alert to the changing needs of**

the communities they serve



Being **generous** with their time, possessions

and selves in the service of others



Organising **soup runs** in disadvantaged

areas, providing warm drink, food and

companionship



Showing **compassion** to those they work with

by not judging them



Running **support centres** providing a

range of services such as counselling, training in basic literacy and numeracy and debt advice



The St Vincent de Paul society, commonly known as the SVP, was founded by **Blessed Fredric Ozanam in Paris in 1833**. Blessed Fredric Ozanam was inspired by St Vincent de Paul, a Catholic priest who dedicated his life to helping the poor. Active involvement with the poor is the Vincentian way and their aim is to tackle poverty and disadvantage by providing practical assistance to those who are suffering in whatever form.



Mini Vinnies

'Mini Vinnies' are children aged between 7 to 11 (or younger) who, with the permission of their parents and the support of their Schools, are encouraged to embark on their first steps as possible 'Vincentians for life'.

As Mini Vinnies, the youngsters have their own 'treasured' Prayer, Pledge and Badge, a dedicated website and a range of bright and colourful documents which guide them in their formative steps - helping and enabling them to become in every sense, young Vincentians - or 'Mini Vinnies'.

SVP National President

Adrian Abel said:

"At the heart of Vincentian Spirituality is serving Christ in the poor, and being Christ to the poor as part of a family. This is the charisma that the Vincentian family has been built upon, and it has motivated and inspired hundreds of thousands of people to bring Christ's love to those in need. I am delighted to be part of this work and would encourage anyone who feels called to do so, to join us." (2017)

CSP

Community Support Projects (CSP) is the collective term we use to describe all the project work we do in the community.

This includes our Community Shops, Furniture Stores, Advice and Support Centres, Supported Accommodation and our contract with the Home Office to manage and run two local Approved Premises.

SVP members are also involved with holiday camps and the running of local soup runs and food banks.

oxera
compelling economics



£11million per year

Research by Oxera Europe, a leading economics consultancy, estimates that the SVP in England and Wales generates at least £11m per year in economic welfare improvement through its befriending programmes alone.

The Sudan Appeal Funded:

- medical treatment for over 5,000 people
- clean water for 22,000 people in Khartoum
- regular meals for 5,250 children as part of the baby feeding programme
- vocational training for 400 young people in Juba

Knowledge Check



- Where do SVP take its inspiration from?
- Who founded SVP?
- Who was he inspired by and why?
- What do SVP do?
- What is 'Mini Vinnies'?
- What is CSP?
- How much did Oxera Europe predict SVP generates yearly in economic welfare?
- What is meant by the term 'dignity'?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe how the work of the SVP reflects Catholic belief about the dignity of the human being [5]

Human Dignity

A founding principle of the SVP society is that they

RESPECT THE DIGNITY OF EACH PERSON they work with because they believe that they are all **EQUAL**.



Although the SVP is a Catholic organisation, it is **non-discriminatory** and helps those in need **regardless** of their colour, race, faith, status or sexual orientation. The kind of people they help includes the homeless, single parent families, the socially isolated and asylum seekers.

Dignity: Being worthy of honour or respect



CAFOD



CAFOD is the official agency for the Catholic Church in England and Wales. It is a member of Caritas International, a group of over 160 Catholic agencies from around the world who are known as 'the helping hand of the Church'.

CAFOD works with local churches and other partners in places like Africa, Latin America and the Middle East, to tackle injustice and poverty.

C Catholic
A Agency
F For
O Overseas
D Development



Educate



CAFOD educate people on the causes of poverty and injustice so that lasting change can be achieved.

CAFOD provides resources for schools and parishes to use to raise awareness of issues as an inspiration for prayer and worship.

Overcome Poverty



CAFOD work with the poorest and most vulnerable communities to bring about sustainable development. They do this by working alongside local partners to plan programmes together.

They fund projects to long-term change in communities such as providing: seeds, tools and machinery for food production, materials to build wells for clean water, education, hospitals, health care programmes and training in skills and advocacy.

Fundraise

CAFOD fundraise in schools and churches to enable them to carry out their projects, helping the poorest and most vulnerable people in the world.

CAFOD organises two Family Fast days a year, which they rely on for much of their income.

Respond



Respond in times of an emergency such as an earthquake, flood, drought or war to save and protect the vulnerable lives of the poor.

CAFOD, along with other aid agencies and local partners including the Church, will provide food, water, shelter and medicine to people who have lost everything so that lives can be saved.

Campaign

CAFOD campaign and challenge those in positions of power, such as governments and businesses, to ensure their policies and practices are just and fair and contribute to alleviating poverty.



Knowledge Check



1. What does CAFOD stand for?
2. What is CAFOD a member of?
3. Who do CAFOD work with?
4. How do CAFOD work to overcome poverty?
5. What do CAFOD campaign for?
6. What is the name of the campaign organised in response to Pope Francis' call to care for 'our common home'?
7. What are the three main goals this campaign works towards?
8. How do CAFOD demonstrate their belief in the intrinsic dignity of every person?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe how the work of CAFOD reflects Catholic belief about the dignity of the human being [5]



The dignity of every person

One of CAFOD's fundamental principles is the belief in the **INTRINSIC DIGNITY** of every person.

Some ways that this belief is demonstrated in their work include:

- ✓ Working with people regardless of their gender, race, religion or political views. Even though CAFOD is a Catholic organisation, they do not limit their work to only helping Catholics.
- ✓ Working alongside those who need help retaining their dignity. People often do not want to rely on others to survive, so CAFOD equips them with skills so that they can support their own families and give something back to their communities.

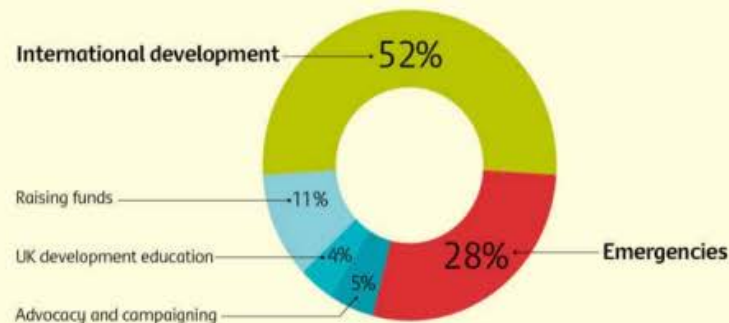
Respecting Creation

At the heart of CAFOD's work is sustainable development – this protects the environment. Poverty and environmental concerns are closely linked.

Their campaign '**One Climate, One World**' was organised in response to the needs of the poorest communities and Pope Francis' call to care for 'our common home'. CAFOD's campaign contributed to a climate deal in Paris (December 2015) which agreed a path towards:

- A low carbon future
- Global temperature increases no greater than two degrees centigrade
- Financial support for poorer countries to cope with the impact of climate change which disproportionately affects them

CAFOD spent **£52,419,000** 2016/17



TWO TYPES OF EVIL

Moral Evil

Evil that is the result of human actions.



Natural Evil

Events that cause suffering but aren't the result of human actions



THE PROBLEM OF EVIL



Firstly, Christians believe God

is **omniscient**

(all-knowing). This means He has knowledge of everything that will happen in the world, including bad things.

The problem of evil is an argument against the existence of God. The argument applies to Christians because they believe in the God of Classical Theism. This means God has certain traits which suggest that, if He exists, there should be no evil in the world.



Thirdly, Christians believe God is

omnipotent (all-powerful). This means He

is able to stop evil from happening if He wishes.



Secondly, they believe God is

omnibenevolent (all-loving). If this

is the case God would care about His creation and not want anything bad to happen to them.

If God has all these characteristics then He has knowledge of evil and the desire and power to stop it. However, evil still exists. Some people argue this shows the Christian God cannot exist.

Knowledge Check

1. What is the problem of evil?
2. What is moral evil?
3. Give three examples of moral evil
4. What is natural evil?
5. Give three examples of natural evil
6. Why might natural evil pose a bigger problem for religious believers and their belief in God?
7. What is suffering caused by?
8. How might natural disasters be a cause of good?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe the difference between moral and natural evil [5]

MORAL EVIL



Bullying



Murder



Theft



Terrorism



Starvation

This is moral if it is the result of a political cause



War



Rape

NATURAL EVIL



Volcano

This is an event caused by plate movements, humans are not involved



Earthquake

This is an event caused by plate movements, humans are not involved



Starvation

This is natural if it is caused by food shortages due to crop failure

IMPORTANT!

Natural evil poses a big problem to religious people. They believe God is the creator of the world. If so, why would he create a world in which things like volcanoes exist and harm many people? Christians cannot explain this with the 'free will' argument (that it is human choice that causes evil and suffering)

David Hume

A Scottish philosopher and atheist of the 18th century. He claimed that The Problem of Evil was **'THE ROCK OF ATHEISM'**. He believed that there was no logical way of explaining how a benevolent God can allow suffering to happen to good people (or even bad).



Ian Brady & Myra Hindley

They were serial killers, murdering five small children. They snatched these children off the street, sexually abused them and tortured them to death. They are infamous for having buried the bodies at Saddleworth Moor.

Human evil and natural evil can often work together, with human evil making natural evil worse – or better! For example, the suffering caused by an earthquake or floods can be made worse by people looting, but it can be made more bearable by people showing compassion and making personal sacrifices to help those who are suffering.

It is important to remember that:

'evil' is a cause of suffering; 'suffering' is a result of evil.

Earthquakes, tsunamis and volcanoes are just some of the deadly hazards we are exposed to on Earth. As well as being dangerous to humans, these events shape our planet and affect where and how we live. Volcanoes are thought to have played an important role in the emergence of life. They enrich soils, making the land around them good places to grow crops. Earthquakes signal the movement of Earth's tectonic plates, which build mountains (including volcanoes). Fault lines are often rich in minerals – for example, gold is found along the San Andreas Fault in California.



Flood



Tsunami



Richard Dawkins

Called **"the most famous atheist of our time"**, Dawkins claims that the randomness of natural evil and disease is **PROOF ENOUGH** that **A GOD CANNOT EXIST!**

GENESIS 3

Original Sin

Now the serpent was more crafty than any of the wild animals the Lord God had made. He said to the woman, "Did God really say, 'You must not eat from any tree in the garden?'"

The woman said to the serpent, "We may eat fruit from the trees in the garden, but **God did say, 'You must not eat fruit from the tree that is in the middle of the garden, and you must not touch it, or you will die.'**"

"**You will not certainly die," the serpent said to the woman. "For God knows that when you eat from it your eyes will be opened, and you will be like God, knowing good and evil."**

When the woman saw that the fruit of the tree was good for food and pleasing to the eye, and also desirable for gaining wisdom, she took some and ate it. She also gave some to her husband, who was with her, and he ate it. **Then the eyes of both of them were opened, and they realized they were naked,** so they sewed fig leaves together and made coverings for themselves.

Then the man and his wife heard the sound of the Lord God as he was walking in the garden in the cool of the day, and they hid from the Lord God among the trees of the garden. **But the Lord God called to the man, "Where are you?"**

He answered, **"I heard you in the garden, and I was afraid because I was naked, so I hid."**

And he said, **"Who told you that you were naked? Have you eaten from the tree that I commanded you not to eat from?"**

The man said, "The woman you put here with me—she gave me some fruit from the tree, and I ate it."

Then the Lord God said to the woman, "What is this you have done?"

The woman said, "The serpent deceived me, and I ate."



Is the story true?

- Many Christians take this story literally and believe that Adam and Eve were real people and their sinfulness introduced all kinds of bad things into the world – including pain, inequality, work and death
- It also affected all the human beings who are descended from them, who no longer have a natural ability to avoid doing evil things. This creates more moral evil
- For many Christians, this is the best explanation for the existence of evil and suffering in the world
- God made a perfect world, but human beings sinned and damaged themselves and the world in which they live, and because of this damage, evil and suffering now exist
- Catholics believe that this story is a description of a real prehistoric event, told through figurative language
- It describes the moment in human history when humans first turned away from God
- It explains why human beings still have a tendency to sin and makes clear that we all share some responsibility for the evil and suffering in the world

And the Lord God commanded the man, "You are free to eat from any tree in the garden, but you must not eat from the tree of the knowledge of good and evil, for when you eat from it you will certainly die."

The Fall...

The story is sometimes called 'the Fall' because it describes the moment when human beings 'fell' from the perfect state in which God had created them.

The disobedience of Adam and Eve is often called 'original sin'. Sin is any wrong action that is against God's plans for human beings.

The Punishments

So the Lord God said to the serpent, "Because you have done this, **Cursed are you above all livestock and all wild animals!**

You will crawl on your belly and you will eat dust all the days of your life.

And I will put enmity between you and the woman, and between your offspring and hers; he will crush your head, and you will strike his heel."

To the woman he said,

"I will make your pains in childbearing very severe; with painful labor you will give birth to children. Your desire will be for your husband, and he will rule over you."

To Adam he said, "Because you listened to your wife and ate fruit from the tree about which I commanded you, 'You must not eat from it,'

Cursed is the ground because of you; through painful toil you will eat food from it all the days of your life.

It will produce thorns and thistles for you, and you will eat the plants of the field.

By the sweat of your brow you will eat your food until you return to the ground, since from it you were taken; **for dust you are and to dust you will return.**

Adam named his wife Eve, because she would become the mother of all the living.



Then the Lord God made garments of skin for Adam and his wife and clothed them. And the Lord God said, **"The man has now become like one of us, knowing good and evil. He must not be allowed to reach out his hand and take also from the tree of life and eat, and live forever."**

So the Lord God banished him from the Garden of Eden to work the ground from which he had been taken.

After he drove the man out, he placed on the east side of the Garden of Eden cherubim and a flaming sword flashing back and forth to guard the way to the tree of life.

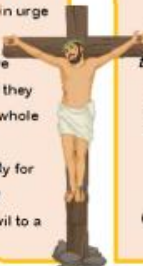


Many people argue that the story is pointless because Science disproves it. Most modern theologians don't think this a good reason to abandon the doctrine of the fall. They believe that although the story is not historically true, it does contain important truths about the state of humanity.

For Catholics, baptism is the point at which they **enter the Catholic Church**. At the service of baptism, water is poured on a baby's head while the priest says: **"I baptise you in the name of the Father, and of the Son and of the Holy Spirit."** The person being baptised becomes part of the family of God. **Baptism takes away original sin (which all humans have inherited through the first sin of Adam and Eve in the Garden of Eden) and gives a new birth in the Holy Spirit.** Catholic families are encouraged to baptise their children soon after birth, however sometimes people are baptised later, or even as adults.

Augustine Christian Doctrine

Original sin is an Augustine Christian doctrine (belief) that says that everyone is born sinful. This means that they are born with a built-in urge to do bad things and to disobey God. Christians believe that when Adam and Eve sinned in Eden and turned away from God they brought sin into the world and turned the whole human race away from God. The doctrine absolves God of responsibility for the evils that make our world imperfect by teaching that Adam and Eve introduced evil to a perfect world when they disobeyed him.



Jesus' Sacrifice

"We believe that our Lord Jesus Christ, by the sacrifice of the cross, redeemed us from original sin and all the personal sins committed by each one of us..."
(Pope Paul VI, 1968)

Knowledge Check

- What is this story often known as? Why?
- How does the serpent convince the woman to eat from the tree?
- How is the serpent punished?
- How is the woman punished?
- How is the man punished?
- Why do you think God clothes Adam and his wife?
- How do Christians 'rid' themselves of original sin?
- How do Christians interpret this story?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe Catholic belief on the origin of evil [5]

c) Explain how fundamentalist and liberal understandings of original sin differ [8]

St Augustine

Enchiridion ('Handbook')



St Augustine wrote a book called the *Enchiridion* (a Latin word which means 'handbook'). In it, Augustine asks himself the question of why there is evil and suffering in the world if God is good and all powerful.

He gives three separate but related answers to the question:

1. Evil helps us appreciate good

Augustine's first answer is that the existence of evil helps people to appreciate the good in the world which otherwise they might not notice. Sometimes we don't appreciate the good things we have until they are not there anymore. Most of us don't appreciate how wonderful being healthy is, until we have the experience of being unwell.

'And in the universe, even that which is called evil, when it is regulated and put in its own place, only enhances our admiration of the good; for we enjoy and value the good more when we compare it to evil.'

St Augustine, *Enchiridion* 3:11

2. Evil is not a thing

Augustine's second answer is that God does not cause or permit evil because evil isn't even a thing. Evil is just the absence of good things. God makes a world full of good things but through our poor choices we sometimes cause those good things to become absent from the world.

Another word for an absence is a 'privation'. When we experience evil and suffering we are not experiencing anything at all, we are just being deprived of the good things we have. God does not want us to be deprived of these good things but either our choices have led to these privations or God allows them for the sake of some greater good.

'For what is that which we call evil but the absence of good? Disease and wounds mean nothing but the absence of health; for when a cure is effected, that does not mean that the evils go away from the body and dwell elsewhere: they altogether cease to exist.'

St Augustine, *Enchiridion* 3:11

3. Evil makes us better

Augustine's third answer is God allows suffering precisely because he is omnipotent and good. He allows evil because in his goodness and power he is able to bring a greater good out of suffering. In this answer, St Augustine is saying that sometimes we arrive at a place of much greater happiness through overcoming evil and suffering, than we could ever have done without it. In other words, sometimes suffering is good for us!

'For the Almighty God, who has supreme power over all things, being Himself supremely good, would never permit the existence of anything evil, if he were not so omnipotent and good that He can bring good even out of evil.' - St Augustine, *Enchiridion* 3:11

EVIL & SUFFERING is NOT A PROBLEM FOR CHRISTIANS



The Meaning of Suffering is a Mystery

For Catholics, the meaning of suffering is a MYSTERY and it might be the case that God uses suffering to bring about GREAT GOODS that would not have been possible without it.

In the biblical Book of Job, God tells the long-suffering Job that he is just not capable of understanding the reasons why God chooses to do, or not do, certain things.



The Goodness of God

When Catholics use this term for God, they mean that God is the cause of goodness in others. God's goodness is called essential – that is to say, it is an unchanging aspect of who God is: God is supremely good. This is probably the best way to think about God's goodness, especially if God is beyond the human ability to describe what he is really like.

Catholics would say, we call God good because the things he made are good: light, sea, earth, sky, animals, plants and human beings. God finished Creation by looking on all that has been created and he 'saw that it was good'. This is what Catholics mean when they say that the world reflects God's goodness – they mean, they can tell that God is good, because the world God created is good.

John Hick



John Hick was a Christian philosopher. He argued that God deliberately made a world which was not perfect because only in an imperfect world could human beings learn and grow. In this view, God values human freedom so much that he wants us to learn for ourselves how to be good and loving; God doesn't give these things to us 'ready-made'.

Hick argues that it is only through suffering that human beings can come to perfection and 'grow in God's likeness'. This is a bit like thinking of human beings as athletes in training. Physical exercise is painful and difficult but it ultimately leads to a much stronger, healthier body. In the same way, Hick says, suffering is painful and difficult but it ultimately leads to a much stronger, healthier soul.

Suffering as a sign of love

Many wise thinkers have pointed out that love is impossible without suffering. Loving another person means that you would do anything for them, even if it means sacrificing your own pleasures and comforts. There is also another way that suffering and love are connected and that is because nothing lasts forever. If you love anyone, or even a pet, there will come a time when one of these people or animals leaves you, or dies. Few human beings go through life without ever experiencing the pain of grief and parting, but the suffering we experience when we lose someone we love reflects the depth of love we felt for them. The more we love a person, the more painful it is when we leave them. *Suffering and love, therefore, cannot be separated.*

Suffering as a proof of commitment

Jesus makes clear that being a disciple always requires sacrifice and a cost: To show we are really committed to something, we must experience suffering.

'Whoever wants to be my disciple must deny themselves and take up their cross and follow me.' (Mark 8:34)

Suffering as blessing

One of the most difficult ideas to understand is that suffering can somehow be a blessing. In Matthew, Jesus lists those people that are 'blessed' and includes some strange categories of people: *those who are poor, those who mourn, those who suffer.* We would not usually consider these things to be blessings, but Jesus is pointing out that God's way of seeing the world is not our way, and that those who are lowest in the world's eyes are often closest to God.

The suffering and death of Jesus

At the heart of all the Gospel accounts is something called '*the Passion narrative*'. 'Passion' comes from the Latin word for suffering, and these parts of the Gospel describe the last week in Jesus' life when he was arrested, tried, tortured and crucified. *This story is so sacred to Christians because they believe that the death and resurrection of Jesus saved all humanity from their sins.* Therefore, the suffering of Jesus brought about something very good.

Knowledge Check

1. What does *Enchiridion* translate to?
2. What are the three answers St Augustine gives as to how God can be omnibenevolent and omnipotent and evil and suffering exist?
3. Define the key concept: Privation
4. What does John Hick argue?
5. How might suffering be a sign of love?
6. How might suffering be proof of commitment?
7. How might suffering be a blessing?
8. What happens to the 'suffering servant' in Isaiah 53?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

Exam Question

Explain different Christian responses to the problem of evil [8]

One metaphor which can help us to understand the importance of Jesus' suffering can be found in the Old Testament description of the suffering servant.

From the earliest centuries, Christians saw this passage from Isaiah as a PROPHECY of Jesus and the way in which his suffering would bring about blessings for others.

In this passage, a figure called 'the suffering servant', who is described as an unattractive person, is rejected by his own people and cruelly punished by them. But the author of Isaiah says that he was experiencing the sufferings that others deserved, so that they would not have to experience them. The acceptance of suffering by the 'suffering servant' somehow brought about their salvation. *This is what Catholics believe about Jesus too.*

The Suffering Servant – Isaiah 53

'He had no beauty or majesty to attract us to him... He was despised and rejected by mankind, a man of suffering, and familiar with pain. Surely, he took up our pain and bore our suffering, yet we considered him punished by God, stricken by him, and afflicted. But he was pierced for our transgressions, he was crushed for our iniquities; the punishment that brought us peace was on him, and by his wounds we are healed.'



THE BOOK OF JOB



Job 1

INTRODUCTION: INTRODUCING JOB

1 In the land of Uz there lived a man whose name was Job. This man was blameless and upright; he feared God and shunned evil. **2** He had seven sons and three daughters, **3** and he owned seven thousand sheep, three thousand camels, five hundred yoke of oxen and five hundred donkeys, and had a large number of servants. He was the greatest man among all the people of the East.

4 His sons used to hold feasts in their homes on their birthdays, and they would invite their three sisters to eat and drink with them. **5** When a period of feasting had run its course, Job would make arrangements for them to be purified. Early in the morning he would sacrifice a burnt offering for each of them, thinking, "Perhaps my children have sinned and cursed God in their hearts." This was Job's regular custom.

SATAN AND GOD: THE MEETING

6 One day the angels came to present themselves before the Lord, and Satan also came with them. **7** The Lord said to Satan, "Where have you come from?"

Satan answered the Lord, "From roaming throughout the earth, going back and forth on it."

8 Then the Lord said to Satan, "Have you considered my servant Job? There is no one on earth like him; he is blameless and upright, a man who fears God and shuns evil."

9 "Does Job fear God for nothing?" Satan replied. **10** "Have you not put a hedge around him and his household and everything he has? You have blessed the work of his hands, so that his flocks and herds are spread throughout the land. **11** But now stretch out your hand and strike everything he has, and he will surely curse you to your face."

12 The Lord said to Satan, "Very well, then, everything he has is in your power, but on the man himself do not lay a finger." Then Satan went out from the presence of the Lord.

THE CAPTURE OF JOB'S OXEN AND DONKEYS

13 One day when Job's sons and daughters were feasting and drinking wine at the oldest brother's house, **14** a messenger came to Job and said, "The oxen were plowing and the donkeys were grazing nearby, **15** and the Sabeans attacked and made off with them. They put the servants to the sword, and I am the only one who has escaped to tell you!"

THE MURDER OF JOB'S SHEEP AND SERVANTS

16 While he was still speaking, another messenger came and said, "The fire of God fell from the heavens and burned up the sheep and the servants, and I am the only one who has escaped to tell you!"

THE MURDER OF JOB'S SERVANTS AND THEFT OF HIS DONKEYS

17 While he was still speaking, another messenger came and said, "The Chaldeans formed three raiding parties and swept down on your camels and made off with them. They put the servants to the sword, and I am the only one who has escaped to tell you!"

THE MURDER OF JOB'S CHILDREN

18 While he was still speaking, yet another messenger came and said, "Your sons and daughters were feasting and drinking wine at the oldest brother's house, **19** when suddenly a mighty wind swept in from the desert and struck the four corners of the house. It collapsed on them and they are dead, and I am the only one who has escaped to tell you!"

JOB STILL DOES NOT BLAME GOD!

20 At this, Job got up and tore his robe and shaved his head. Then he fell to the ground in worship **21** and said: "Naked I came from my mother's womb, and naked I will depart. The Lord gave and the Lord has taken away; may the name of the Lord be praised!"

22 In all this, Job did not sin by charging God with wrongdoing.

The book of Job is in the Old Testament. It is therefore both a Jewish and Christian story.



Job 2: He still does not sin!

"Have you considered my servant Job? There is no one on earth like him; he is blameless and upright, a man who fears God and shuns evil. And he still maintains his integrity, though you incited me against him to ruin him without any reason."

4 "Skin for skin!" Satan replied. "A man will give all he has for his own life, **5** but now stretch out your hand and strike his flesh and bones, and he will surely curse you to your face."

6 The Lord said to Satan, "Very well, then, he is in your hands; but you must spare his life."

7 So Satan went out from the presence of the Lord and afflicted Job with painful sores from the soles of his feet to the crown of his head. **8** Then Job took a piece of broken pottery and scraped himself with it as he sat among the ashes.

9 His wife said to him, "Are you still maintaining your integrity? Curse God and die!"

10 He replied, "You are talking like a foolish woman. **11** Shall we accept good from God, and not trouble?"

In all this, Job did not sin in what he said.

The Meaning of Suffering is a Mystery

For Catholics, the meaning of suffering is a MYSTERY and it might be the case that God uses suffering to bring about GREAT GOODS that would not have been possible without it.

In the biblical Book of Job, God tells the long-suffering Job that he is just not capable of understanding the reasons why God chooses to do, or not do, certain things.

A summary of the friends' judgement

ELIPHAZ – Job never really understood the pain of others because he had it so good. Job must have done something bad and deserves to suffer (we know he doesn't!)

BILDAD – Job's children brought their deaths upon themselves

ZOPHAR – Whatever Job has done wrong probably deserves greater punishment than what he has received

ELIHU – You might not have done wrong, but you still have no right to question God

God responds

"Where were you when I laid the earth's foundation?" (Job 38: 4)

Job repents

My ears had heard of you but now my eyes have seen you. **2** Therefore I despise myself and repent in dust and ashes." (Job 42: 6)

Job is blessed with more than he had before!

12 The Lord blessed the latter part of Job's life more than the former part. **13** He had fourteen thousand sheep, six thousand camels, a thousand yoke of oxen and a thousand donkeys. **14** And he also had seven sons and three daughters. **15** The first daughter he named Jemimah, the second Keziah and the third Keren-Happuch. **16** Nowhere in all the land were there found women as beautiful as Job's daughters, and their father granted them an inheritance along with their brothers.

17 After this, Job lived a hundred and forty years; he saw his children and their children to the fourth generation. **18** And so Job died, an old man and full of years.

Job 3: Job Sins!

11 When Job's three friends, Eliphaz the Temanite, Bildad the Shuhite and Zophar the Naamathite, heard about all the troubles that had come upon him, they set out from their homes and met together by agreement to go and sympathize with him and comfort him. **12** When they saw him from a distance, they could hardly recognize him; they began to weep aloud, and they tore their robes and sprinkled dust on their heads. **13** Then they sat on the ground with him for seven days and seven nights. No one said a word to him, because they saw how great his suffering was.

After this, Job opened his mouth and cursed the day of his birth. **2** He said:

- "May the day of my birth perish, and the night that said, 'A boy is conceived!'"
- That day—may it turn to darkness; may God above not care about it; may no light shine on it.

Job Curses the day he was conceived

God ignores Job

"I cry out to you, God, but you do not answer; (Job 30: 20)

Knowledge Check

1. What does Job own at the beginning of the story?
2. Why does Satan suggest Job has never sinned?
3. What is taken from Job?
4. How does Job's wife react to his suffering?
5. What causes Job to curse God?
6. What are the names of Job's four friends?
7. What causes Job to realise that he is in the wrong?
8. How is Job rewarded at the end of the story?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE! Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe the suffering Job experiences in the book of Job [5]

Mackie rejected some of the answers Christians give to the problem of evil. For example:

JOHN MACKIE

EVIL AND SUFFERING IS A PROBLEM FOR BELIEVERS!



Mackie (1917-1981) was an **ATHEIST** Philosopher

Atheism:
Believing that there is no God

Evil: A cause of human suffering
Suffering: The bearing or undergoing of pain or distress

Evil doesn't ALWAYS help us to become better people

Firstly, Mackie doesn't understand why God needs to make us better through experiencing suffering. Why can God not just make us perfect to begin with? But even if we accept that the sort of goodness that comes about because of overcoming suffering is better than the goodness we could achieve without suffering, there is still a problem.

The problem is that just as often, suffering makes people worse, rather than making them better. Some people might learn patience and courage through having to undergo cancer treatment. But other people might just as likely become bitter and resentful. If evil is allowed in order to bring about greater goods, then why does it sometimes lead to greater evils instead?

Even if evil and suffering is there for us to learn from there is TOO MUCH

Lots of examples of goodness are easily noticed and appreciated without needing a contrast. We can all see and appreciate a kind and generous person, even if we have never met a mean and selfish one.

Even if it is true that we need some evil and suffering to help us to appreciate the good, we only need a little bit. He argues that there is far more suffering than is needed to make a contrast to the good in the world and some of the suffering is truly horrible, far more and far worse than is really needed. e.g. the holocaust.



Why aren't human beings made to choose good?

Both St Augustine and John Hick rely on the existence of free will to explain why God allows evil to exist.

Mackie rejects this as a reason because he does not see why God could not make free human beings who always choose good instead of evil.

Some would reply that a human being who can only ever choose good, is not truly free BUT Mackie does not think the ability to choose evil is a required part of human freedom. He also feels that evil and suffering is far too high a price to pay for having free will.

"We live in an unkind universe that simply doesn't care."

Richard Dawkins does not accept the idea that there is a purpose to life. We are simply here by chance. There is no loving God, nor any sort of god at all.

"...faith is one of the world's great evils, comparable to the smallpox virus but harder to eradicate."

There is "no design, no purpose, no evil and no good, nothing but blind, pitiless indifference."



'Is God willing to prevent evil, but is not able? Then he is not omnipotent. Is he able, but not willing? Then he is malevolent. Is he both willing and able? Then whence cometh evil? Is he neither willing nor able? Then why call him God?'
- Epicurus (an ancient Greek philosopher)



David Hume

A Scottish philosopher and atheist of the 18th century. He claimed that The Problem of Evil was **"THE ROCK OF ATHEISM"**. He believed that there was no logical way of explaining how a benevolent God can allow suffering to happen to good people (or even bad).

The Inconsistent Triad

One of the most famous presentations of the Problem of Evil was made by an atheist named John Mackie. He is the first philosopher to present what has become known as 'the inconsistent triad'. A 'triad' is a group of three things. Mackie and others claim the following is 'inconsistent' because it seems that not all of them can be true at the same time.

If God WANTS to stop suffering and **CAN** stop suffering, then evil would not exist. Therefore, Mackie says either:

- God is **not** good; OR
- God is **not** powerful; OR
- God does **not** exist.



Omnipotent



Omnibenevolent



Evil exists

Mackie concludes that God **does not exist**

Knowledge Check

1. What is atheism?
2. What are the typical answers Christians give in response to the problem of evil?
3. How does John Mackie challenge Christian answers to the problem of evil?
4. What does Richard Dawkins believe about the existence of evil and suffering?
5. What did David Hume claim?
6. What is the inconsistent triad?
7. Who put forward the inconsistent triad?
8. What does he conclude?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!
Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain how the existence of evil and suffering poses a challenge to belief in God [8]



Richard Dawkins

Called "the most famous atheist of our time",

Dawkins claims that the randomness of natural evil and disease is **PROOF ENOUGH** that **A GOD CANNOT EXIST**

TRINITY

"Trinity" literally means "Tri-Unity" : Three in One

Each of the following illustrations have been used in the past to help people understand the very difficult concept of The Trinity.



St Patrick used the **Shamrock** - it seems to be three separate leaves yet they are intrinsically connected as ONE leaf, as God is 3 persons in 1 God!



The **Triquetra** is a symbol used by our own school to highlight that Trinity has three components that are totally interwoven into the one symbol.



H2O clearly shows how ONE substance can take three totally different forms with 3 totally different sets of qualities and roles to perform.

However, none of these come really close because they are material objects, God is not!
If we could fully explain God, He wouldn't really be omnipotent would he? We would be in a position of authority over God (instead of the other way around!)

Belief in the Trinity existed in the Bible *before* the word was actually "invented" to describe the belief.



GOD THE **FATHER**, GOD THE **SON**, GOD THE **HOLY SPIRIT**

The first followers of Jesus seemed to believe in the idea of the Trinity before they had the language to express this belief:

- ✓ Remember they were **Jews** (born and raised) and therefore **totally believed in ONLY One God**: The Shema, the central prayer of Judaism proves this: "Hear, O Israel: The LORD our God, the LORD is one." - Deuteronomy 6:4.
- ✓ They accepted Jesus as God - they'd witnessed the Resurrection after all! But they also witnessed Jesus *praying* to God The Father, so knew HE couldn't be God The Father!
- ✓ They had experienced God The Spirit at Pentecost (where the disciples are granted the ability to understand different languages to spread the Good News) but knew this wasn't Jesus, because Jesus promised them he would send them the Spirit after he'd gone!

Disagreements over the Trinity: Arius and Athanasius

By the time the Gospels were written (later than St Paul's letter) there were many indications of a belief in the three persons of the Trinity. From these starting points in the early Church, the doctrine (a belief/set of ideas) of the Trinity developed until it was finally settled and written down at two early councils of the Church - Nicea in 325AD and Constantinople in 381AD.

The first council of Nicea was called to settle a disagreement that had arisen in the fourth century between Arius, a priest, and a deacon called Athanasius. **Arius did not believe that Jesus was God.** He argued that **Jesus was the highest creature** but that he was **less than God**. Athanasius disagreed. He argued that **the Father and the Son were equal and that both were God**. **The council sided with Athanasius and said that the Father and the Son were equal to each other.**

Nicea 325 AD

Constantinople 381 AD

Following this council, another argument arose. This time there were some who argued that **the Son and the Father were so equal that they weren't really two distinct persons**, but just different 'aspects' or 'modes' of the one God. So another council was called in 381AD in Constantinople (modern day Istanbul) which **produced the creed that Catholics now say at mass every week**. This creed makes it clear that the Father, the Son and the Holy Spirit are all **equal to each other, are all equally God, but there are still three distinct persons**.

Early Christians

A belief in the Trinity emerged gradually in the history of Christianity. The earliest Christians were not really Christians at all; they were Jews who followed Jesus. The term Christian doesn't even exist as a name for a group until several years after Jesus' death. Even then it seems to be a name others used as an insult, rather than a name that these Jesus-following Jews called themselves.

It is therefore no surprise that Christians believe in only one God because Christianity grew out of Judaism.

A belief in only one God (what we now call 'monotheism') is the belief that most clearly separated the Jews from many other ancient religions that surrounded them.

The Nicene Creed

Catholics recite this every Sunday. A creed is a statement of belief. A council of bishops met in a place called Nicea, in Turkey, to settle the question of how Christians should speak about God. In this creed it is clear that Christians believe in:

- ✓ One God
- ✓ But also in the 'Son of God' who is equal with the Father
- ✓ And in the Holy Spirit who is 'adored and glorified' with the Father and the Son

I believe in one God, the Father almighty, maker of heaven and earth, of all things visible and invisible.



I believe in one Lord Jesus Christ, the Only Begotten Son of God, born of the Father before all ages. God from God, Light from Light, true God from true God, begotten, not made, consubstantial with the Father.



I believe in the Holy Spirit, The Lord, the giver of life, who proceeds from the Father and the Son, who with the Father and the Son is adored and glorified, who has spoken through the prophets.



St Augustine - De Trinitate

St Augustine wrote a whole book named 'De Trinitate' meaning 'On the Trinity'. One of the ideas that he used to make sense of the doctrine was the concept of love. St Augustine believed, as do all Christians, that 'God is love'. He also realised that love needs three things:

The person who is doing the loving, the person who is being loved and the love itself.

If God is love, these three aspects must have been present in God from all eternity - even before God have made any creatures to love. So St Augustine says that the Trinity of the Father, Son and Holy Spirit is like this Trinity of love, lover and beloved.

This idea of love is a helpful one for Christians because it makes clear that love needs to be an important part of every Christian's life.

'There are three things in love, as it were a trace of the Trinity...love is of someone that loves, and with love something is loved. Behold, then, there are three things: he that loves, and that which is loved, and love.' - De Trinitate



Summary

Christians believe in a God who exists as a Trinity of persons: Father, Son and Spirit.

This arose because the early Christians believed that Jesus was God incarnate.

St Augustine said that the Trinity of persons was like the lover, the beloved and love itself.

Jews have no beliefs or teachings about the idea of Trinity. They would reject it as a challenge to their fundamental beliefs that God is one.

Knowledge Check

Answer in full sentences or copy out the question.

1. What does Trinity literally mean?
2. What are the three popular illustrations of the Trinity?
3. Why are these illustrations of the Trinity limited?
4. Which Jewish prayer illustrates belief in one God?
5. What is meant by 'doctrine'?
6. What was the name of the first Church council?
7. When was this council held?
8. What disagreement was the first council called to settle?
9. What did the first council decide?
10. Why was a second council called?
11. What is the name of the second council?
12. What did the second council decide?
13. When do Catholics recite the Nicene Creed?
14. What does the creed state about each aspect of the Trinity?
15. How did St Augustine make sense of the Trinity?

Choose a Task

1. Design a **multiple choice** quiz on the topic of the Trinity (15 questions).
2. Design a **detailed** mind map outlining the Trinity.
3. Design a **detailed** visual poster outlining the Trinity.

Exam Question

Write an extended answer to the question below.

"Christianity is really a polytheistic religion (believes in many Gods)."

Discuss the statement showing that you have thought of **more than one point of view**.

For each sentence, use PEEA (Point, Evidence, Explain, Analysis).

For example:

P - Make your point

E - Back it up with evidence or examples

E - Explanation (link back to the statement)

A - Say what is good or bad about the point you have just made

Why is the Trinity Important?

1. Without a doctrine of the Trinity, it would not be possible for Christians to believe that Jesus is God. **The belief that Jesus is God is probably the most important Christian belief.**
2. The doctrine of the Trinity means that the God that Christians believe in is a community of persons. This means that **it makes sense to say 'God is love'**, because even before any creatures existed for God to love, there was a relationship of love within God which has existed for all eternity.

INCARNATION

Meaning "made flesh". The Christian belief that God became man in the person of Jesus, fully human and fully divine.



Divine Word (John 1:1-18)

Another way that a belief in the incarnation is expressed is by using the metaphor of 'God's Word'. In the opening chapter of John's Gospel, John refers to Jesus as 'the Word'. The author of John's Gospel makes a link with the book of Genesis by starting with the words 'In the beginning...', which is also how Genesis starts.

Jesus = "The Word"

In the first chapter of Genesis, God speaks and things happen. For example, God says 'Let there be light' and then light happens. So in Genesis, God's word is the power that makes creation happen. In John's Gospel, the author says that the relationship between the Father and Jesus is like the relationship between a speaker and his words. So the author of John's Gospel refers to the second person of the Trinity, Jesus, as 'the Word'. In John's Gospel, it is clear that the second person of the Trinity is distinct from the Father ('the Word was with God') but that he is also equal to God ('the Word was God').

...the Word was with God.'	Jesus is part of the Trinity that is distinct from God the Father
...the Word was God...'	Jesus is equal to God the Father
...the Word became flesh and made his dwelling among us...'	Jesus was God in human form (incarnate)
...in the beginning was the Word.'	Jesus is eternal

Son of God

The most usual way Christians express this belief is by calling Jesus the 'Son of God'. This connects to the doctrine of the Trinity, where the term 'Son' is used to name the second person of the Trinity. When Christians call Jesus the 'Son of God' they mean that he is God who has become a human being; that he is the 'incarnate Son'.

For Christians, the world INCARNATION refers to the most central Christian belief; that Jesus is God and that in Jesus, God the son became a human being. 'The incarnation' means 'became flesh' and Christians believe that God became visible 'in the flesh' in the person of Jesus.

Fully God Fully Man

100%

Christians also believe that Jesus is 'fully God and fully man'. So when they say that Jesus is the incarnate Son, they don't mean that Jesus is a really good human being who is very close to God, he is really and fully God.

At the same time, they don't mean that Jesus is just God in disguise, or God pretending to be a human being; he is really and fully human.

Christians believe that Jesus is one person, with two natures: one human nature, and one divine (which means 'godly') nature.

Salvifici Doloris

In his letter, Salvifici Doloris (which means 'the saving power of suffering') Pope St John Paul II says that the only way human beings can grasp the 'why' of suffering is to try and understand the depth of God's love for human beings, which Jesus showed through his willingness to die on the cross. He also says that if Christians willingly 'offer up' their own suffering in prayer for the sake of others, they can somehow share in the saving suffering of Jesus. This is very difficult to understand but Pope St John Paul II believes that if we try and bear our suffering patiently and offer it to God in prayer, that God will somehow be able to use it to bring about good for others. If a Christian can do this, it is an act of love which is like Jesus' own act of sacrifice.

Pope St John Paul II

'But in order to understand the 'why' of suffering, we must look to the revelation of divine love... This answer has been given by God to human beings in the Cross of Jesus Christ.'
(Salvifici Doloris)



'Those who share in Christ's suffering have before their eyes the Paschal Mystery of the Cross and Resurrection, in which Christ takes on human weakness... But if in this weakness there is accomplished his lifting up, then the weakness of human suffering can be filled with the same power of God made visible in Christ's cross.'
(Salvifici Doloris)



The Problem of Evil

A belief that there is the incarnation of God's very important to Christians in helping them to respond to the Problem of Evil. Jesus' incarnation and suffering give Christians an answer to the problem of evil, even in the face of human suffering.

The Kenosis Hymn

'In your relationships with one another, have the same mindset as Christ Jesus: Who, being in very nature God, Did not consider equality with God something to be used to his own advantage; Rather, he made himself nothing By taking the very nature of a servant. Being made in human likeness. And being found in appearance as a man He humbled himself By becoming obedient to death - Even death on a cross!'

(Philippians 2:5-8)

Kenosis is a great word which means 'emptying' it is called the kenosis hymn because it was a hymn of praise that early Christians used to sing about Jesus and it contains the idea the Jesus 'emptied himself' of his rightful equality with God, in becoming a human being in the incarnation. St Paul says, 'he made himself nothing'.

The equality between Jesus and the Father, and the moment of the incarnation, is described in another piece of scripture: in a hymn in which St Paul quotes in his letter to the Philippians.

In the hymn it says that Christians should be like Jesus who, even though he was God, willingly put aside his equality with God to become a human being. And then as a human being, he doesn't even insist on his equality with other human beings, but makes himself even lower accepting a humiliating and degrading execution.

Marilyn McCord Adams

An American theologian called Marilyn McCord Adams said that the answer to the Problem of Evil is one that human minds might not be able to ever understand but Christians can still trust in the goodness of God. She says Christians should not ask why they suffer but how they can suffer WITHOUT LOSING FAITH.



Parable: 2-year-old child

She uses the parable of a two-year old child who has to undergo heart surgery which we very painful but which will ultimately save her life. She points out that the mother will never be able to explain to her two-year old why she has to suffer, because the daughter won't understand what heart surgery is, or why it is needed. But the two-year old can be helped to cope with the pain because she trusts in her mother's love and that her mother has her best interests at heart. The child can cope with the suffering because her mother is by her side while she suffers. She doesn't know why she has to suffer, but she does know how to endure it.

Summary

The incarnation is the belief that Jesus is God 'made flesh'; that Jesus is fully God and fully human

The opening chapter of John's Gospel conveys these ideas clearly

St Paul describes the incarnation in his writings

Jesus gives an answer to the 'how' of suffering, if not the 'why' of suffering

Pope St John Paul II believed that our own suffering could become saving for others if it is joined to the suffering of Jesus

Knowledge Check

Answer in full sentences or copy out the question.

- What is meant by 'incarnation'?
- What is the most usual way Christians express this belief in God?
- How does the author of John's gospel make a link to the book of Genesis?
- What do Christians mean when they say that Jesus is 'fully god and fully man'?
- What does the author of John's Gospel refer to Jesus as?
- In John's Gospel, what is the relationship between the Father and Jesus compared to?
- What is meant by 'the Word was God'?
- What is meant by 'the Word became flesh and made his dwelling among us...?'
- How does the author of John's Gospel suggest that Jesus is eternal?
- What does Salvifici Doloris mean?
- What does Pope St John Paul II say about suffering in his letter: Salvifici Doloris?
- What parable does Marilyn McCord use to answer the Problem of Evil? How does this help Christians?
- What is the Kenosis hymn?
- What does the Kenosis hymn say about Jesus?
- What does Jesus' incarnation and suffering give Christians?

Choose a Task

- Design a multiple choice quiz on the topic of the Incarnation (15 questions).
- Design a detailed mind map outlining the Incarnation.
- Design a detailed visual poster outlining the Incarnation.

Exam Question

Write an extended answer to the question below.

"Jesus was just a human man."

Discuss the statement showing that you have thought of more than one point of view.

For each sentence, use PEEA (Point, Evidence, Explain, Analysis).
For example:
P - Make your point
E - Back it up with evidence or examples
E - Explanation (link back to the statement)
A - Say what is good or bad about the point you have just made

JESUS AND MORAL AUTHORITY

MATTHEW 5-7

Jesus gives clear teachings on how people should live their lives. The clearest collection of these teachings are in Chapters five to seven of Matthew's Gospel, in a section that is often called

The Sermon on the Mount.



The sermon *begins with a list of blessings*, which are often called The Beatitudes (which is Latin for 'blessings'). *This list of blessings is strange in that some of the things on it are not usually thought of as blessings.*

For example, Jesus speaks of the poor, the grieving and those who suffer, as people who are blessed. But there are other categories of people on this list who clearly stand for the sort of behaviour and attitudes Jesus sees as the model for all human living. So, he praises the peacemakers, the merciful, the meek and those who hunger and thirst for righteousness.

One of the key messages of the beatitudes seems to be that *those who are closest to God are often those that the world does not recognise or value and sometimes even persecutes.*



THE SERMON ON THE MOUNT

The Beatitudes (Blessings):

*'Blessed are the poor in spirit,
For theirs is the kingdom of heaven.*

*Blessed are those who mourn,
For they will be comforted.*

*Blessed are the meek,
For they will inherit the earth.*

*Blessed are those who hunger and thirst for righteousness,
For they will be filled.*

*Blessed are the merciful,
For they will be shown mercy.*

*Blessed are the pure in heart,
For they will see God.*

*Blessed are the peacemakers,
For they will be called children of God.*

*Blessed are those who are persecuted because of righteousness,
For theirs is the kingdom of heaven.*

Blessed are you when people insult you, persecute you and falsely say all kinds of evil against you because of me. Rejoice and be glad, because great is your reward in heaven, for in the same way they persecuted the prophets who were before you.'



Matthew 5:3-11

The Beatitude Life

THE POOR IN SPIRIT	Embracing our need for God.
THE MOURNERS	Experiencing God's comfort in our pain.
THE MEAK	Choosing humble submissiveness over ambition and authority.
THE HUNGRY FOR RIGHTEOUSNESS	Longing for God to make all things new.
THE MERCIFUL	Extending God's incredible compassion and mercy.
THE PURE IN HEART	Making our hearts fully God's, in all we think, say and do.
THE PEACEMAKERS	Bringing healing, togetherness, and fullness to our world.
THE PERSECUTED	Following Jesus no matter what the cost.

THE OLD LAW AND THE NEW

In another part of the Sermon on the Mount, Jesus uses a phrase over and over again which begins **'You have heard that it was said...'** and ends with the phrase **'But I say to you...'**

He begins this whole section by saying:

'Do not imagine that I have come to abolish the Law... I have not come to abolish the Law but to fulfil it.'

Here Jesus shows the ways in which **being a follower of his is more demanding than the religious Law** (Torah) which his listeners (Jews) have been living by.

MURDER

Jesus says that in the past the Law ruled out murder, but Jesus says **even being angry with someone is unacceptable.**

ADULTERY

The Law did not allow adultery but Jesus says that even **looking at someone lustfully is unacceptable.**

REVENGE

The Law allowed people to take revenge on those who had harmed them, only paying back in proportion to what had been suffered ('an eye for an eye') but Jesus says that **you should not take revenge at all.**

LOVE YOUR NEIGHBOUR

The Law required people to love their neighbour but allowed them to hate their enemy, but Jesus says **you must love your enemies as well.**

Knowledge Check



- Which Gospel contains the Sermon on the Mount?
- What does the sermon begin with?
- What does 'beatitudes' translate to?
- Why might these blessings be viewed as "strange"?
- Which categories of people are blessed?
- What is the key message of the beatitudes?
- What is meant by 'right actions, wrong reasons'?
- Who were the Pharisees?
- Why did Jesus prefer spending time with sinners as opposed to the Pharisees?
- Which phrase does Jesus repeat during the Sermon on the Mount after the section on the beatitudes??
- What does Jesus say in regards to murder?
- What does Jesus say in regards to adultery?
- What does Jesus say in regards to revenge?
- What does Jesus say in regards to loving your neighbour?

Choose a Task



- Design a multiple choice quiz on the topic of the Sermon on the Mount (15 questions).
- Design a detailed mind map outlining the Sermon on the Mount.
- Design a detailed visual poster outlining the Sermon on the Mount.

Exam Question



c) Explain how Catholics might use Jesus' teachings to help them make an ethical decision.

Write an extended answer to the question below.

d) "Jesus' moral teachings are not relevant for today."

Discuss the statement showing that you have thought of **more than one point of view.**

RIGHT ACTIONS, WRONG REASONS

At the end of the sermon, he warns people against doing good things but for the wrong reasons. He speaks about praying, fasting and giving to charity (called almsgiving) and says that these must always be done in private. Jesus knew that often people do these good things publicly so that others will think well of them. Jesus says that people should do these things because they are right, not to get praise from other people.

The whole of the Sermon on the Mount seems very **demanding and almost impossible.** Perhaps the thing Jesus dislikes the most is pride; he doesn't want anyone to think that they have achieved all that goodness demands of them. This is probably why he preferred spending time with sinners who knew they needed the mercy of God, than he did with the Jewish religious leaders (Pharisees), who thought they did not.

The Pharisees

The Pharisees were an influential religious sect within Judaism in the time of Christ and the early church. They were known for their emphasis on personal piety (the word *Pharisee* comes from a Hebrew word meaning "separated"), their acceptance of oral tradition in addition to the written Law, and their teaching that all Jews should observe all 613 laws in the Torah, including the rituals concerning ceremonial purification.

The Pharisees were mostly middle-class businessmen and leaders of the synagogues. Though they were a minority in the Sanhedrin and held a minority number of positions as priests, they seemed to control the decision-making of the Sanhedrin because they had popular support among the people.



OTHER SOURCES OF MORAL AUTHORITY

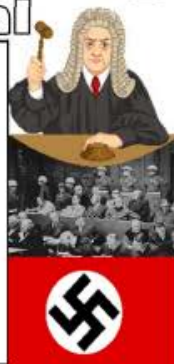
NATURAL LAW

The moral laws of right and wrong which are universal and not dependent on human laws. The belief in natural law is the belief that the moral law is discoverable by every human being and is the same for all human beings in all places at all times.



Nuremberg Trial

After the Second World War, many former Nazis were put on trial in Nuremberg for 'crimes against humanity'. Many of these people used as their defense the argument that **they were only obeying their superior officers who, at the time, they were legally obliged to obey.** The courts at Nuremberg **did not** accept these arguments. Even though the crimes committed by Nazis were not crimes at the time in Nazi Germany, they were still crimes that were **against a universal natural law** that the judges at Nuremberg believed every human being could understand, even if they were living in a state that had rejected these natural laws. This is the basic idea behind the concept of natural law.



Natural Law is the belief that above all human legal systems, which are enforced by nation states or other human institutions, there is a **moral law** that every human being **understands and should live by.**

The same idea is expressed in the existence of the Universal Declaration of Human Rights, which is another way of saying that there are some natural rights which every human being should have, even if the laws of the land in why they happen to live ignore these rights.



St Thomas Aquinas

A belief in natural law is a key part of Catholic moral teaching. The idea is that because human beings all ultimately share the same human nature, the same things will ultimately bring them fulfilment. Natural law (put forward by St Thomas Aquinas) says that all human beings have **some purposes in common:**

Preserving life

Reproduction

Educating Children

Worshipping God

Living in an Ordered Society

CONSCIENCE

Human reason making moral decisions. The knowledge we have of what is right and wrong and the God-given compulsion within all human beings to do what is right and to avoid what is evil.



If there is a natural law that applies to all human beings, then **the ability to discover this law is what Catholics call conscience.** St Thomas Aquinas defined conscience as 'the mind of human beings making moral decisions.'

In Catholic understanding, conscience has two parts:

KNOWLEDGE

The part that is to do with knowledge is our mind's ability to know the difference between right and wrong and make decisions about what the right to do is in different situations.



ACTION

The part that is to do with action is the internal impulse, which Catholics believe all human beings have, to do what is right and to avoid doing what is wrong. This part gives human beings their sense of moral duty and leads to guilt when they fail to do what they know to be right.



The two parts of conscience work together: in any given situation, the conscience will help a human being to know what the right thing to do is; it will also compel the human being to do that thing.

Catholics believe the existence of conscience is unique to human beings and that this existence of conscience is another proof of the goodness of God who created human beings in his own image. Also, in relation to the Problem of Evil, if human beings obeyed their conscience more often, there would be far less moral evil in the world, and far less suffering as a result. Catholics believe conscience is knowing the difference between right and wrong and then following the direction that right points in.

VIRTUES AND SUFFERING

Catholics also believe that living a good life and obeying their conscience is something that requires practice. Doing the right thing is not always easy and if our moral character is weak, then it is even more difficult to do what is right.

Catholics believe that there are moral habits which human beings need to practice in order to become good people. These moral habits are called virtues, from the **Latin word 'perfection'**. They include things like **courage, generosity, selflessness and self-control.** Each of these virtues **challenges our instinctive selfishness**, for example, our desire to keep ourselves safe has to be overcome in order to become more courageous.

The Catholic view is that **these virtues take practice.** we are not good at them straight away but we can get better at them through our life experiences.

One of the ways in which **people can grow in virtue** is through the **experience of suffering.** This is because suffering sometimes **helps us to improve in the virtues.**

- For example, **enduring a serious illness** can make someone more **courageous.**
- If I suffer **poverty**, this can make me **more generous** when I do have food and other things to share.



The Catholic view of virtues is a good way of helping us to understand how suffering can help us to become better people

Knowledge Check

Answer in full sentences or copy out the question.

- What is meant by 'natural law'?
- What is meant by 'conscience'?
- What do Catholics call the ability to discover natural law?
- What is meant by 'The Nuremberg Trial'?
- What did the judges conclude at the Nuremberg Trial?
- Which Saint put forward the concept of Natural Law?
- What five things did this Saint say all human beings have in common?
- What are the two parts to conscience?
- How do the two parts of conscience work together?
- What do Catholics argue the existence of conscience is proof of?
- What are 'moral habits' also known as?
- What does 'perfection' translate to in Latin?
- Give examples of virtues
- How might someone grow in virtue?
- What does the Catholic view of virtue help us to understand?

Choose a Task

- Design a multiple choice quiz on the topic of the other sources of moral authority.
- Design a **detailed** mind map outlining Natural Law, Conscience and Virtues and Suffering.
- Design a **detailed** visual poster outlining Natural Law, Conscience and Virtues and Suffering.

Exam Question

Explain why Catholics believe that natural law and conscience are evidence for the existence of a benevolent God. (8 Marks)

SCULPTURE AND STATUARY

Catholic churches have many features that make them different from other churches. One thing that many people notice is the presence of statues. These statues can be of many different religious figures. In all Catholic churches, there will be at least one crucifix that has on it the figure of Jesus. This will usually be displayed in a prominent position in the church.

In most Catholic churches, there will also be a statue of Mary, the mother of Jesus.



There will also often be a statue of Jesus, called the 'Sacred Heart' that shows the heart of Jesus burning with love. In addition to these three most common statues, there might well be other statues of saints, especially of the saint after whom the church is named.



In many Catholic churches, these statues will have in front of them places to kneel and places to light candles to leave as physical symbols of prayer intentions. Catholics often kneel in front of statues to pray. The presence of statues in Catholic churches as a focus for prayer and devotion is common and unremarkable to most Catholics, but for many other Christians it is an unusual practice and one with which many would disagree.

THE SIGNIFICANCE OF STATUES FOR CATHOLICS

Catholics would say that the presence of Catholics in churches is just one way in which they express a deeper commitment to what they call an 'incarnational view' of the world. Remember, the incarnation is the belief that God took on a physical form and lived in the real world when he became a human being in Jesus. For Catholics, this means that physical things are good and that God can make himself known to human beings through the ordinary physical things around us. This is why so much of Catholic worship is centred on ordinary, physical signs of God's extraordinary presence – oil, water, bread, wine, colours, incense, music, and so on. For Catholic Christians, statues are just another sign of the reality of the incarnation ('made flesh' The Christian belief that God became man in the person of Jesus, fully human and fully divine.)



The Crucifix

The one statue that will be present in every Catholic church is the crucifix. This is a directly incarnational image since it is an image of Jesus himself whom Catholics believe became incarnate in order to save people from their sins. The crucifix is the most common focus for Catholic prayer and it reminds believers of the incarnation, but also of the suffering of Jesus which, for Catholics, is a reminder of God's love for them.

Do Statues Break the Commandment to Worship God Alone?

Making religious statues goes against the second commandment that forbids the making of any image as an object of worship. By worshipping statues, Catholics are worshipping 'false gods'.



Jews do not use statues as a focus for prayer as it goes against the Ten Commandments: *"You shall have no other gods before me."* (Exodus 20:4-5). Synagogues therefore do not have any representations of God as he is above human understanding.



Catholics argue statues are reminders of Jesus and God and help them focus their prayers. Well... that would be a good argument if the statues were only statues of Jesus, but they are often of other holy men and women, such as Mary and the saints. Offering prayers to anyone or anything other than God is breaking the first commandment to worship God alone.



Catholics don't pray to the statues. They are just reminders of God and Jesus and these help us to focus our prayers on what really matters. Statues are like photographs of loved ones – the photographs are only important to us because they remind us of the people we love. We don't love photographs; we love the people in the photographs.



Intercede
- To act on behalf of someone else

Catholics don't worship Mary and the saints but rather ask Mary and the saints to INTERCEDE on our behalf and pray to God for us, just like we often ask other living people to pray for us and will offer to pray for them too – just like many Christians. Catholics believe that we are part of something called 'the communion of saints', all believers, both living and dead, are part of this communion and we believe that the saints in heaven offer prayers to God for those on earth. So we're just asking the saints to pray for us, not worshipping false gods.



Catholics use statues in their worship as a reminder of God and as a focus for prayers; statues are not worshipped.

Some other Christians believe that using statues in worship is against the Ten Commandments.

Jews reject the use of statues or any images of humans in synagogues and would never represent God because God is beyond human understanding.

The Pieta is a statue of the death of Jesus that many Catholics find helpful in helping them to respond to human suffering.

SUMMARY

Knowledge Check

Answer in full sentences or copy out the question.

1. What noticeably makes Catholic churches different to other Christian churches?
2. Give three examples of statues commonly found in Catholic churches.
3. What is the statue showing the heart of Jesus burning with love known as?
4. What stance will Catholics typically take while praying in front of these statues?
5. Why do many Christians disagree with the use of statues?
6. Which commandment does the use of statues go against?
7. What is meant by 'incarnation'?
8. Name three things used in Catholic worship to signify God's extraordinary presence
9. Why is the crucifix important to many Catholics?
10. How might a Catholic person and a Jewish person disagree over the use of statues?

Choose a Task

1. Design a multiple choice quiz on the topic of Statues.
2. Design a detailed mind map outlining the use of Statues.
3. Design a detailed visual poster outlining the use of Statues.

Exam Question

Write an extended answer to the question below.

Describe the different types of statues found in a Catholic church

Discuss the statement showing that you have thought of more than one point of view.

For each sentence, use PEEA (Point, Evidence, Explain, Analysis).

For example:
P – Make your point

E – Back it up with evidence or examples

E – Explanation (link back to the statement)

A – Say what is good or bad about the point you have just made

MICHELANGELO'S PIETÀ



Michelangelo **carved it from a single slab of marble** in less than two years. It is famous for the way Michelangelo has managed to make **stone appear to flow like real cloth** and how well he has **captured the human form and emotions**.

His interpretation of the Pietà was different to ones previous created by other artists. **Michelangelo decided to create a youthful and peaceful Virgin Mary instead of a broken-hearted and older woman**, as is often portrayed in earlier version of the image.

Statues help Catholics to reflect on the meaning of suffering.

One of the most famous statues that does this is Michelangelo's Pietà.

It is a **statue of Mary holding the body of her son after his crucifixion**.



LATIN 'Holiness'

Catholic Ambivalence to Suffering

In her sadness, Mary seems **resigned to what has happened**. Jesus, too, is presented almost as if he is in a **peaceful sleep**, rather than having been bloodied and bruised after hours of torture and suffering.

His **wounds are hardly visible**. In supporting Jesus, **Mary's right hand does not come into direct contact with his flesh**, but instead it is covered with a cloth which then touches his side. This shows the **sacredness of Jesus' body**.

Overall, these two figures are beautiful and idealised, despite their suffering. This reflects the belief of Catholic ambivalence to suffering; **that suffering is somehow part of love and can be a source of blessing**.

'Pietà' is a word which comes from the **Latin word for holiness**. Of all the many different forms of the Pietà by various painters and sculptors throughout history, the one by Michelangelo stands out as perhaps the greatest. It was created in 1499 when Michelangelo was just 24 years old.



Commissioned by a French Cardinal for his own funeral



French cardinal Jean de Bilheres, who served the church in Rome, wanted to be remembered long after he'd died. To achieve this goal, he hired Michelangelo to make a memorial for his tomb that would capture a scene that was popular in Northern European art at the time: the tragic moment of the Virgin Mary taking Jesus down from the cross.

Knowledge Check

Answer in full sentences or copy out the question.

1. What does the Latin 'Pietà' translate to?
2. Who carved this Pietà?
3. What is his sculpture famous for?
4. How is his interpretation different to that of other artists?
5. What scene does the sculpture depict?
6. Who commissioned this sculpture and what was it to be used for?
7. What does the deep shadow created by the fold of the garment next to Jesus symbolise?
8. What does the stillness on Mary's face symbolise?
9. What does the open palm symbolise?
10. What does the large figure of Mary symbolise?

Choose a Task

1. Design a multiple choice quiz on the topic of the Pietà.
2. Design a detailed mind map outlining the Pietà.
3. Design a detailed visual poster outlining the Pietà.

Exam Question

Explain what the Pietà reveals about a Catholic understanding of suffering. (8 marks)

For each sentence, use PEEA (Point, Evidence, Explain, Analysis).

For example:

P - Make your point

E - Back it up with evidence or examples

E - Explanation (link back to the statement)

A - Say what is good or bad about the point you have just made

Deep Shadow

Symbol of an open wound

Viewers have pointed out that the deep shadow created by the fold of the garment next to Jesus is a **symbol of an open wound**, reminding us that the one she holds in her arms is the one she **carried in her womb**, and inviting us to **share the pain of her sorrow**.



Stillness

Some viewers are **surprised by the stillness on Mary's face**, considering she is **holding the body of her dead son**. Mary seems **at peace** with what has happened to her son.



Open Palm

Mary's left hand is positioned with an **open palm**; this again is a sign that **Mary is at peace** after witnessing her son's crucifixion and **accepts what has happened**.



The Large Figure of Mary

Mary is shown **supporting the body of a fully-grown man** on her lap. In reality, that is **difficult for the average woman to do**. In the Pietà, Mary's **figure is larger than that of Jesus**. Her bottom half forms a **sturdy base** for the body of Jesus. Even though this piece is life-like, it is **not realistic**. Mary's size **makes Jesus look small** in comparison. This is another echo of **Mary as the mother of the infant Jesus**; as if she is holding a baby in her arms.



This **represents the love of a mother** and many mothers who have lost their own children report that the statue is a strange sort of comfort for them.

S Surprised at the Stillness of the face

P Palm open, Mary is at Peace

L Large Figure of Mary Love of a mother

A Ambivalence to suffering A source of blessing

S Shadow Symbol - open wound

H Holiness

THE ROSARY

Popular piety is a form of devotion. It refers to forms of worship or prayer that are *inspired by culture* rather than the liturgical worship of the Church. A good examples is the rosary.

1. The crucifix

4. Decades

2. The Five Beads

5. The Medal

3. The Medal



1. The crucifix

Holding the crucifix at the start of the Rosary, the person reciting the Rosary will say **the Apostles' Creed**.

2. The Five Beads

The beads on the string that begins with the crucifix are divided into a 1,3,1 arrangement. On the first bead an Our Father will be prayed, on the next three Hail Marys will be prayed and on the last one a Glory Be. Often these prayers are offered for the Pope's special intentions.

3. The Medal

At the end of the string, which is the beginning of the large circle of beads, there is usually a religious medal. The medal is **the beginning and end of one set of mysteries**. The first time the medal is held, an Our Father prayer is prayed at the beginning of the first mystery prayed.

4. Decades

Then there comes a set of ten beads, followed by a single bead. On each of the ten beads a Hail Mary will be prayed and on the single bead a Glory Be will be prayed to mark the end of one mystery. On the same bead, an Our Father is then prayed to mark the beginning of the next mystery. Between these two prayers, it is now the usual custom to recite the **'Oh My Jesus' Fatima Prayer**.

5. The Medal

On returning to the medal, a full set of mysteries will have been prayed. This time, whilst holding the medal, the person will say the final Glory Be, final 'Oh my Jesus' prayer and usually the seasonal antiphon to Our Lady, such as the Hail, Holy Queen.

What is it?

The Rosary is one of the oldest and most universally used examples of popular piety. The Rosary is the name given both to a prayer and to the beads that are used in the reciting of the prayer. It consists of three prayers:

Our Father

The Hail Mary

The Glory Be

Each of these prayers is said a set number of times during the reciting of a Rosary. The practice of praying the Rosary is believed to have begun with St Dominic in the thirteenth century. It has been pointed out that anyone who says a full Rosary will have prayed 150 Hail Mary's, which is the same as the number of Psalms in the Bible. Enclosed* Benedictine Monks will pray all 150 Psalms through the Church's year and it has been suggested that the Rosary was a way for ordinary people to echo this monastic prayer in their ordinary lives.

How & When Do Catholics Pray the Rosary?

Each of the Rosary's parts has a prayer to accompany it and the Rosary is divided into sets of mysteries which are prayed on different days. There are three traditional sets of mysteries:

The Joyful

The Sorrowful

The Glorious

Pope St John Paul II added an additional set of mysteries: **the Luminous Mysteries**. The Rosary is often prayed before and after Mass on weekdays in many parishes. It is also the most usual prayer said when families gather to receive the body of a deceased loved one into their home or into the church on the evening before their funeral. For this reason, the Rosary has become **a powerful way for Catholics to reflect on the meaning of suffering**.

THE SORROWFUL MYSTERIES

The mysteries of the Rosary are the focus of the whole prayer. The idea is that while each of the prayer repetitions are made the person is supposed to **think about the meaning of the mysteries**. Each mystery is an **event from the life of Jesus**. The Sorrowful Mysteries are the five that encourage Catholics to think about the meaning and importance of Jesus' suffering and death. **Reflecting on the suffering of Jesus was one of the most important ways in which Catholics were able to find answers to the Problem of Evil**. The Rosary in turn is one of the ways that helps Catholics reflect on the **nature and meaning of this suffering**.



The agony in the garden

This is when Jesus prayed in the Garden of Gethsemane on the night before he died. He prayed to be spared the suffering he knew was to come but in the end accepted God's will out of obedience and love.



The scourging at the pillar

This is when Pilate had Jesus whipped in an attempt to satisfy those who wanted Jesus to be crucified. It didn't do any good and Pilate (the Roman governor and the judge at Jesus' trial) condemned Jesus to death.



The crowning with thorns

This is when the soldiers overseeing the crucifixion mocked Jesus, twisting thorns into a crown because he had been charged with claiming to be the King of the Jews.



Jesus is made to carry his cross

This is when Jesus carried his own cross to Golgotha, the place of his crucifixion.



Jesus is crucified and dies on the cross

This is when Jesus was nailed to the cross and, after six hours, died on the cross.

KEY TERMS

Enclosed

Religious orders of monks or nuns who have no contact with the outside world.

Antiphon

A short hymn to Mary sung at the end of the Rosary and often after morning and evening prayer.

Mysteries

The Rosary mysteries are reflection on periods of Jesus' birth, life and death that we cannot fully understand.

Fatima Prayer

A short prayer added to the Rosary after the appearance of Mary to the three young children in the Portuguese village of Fatima in 1917. In one of these appearances, Mary asked the children to add this prayer at the end of each mystery:

'Oh my Jesus, forgive our sins and save us from the fires of Hell and lead all souls to heaven, especially those in most need of thy mercy.'

Knowledge Check

Answer in full sentences or copy out the question.

1. What is meant by 'popular piety'?
2. What three prayers does the Rosary consist of?
3. When is the practice of the Rosary believed to have begun?
4. How many times will a person have prayed Hail Mary's after completing the Rosary?
5. What is an 'enclosed' Benedictine Monk?
6. How many Psalms will enclosed Benedictine Monks pray through the Church's year?
7. What are the three traditional sets of mysteries?
8. Which Pope added an additional set of mysteries?
9. What are these mysteries known as?
10. When is the Rosary often prayed?
11. What does the Rosary allow Catholics to reflect on?
12. What are the 'mysteries' based on?
13. What events do the five sorrowful mysteries remember?
14. At the start of the Rosary, which Creed is recited?
15. Describe how a decade is recited.

Choose a Task

1. Design a multiple choice quiz on the topic of the Rosary.
2. Design a **detailed** mind map outlining the Rosary.
3. Design a **detailed** visual poster outlining the Rosary.

Exam Questions

Answer both questions

Remember to use examples and sources of wisdom and authority where possible.

Explain what a rosary is used for. (8 marks)

Explain how the sorrowful mysteries might help Catholics to respond to the problem of evil. (8 marks)

PILGRIMAGE

WHY?

A pilgrimage is a journey to a holy place. Before modern roads and transport, this could take a very long time. For example, many Catholics in England would walk for many weeks to Canterbury, the ancient shrine of Thomas Beckett (Archbishop of Canterbury, 1161-1170. A saint in the Catholic Church). In Europe they would walk for weeks or months to Santiago di Compostela the supposed resting place of the apostle St James.

Many Catholics still go on pilgrimage, although they don't usually take weeks or months to do it. However, many of the ancient practices of pilgrimage are still common: *travelling with groups of pilgrims, praying and fasting on the way to the site, carrying with them the sick and those who are in need of prayers.* In this last respect, pilgrimage remains an important way for Catholics to respond to the mystery of suffering. The Catholic Church recognises sites of pilgrimage as important places for prayer and spiritual renewal.

Group Pilgrimages

A group pilgrimage may help an individual to feel part of the Church community. Pilgrims pray together and feel supported by each other. Going on a pilgrimage can help believers to reflect on their life's journey. It is an opportunity to take time out from every-day life and focus on their journey to God. It is often a journey of self-discovery, especially for those who are sick. Very few sick people come back cured. However, they may come back feeling at peace and able to accept and cope with the problems they face.



- ✓ To help strengthen their faith
- ✓ As a way of thanking God
- ✓ To do a penitential act as a reflection of sorrow for sin
- ✓ To share the experience and their faith with other believers
- ✓ To think about their relationship with God
- ✓ To come closer to God by giving him time and attention
- ✓ To seek physical, spiritual or emotional healing

S Strengthen

T Thanking

R Reflection of sins

E Experience with others

T Thinking about their relationship with God

C Closer to God

H Healing: physical, spiritual, emotional

Knowledge Check

Answer in full sentences or copy out the question.

1. What is a pilgrimage?
2. Who was Thomas Beckett?
3. Why do many Catholics go on group pilgrimages?
4. Why do many Catholics go to Rome?
5. Who was Bernadette Soubirous?
6. Why do many Catholics go to Lourdes?

Choose a Task

1. Design a multiple choice quiz on the topic of pilgrimage.
2. Design a detailed mind map outlining pilgrimage
3. Design a detailed visual poster outlining pilgrimage

Exam Question

Explain why Catholic Christians go on pilgrimage.

Rome is the Eternal City, centre of the Christian world, home to the popes, and the place where many early Christians were martyred.



Italy

The Holy Land and Jerusalem To walk in the steps of Jesus.



Israel

Santiago de Compostela One of the few medieval pilgrim ways to have continued to modern times, pilgrims can still walk the way (Camino) from France to Santiago to venerate the relics of St James the Apostle.



Spain

HOLY PLACES TO GO ON PILGRIMAGE



You need to know about Lourdes for your exam!

Many Christians go on pilgrimage to WALK IN THE FOOTSTEPS of important people, such as: Jesus, Mary, St Peter...etc. Here are some examples:

Fatima is the site of the important Marian apparitions, approved by the Catholic Church. The recent popes have all shown great devotion to Our Lady of Fatima.



Portugal

Lourdes A place of healing for over a century, Catholics visit this place to seek healing for themselves, family and friends. It is where Mary appeared to a young girl named Bernadette.



France

Walsingham A place of pilgrimage since medieval times, Our Lady of Walsingham is one of the patrons of England.



England

LOURDES

Pilgrimage and Suffering
Pilgrimages help many people learn how to value the role of God in their lives in a new way and find a way to bear the sufferings of life without being defeated by them. One place where this is very evident is in a Catholic pilgrimage shrine called Lourdes, in southern France.

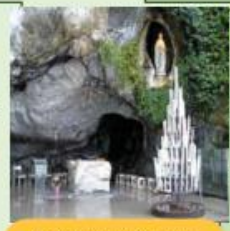
Bernadette Soubirous
Lourdes became a pilgrimage site after a young girl called Bernadette Soubirous, in the middle of the nineteenth century, had a series of visions of a beautiful lady she later realised was Mary, the mother of Jesus. These visions happened in a grotto (small cave).

In these visions, amongst other things, the lady told Bernadette to dig in the ground and that from it a spring of healing water would flow. This spring of water is still a central part of the pilgrimage to Lourdes and many visitors, especially the sick and disabled, bathe in the water to seek physical and spiritual healing.

Visiting the grotto
Pilgrims will visit the grotto, which is the site of the visions, to pray and to offer petitions (a prayer asking God to do something). They take part in torchlight and Blessed Sacrament Processions*, will usually celebrate Mass daily and take the opportunity to celebrate the Sacrament of Reconciliation*.

The Annual (Yearly) Pilgrimage to Lourdes
Most Catholic dioceses in England and Wales have an annual pilgrimage to Lourdes and will take numbers of young people who volunteer as helpers for the sick and disabled pilgrims. These pilgrimages are often life-changing for the young people involved and are a real and practical way that ordinary people can respond to the mystery of suffering.

Many young people report that it is their work with the sick and disabled that is especially meaningful to them on their pilgrimage, because often these people have borne suffering and sickness (lived with it) their whole life with patience and grace.



Blessed Sacrament Processions: The name given to the bread and wine after they have been blessed (consecrated) by the priest during Mass. Catholics believe that after the consecration the bread and wine become the body and blood of Christ: the real presence of Jesus in the form of bread and wine.

Sacrament of Reconciliation: The ritual in which Catholics confess their sins to a priest and ask for God's forgiveness. Through the prayer of absolution, the priest then declares the person's sins forgiven.

Applied Catholic Theology

Life and Death

1. Life and Death
2. Is There a Right Way to Die?
3. Resurrection and the Soul
4. Judgement: Heaven, Purgatory and Hell
5. The Magisterium
6. The Second Vatican Council
7. Sarcophagi: Jesus' Passion
8. The Paschal Candle
9. The Catholic Mass and Music and Worship
10. The Catholic Funeral Rite
11. Prayer Within Catholic Communities

Sin and Forgiveness

1. Crime and Punishment
2. Why should Christians forgive?
3. Capital Punishment
4. Salvation
5. The Paschal Mystery
6. The Nature of the Church
7. Mary as a Model of the Church
8. The Church as the Body of Christ
9. Features of a Catholic Church
10. The Architectural Features of a Catholic Church
11. The Seven Sacraments
12. The Importance of the Eucharist for Catholics
13. Evangelisation
14. Evangelisation Continued
15. UK laws, festivals and traditions

LIFE AND DEATH

Source of Wisdom

Christians believe that at death life is '**CHANGED**' not ended'

 Eternal Life

"I declare to you, brothers and sisters, that **flesh and blood cannot inherit the kingdom of God, nor does the perishable inherit the imperishable. Listen, I tell you a mystery: we will not sleep, but we will be changed.**"
- 1 Corinthians 15: 50-51

CATHOLICS AND THE IMPORTANCE OF DYING WELL

For Catholics, it is important to help those who are facing death to...

PREPARE

themselves to die well
This may include:

- Spending **time with family**
- Updating their **will** to reduce worry about money and inheritance
- Discussing what they'd like their **funeral** to be like
- Making peace** with family members and friends
- For those in significant pain 'preparing for death' will include **palliative care** to reduce pain

RESPECT the VALUE of their lives

The Catholic Church **rejects euthanasia and assisted suicide** as ways of ending a life.

Life is God given and therefore **only God can take it** (death must be natural).

The Catholic Church promote **hospices** (a place where people with terminal illness can go for control of the symptoms and pain) and other organisations that provide palliative care when treated to cure a medical condition is no longer possible.

Provide RITUALS to SUPPORT the GRIEVING

- This means that the **funeral rite** includes **imagery and symbols** that reflect belief and hope in **eternal life**.
- Prayers are said for those who have died. Belief in eternal life is explored through **music and art**.



KEY DOCUMENT FOR THIS TOPIC: EVANGELIUM VITAE (Good News of Life).

Written by St Pope John Paul II.

St Pope John Paul II
Evangelium Vitae
(Good News of Life) - 1995

"...I confirm that **euthanasia is a grave violation of the law of God, since it is the deliberate and morally unacceptable killing of a human person.**"



- This teaching comes from the belief that all human life is sacred or holy. Belief in the sanctity of life comes from an understanding that life itself is a **gift from God** and is therefore precious and should be **respected from conception to natural death**.
- Deliberate killing, such as euthanasia and assisted suicide, are seen as going against the instruction in the **Ten Commandments: 'Do not murder'**. There are suitable alternatives to euthanasia available through palliative care.
- Also, the Catholic tradition teaches that **suffering does have a purpose** in helping us to learn about ourselves and others and to understand the human condition.
- The Church also acknowledges that some people are able to **identify with the suffering of Jesus** at the crucifixion.
- It is reasonable to seek palliative care to reduce pain and maintain dignity. *Evangelium Vitae* points out that **such heroic behaviour [Jesus' death on the cross] cannot be considered the duty for everyone.**

PALLIATIVE CARE Controlling Pain



For some people the time leading up to death can be long. For those who have a significant illness (such as cancer) or degenerative condition (such as Motor Neurone Disease) there may be long periods of pain.

Palliative care aims to control pain.

WHO NEEDS IT?

MEDICATION TO RELIEVE THE PAIN

Medication is provided to reduce pain and to enable the individual to retain as much dignity and quality of life as possible. Hospices and other organisations that offer similar care, have doctors to provide pain relieving medication, nursing care, supervision and practical help until natural death occurs.

Motor neurone disease, also known as ALS, occurs when specialist nerve cells in the brain and spinal cord called **motor neurones** stop working properly.



THE CATHOLIC CHURCH ON PALLIATIVE CARE

The Catholic Church supports those who provide care because it respects the value of every person until their natural death. The source of wisdom you would use here is Pope St John Paul II's document: *Evangelium Vitae* (Good News of Life).



St Pope John Paul II
Evangelium Vitae
(Good News of Life) - 1995

St Pope John Paul II clearly stated in this document that palliative care is an appropriate way of relieving pain for two reasons:
1. **It allows people to reject any treatment that is too painful or difficult.**
2. **It allows people to maintain their dignity and some quality of life.**
Some pain relieving drugs are very strong and in some cases can make death happen sooner. Some people object to the use of these drugs.

Death: The end of physical life, when the physical body ceases completely to function.



Eternal Life: The term used to refer to life in heaven after death. Also, the phrase Jesus uses to describe a state of living as God intends, which leads to a life in heaven.

Jesus' death and resurrection allows us to spend eternity with God

Catholic teaching on death can only be understood in a context in a belief in **Eternal Life**. Eternal life is the belief that when **Jesus died on the cross, he paid for our sins** and when he **rose from the dead, he defeated death**. Catholics therefore believe that because of these things, Christians can hope to go to heaven after death and spend eternity with God.



Knowledge Check

- Define the key concept **death**
- Which quote supports the Christian belief that after death life is 'changed not ended'?
- What three things do Catholics believe are important to help those who are facing death?
- What is euthanasia?
- What is assisted suicide?
- What does the Catholic Church teach about euthanasia and assisted suicide?
- What does St Pope John Paul II say about euthanasia in *Evangelium Vitae*?
- What two reasons does St Pope John Paul II give to support palliative care as an appropriate method of relieving pain?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe Catholic teachings on Palliative Care [5]

Euthanasia & Assisted Suicide

These are both ways of ending someone's life **BEFORE** its 'natural end'.

Euthanasia

This term means a 'good' or 'gentle' death.

Euthanasia is the term used to refer to a procedure where a **MEDICAL PROFESSIONAL** gives medication to end the life of a person who is suffering **UNBEARABLE PAIN** from a prolonged **INCURABLE** condition. **Voluntary Euthanasia** is done on the request of the individual whose life will be ended. Such voluntary euthanasia is legal in the Netherlands.



Both euthanasia and assisted suicide are currently **ILLEGAL** in the UK. The Catholic Church teaches that these **DELIBERATE ACTIONS** to end a life before natural death are **WRONG** in **ALL CIRCUMSTANCES**.

Assisted Suicide

Seeking help to end one's own life.

Assisted suicide is the term used when an individual **SEEKS HELP TO END THEIR OWN LIFE** in a **PAIN FREE/reduced** process. Some countries have changed their laws to permit (allow) assisted suicide.

1 Sanctity of life

IS THERE A RIGHT WAY TO DIE?

1 Quality of life

Beliefs about end-of-life issues like euthanasia and assisted suicide are often based on two things:

2 Many religious believers think that all human life is **SACRED** because it was given to us by God. All human life has **VALUE**. They believe that only God has the right to end a life and, therefore, there should be **NO RIGHT TO DIE**.

“Love your neighbour as yourself” – Sermon on the Mount
“Do to others as you would have them do to you” – Golden Rule
“Do not kill” – 10 Commandments

3 This refers to people’s **WELLBEING** and the extent to which a person’s life is **MEANINGFUL** and **PLEASURABLE**.

It is a difficult concept to measure and doctors often look at pain levels, the extent of disability and the ability of patients to perform basic tasks for themselves. If someone is living with a severe disability or a terminal illness, it could be argued that their **QUALITY OF LIFE IS SO LOW** that they should have the **RIGHT TO DIE**.

4 Do Not Resuscitate (DNR)

Do not resuscitate orders are **LEGAL ORDERS** *not to try and resuscitate a patient if they were to stop breathing or their heart was to stop beating*. They are often requested by patients for whom resuscitation is unlikely to work or where it could lead to unnecessary suffering or poor quality of life. This is *not the same as supporting euthanasia or assisted suicide*. Deciding not to resuscitate a person because the resuscitation procedures would be unreasonably burdensome would be respecting their dignity and value, so many religious people support DNR decisions.

5 A “right to die” argument

- The **BRITISH HUMANIST ASSOCIATION (BHA)** has a very different approach towards the quality and sanctity of life. Their view is that the decision about quality of life and whether or not life is bearable rests with the **INDIVIDUAL**.
- They reject the idea of God, so don’t believe that life is sacred.
- Rather, they believe that all humans have **AUTONOMY** (the right to choose for themselves) and any decision about prolonging or ending a life should be down to the individual.
- They conclude that legalizing assisted dying would mean that individuals would be free to make their own decisions about their end of life care.
- They don’t reject palliative care but argue that euthanasia and assisted suicide should be legal alternatives for those who want them.

6 Catholic Beliefs

- Catholic teachings on the quality and sanctity of life are based on the belief that all life is given by God, and is sacred, so no one has the right to end a life.
- Therefore they do not accept that people have a right to die and think that euthanasia and assisted suicide are not acceptable.
- They care about quality of life and campaign for palliative care to make life for suffering people as comfortable and pain-free as possible.
- This view is shared by many other Christians and people of other religions. Islam and Judaism also believe in the sanctity of life.
- Euthanasia and assisted suicide should not be considered because the focus should be on showing compassion to the dying person to allow them to retain their dignity (being worthy of honour or respect).

What Does The Law Say?

- Euthanasia is legally permitted in the Netherlands and a few other countries.
- Assisted suicide is legally permitted in Switzerland and some states in the USA. Since 2010, the Director of Public Prosecutions for England and Wales has said it is unlikely that someone would be prosecuted for helping someone travel to Switzerland for assisted suicide if:
 - A) it was clear the person had reached a voluntary, settled and informed decision, and
 - B) the one helping was wholly motivated by compassion

6 The Catholic Church Put Forward the Following Arguments...

8 Slippery slope argument

The worry is that, whilst the motivation behind the campaigns to change UK law are reasonable, is it really possible to accept euthanasia or assisted suicide? Where do we draw the line?

Quality of Life

There are numerous examples of people who have lived fruitful and valuable lives despite the difficult circumstances they find themselves in.

Who decides ‘quality of life’?

The most common examples in **FAVOUR** of euthanasia and assisted suicide are those of people with incurable conditions and people in unbearable pain. Twenty-three-year-old Daniel James was paralysed from the chest down following a rugby injury. He sought assisted suicide because he could not come to terms with what he felt to be a diminished quality of life. On the other hand, many people live productive and valuable lives despite such paralysis.

7 Other Christian Beliefs

- Some religious people reach different conclusions on this issue.
- For example, some Christians focus on the compassion that Jesus showed in his healing miracles and in his teaching. They look in particular to Jesus’ teaching to **“Love your neighbour as yourself”** and the **Golden Rule** (**“Do to others as you would have them do to you.”**)
- They would argue that allowing euthanasia, if an individual feels that the quality of the life has become too low, would be a sign of love that clearly demonstrates loving compassion.
- Such an argument is used to support **VOLUNTARY EUTHANASIA** (the patient asks for it) and to support a change to UK law to allow assisted suicide.
- There is a continuing increase in the number of people in the UK who support both voluntary euthanasia and assisted suicide.

In 2012, the BHA supported a challenge to UK law on behalf of Tony Nicklinson who had ‘locked in syndrome’. This condition meant that he was unable to move or speak. He repeatedly asked for the right to be able to choose an assisted death. He felt that the law condemned him to live with increasing indignity and misery.

2012 Tony Nicklinson



A few years later, Diane Pretty had asked the courts to permit her husband to be able to take her to a Dignitas clinic in Switzerland where euthanasia is permitted, should she make the decision that her quality of life had deteriorated too far. Both of these people died without changes in UK law.



Diane Pretty

Knowledge Check

1. What two things are beliefs about end-of-life issues often based on?
2. What is meant by the *sanctity of life*?
3. What it meant by *quality of life*?
4. What is a *do not resuscitate order*?
5. What is the humanist view on the right to die?
6. What do Catholic Christians believe about the right to die?
7. How might other Christians disagree with Catholic beliefs?
8. What is the slippery slope argument?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Describe the difference between the Sanctity of Life and Quality of Life argument [5]

RESURRECTION & THE SOUL

Catholic beliefs about what life after death is like are based on St Paul's analogy. It is offered as a possible explanation of what belief in a bodily resurrection might be like.



Theories about Jesus' Resurrection

3

The Resurrection of Jesus remains a matter of faith. It cannot be proven beyond all doubt but neither can it be disproved. Belief in the Resurrection would be weakened if it were proven that Jesus did not rise from the dead. Various alternative theories have been offered to explain the empty tomb:

- **Jesus' body was stolen:** Could the Romans or some others have stolen the body? Their motivation might have been to reduce the likelihood of Jesus' followers making extraordinary claims about him. This theory is countered by asking why did they not present Jesus' body when the Apostles started preaching that Jesus had risen from the dead?
- There have been some who have said **the Apostles themselves stole Jesus' body**, although that begs the question why would they have risked their own lives for something they knew to be untrue. The Gospel accounts emphasise that the tomb was guarded to protect it from robbery.
- **Jesus was revived:** Theories have been offered suggesting that Jesus **did not really die at all**. They suggest that he was given pain relief and that he merely seemed dead. Then perhaps the women were able to revive him when they went to the tomb. This is countered by asking why are there no stories about Jesus' life and death in the years that followed?

St Paul: The Soul

5

St Paul has an understanding of the soul that informs his explanation of what resurrection means. It is clear that he does not think that Jesus' body was simply revived. St Paul also rejected the view that humans are mere physical bodies with a finite existence on earth. **There is something about being human that gives us our identity; this is what he understood the soul to be.**

He also rejected the view that eternal life was restricted to 'disembodied' souls. It is not possible to fully understand human experience without a body. **So for St Paul, our earthly, physical identity is both body and soul. Our heavenly spiritual bodies are both body and soul.**

Early Christian Beliefs

At first the belief was that Jesus' resurrection would be followed quickly by all people being taken to the presence of God. Early Christian preaching was to encourage people to be ready for the return of Christ and the end of time. Those ideas are still part of the readings and liturgies during Advent.

'Be on your guard! Be alert! You do not know when that time will come.'

6

Scholars refer to this as 'imminent eschatology', the belief that the end of time will be soon. Gradually, Christians began to realise that there was a responsibility to live now in the light of the resurrection. Preparation for eternal life in the presence of God involves resisting evil and doing good. Guided by the Holy Spirit, this world can be transformed by Christians following the teachings of Christ. The inspiration is found in the Lord's prayer:

'...Thy Kingdom come, on earth as it is in heaven.'

St Paul: Bodily Resurrection

Catholic belief in a bodily resurrection

What would this resurrection of the body mean for people? What would it be like?

In his first letter to the people of Corinth, **St Paul offers an explanation. He makes a distinction between earthly bodies and heavenly bodies.** The analogy he offers comes from nature. The grain of wheat is very different to the fully-grown plant. It ceases to be like that seed when it becomes a plant. Our observation of the world helps us understand that the existence of the seed has led to a different physical existence, that of the wheat plant. In a similar way, St Paul says that it is possible to understand a distinction between earthly, physical bodies and heavenly, spiritual bodies.

4 St Paul had an extraordinary encounter with Jesus on the road to Damascus after his resurrection.

He explained the importance and meaning of this experience in the first of his letters to the Christian community in Corinth:

"But if it is preached that Christ has been raised from the dead, how can some of you say there is no resurrection for the dead?" - 1 Corinthians 15:12

'For what I received I passed onto you as of first importance: that Christ died for our sins according to the Scriptures, that he was buried, that he was raised on the third day according to the Scriptures, and that he appeared to Cephas, then to the Twelve. After that, he appeared to more than five hundred of the brothers and sisters at the same time, most of whom are still living, though some have fallen asleep. Then he appeared to James, then to all the apostles, and last of all he appeared to me also...' 1 Corinthians 15:3-8

"So it will be with the resurrection of the dead. The body that is sown is perishable, it is raised imperishable; it is sown in dishonour, it is raised in glory; it is sown in weakness, it is raised in power; it is sown a natural body, it is raised a spiritual body. If there is a natural body, there is also a spiritual body.' 1 Corinthians 15:42-45

'And just as we have borne the image of the earthly man, so shall we bear the image of the heavenly man.' 1 Corinthians 15:49

The grain of wheat vs the plant

1 Jesus' Resurrection



Catholic beliefs about life after death start with the Easter story. The resurrection of Jesus is an essential part of Christian belief. Each of the four Gospels includes scenes of the disciples finding the empty tomb. The body of Jesus was laid in a tomb on the Friday evening. Early on the Sunday morning some women went to the tomb to anoint to body. They found that the tomb was empty and Jesus' body was gone. The Apostles and some other disciples describe events where they met the risen Jesus.

This led them to believe that Jesus had risen from the dead and that this was a resurrection of the body.

This means that his body, not just his soul, had physically risen from the dead. Belief in this event led the early Christians to believe that bodily resurrection and eternal life with God is possible for all people. Like those first Christians, Catholics believe that because Jesus died for our sins and then overcame death by rising again, **now human beings will also experience resurrection of the body.**

Summary

- Death is not the end; Christians believe there is an eternal life after death.
- Catholics do not accept euthanasia or assisted suicide; they believe there are alternatives.
- There are many different opinions about whether people should have the right to end their own lives.
- Due to Jesus' bodily resurrection, Catholics believe that the soul and the body are resurrected.
- There are different opinions about Jesus' resurrection and about what happens to us when we die.

Knowledge Check



1. When was Jesus' body laid in the tomb?
2. When was it discovered that Jesus' body had gone 'missing'?
3. What theories have been offered to explain Jesus' empty tomb? (Give three examples)
4. Who had an extraordinary encounter with Jesus on the road to Damascus?
5. According to St Paul what is the soul?
6. What is imminent eschatology?
7. What is dualism?
8. What is reincarnation?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question



b) Describe Catholic teachings on the soul [5]

Different Beliefs

- ✓ Some Christians believe that death is the end of bodily existence and **only the soul lives on**. They might use the accounts of near-death experiences as evidence of a separation of body and soul. Philosophers have a term for such a **clear distinction between body and soul**, they call it **'dualism'**.
- ✓ Some people use this dualism to explain a very different approach to life after death - **reincarnation**. Reincarnation is the belief that the soul continues to exist after death and may be placed in a different body. There are people who claim that they can remember past lives. This belief is not part of mainstream Christianity, nor of the other monotheistic religions (Judaism and Islam). Within religious beliefs reincarnation is associated with Hinduism and Buddhism.
- ✓ There are those who would simply reject each of these explanations and **reject any belief in a life after death**. Those people would simply say that death is the end of human life.

7

8

Catholics believe that God will judge them based on the actions of their life and based on this judgement they will either go to heaven or hell.



JUDGEMENT: HEAVEN, PURGATORY & HELL

- ✓ This idea of a final day of judgement is present in the Parable of the Sheep and the Goats (Matthew 25:31-46) and in the Book of Revelation.
- ✓ 'It will be revealed with fire, and the fire will test the quality of each person's work.'
- ✓ 'If what has been built survives, the builder will receive a reward.' 1 Corinthians 3:13.
- ✓ Judgement: The Parable of the Rich Man and Lazarus, The Parable of the Unforgiving Servant.

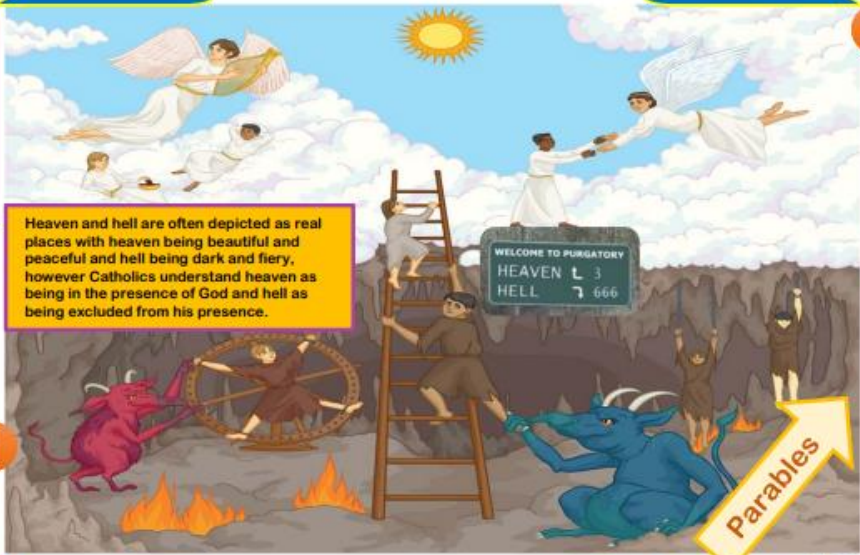
Other Christian views on Judgement

Catholic teaching focuses on individual judgement. Each person is responsible for their own actions. Some Christians put the emphasis on a final judgement at the end of time, rather than an individual judgement. Jesus talked about a 'final judgement' when he would come to earth again and judge the whole of creation. This idea of a final day of judgement is present in the Parable of the Sheep and the Goats (Matthew 25:31-46) and in the Book of Revelation.

Heaven

Those who have accepted God's grace and forgiveness in this life will enjoy eternal existence in God's presence after they die in the next life. This face-to-face encounter with God is what Christians call heaven. Throughout history, Christians have tried to find language and imagery to describe what this might mean. The language of 'up there', the 'presence of God', 'glorious splendor', the 'beatific vision', a 'transcendent place', and the imagery of 'clouds' and 'harp-playing angels' all try to offer ways of understanding a belief in eternal happiness in the presence of God. All such language and imagery are attempts to describe the indescribable. The reward for living correctly is to be eternally in the presence of God. Heaven is to be totally at one with God.

Heaven and hell are often depicted as real places with heaven being beautiful and peaceful and hell being dark and fiery, however Catholics understand heaven as being in the presence of God and hell as being excluded from his presence.



The New Testament has several stories told by Jesus that refer to a judgement being made about how people lived their lives. These include:

- ✓ *The Parable of the Rich Man and Lazarus*
- ✓ *The Parable of the Unforgiving Servant*



7 The Parable of the Rich Man and Lazarus

The Parable of the Rich Man and Lazarus tells how a rich man ignored the needs of the poor, using the example of a man named Lazarus, who begged outside his house. Lazarus would beg while the rich man enjoyed his luxuries. The parable emphasises the injustice by saying that Lazarus would have welcomed even the bits of food that fell from the rich man's table. After death though, Lazarus is taken to be with God, while the rich man has an eternal life of 'torment' and misery. The rich man asks for some comfort, but he is reminded:

'Son, remember that in your lifetime you received your good things, while Lazarus received bad things, but now he is comforted here and you are in agony.' Luke 16:19-31.

Catholic teaching about judgement comes from this Christian understanding that each individual will be held to account by God for the things they do, or fail to do, during their lives.

Summary

- ✓ 'Eschatology' describes Christian ideas about what will happen at the 'end times'.
- ✓ Catholics believe in personal judgement; God will judge everyone on the basis of how they have lived their lives.
- ✓ 'Heaven' is being in the presence of God for eternity and 'hell' is the absence of God for eternity.
- ✓ Purgatory is the Catholic idea that, after death, people will be cleansed of sin before they can enter heaven.
- ✓ Other Christians hold different beliefs about judgement and about purgatory.

Knowledge Check

1. What language is typically used to describe heaven?
2. Why is it difficult to describe what heaven is like?
3. What does *purgatory* mean?
4. Which Christians do not accept purgatory?
5. What is the Greek word for fire?
6. What imagery is typically used by artists, writers and poets to describe hell?
7. What do we learn from the parable of the Rich Man and Lazarus?
8. What do we learn from the parable of the Unforgiving Servant?

Purgatory 3

This term comes from the same root as 'to purge'. It means to cleanse or get rid of sins. Catholic teaching accepts that people are not perfect. While trying to do their best, people will sometimes behave badly or act in ways that cause harm to others. In human relationships when people do something wrong, they can try and make it up to the other person. The same can apply to a person's relationship with God. Eternal life with God is about being in a state of perfection. Cleansing or purging those mistakes and errors in life enables the person to be fully in the presence of God. 'Purgatory' refers to the cleansing of people's sins before they can go on to heaven to spend eternal life with God.

Some art and literature presents purgatory as a place with fire between heaven and hell. This is because the Greek root word for fire is 'pur' and refers to the ancient practice of burning land in an attempt to cleanse it. St Paul uses the same fire imagery in his first letter to the Christians in Corinth:

'It will be revealed with fire, and the fire will test the quality of each person's work. If what has been built survives, the builder will receive a reward.' 1 Corinthians 3:13.

Rather than a 'place', Catholics use the term purgatory to refer to a state of hope. This is why Catholics pray for those who have died. Catholics pray for purification and removal of sin so that they can spend eternal life with God.

Hell 5

If being in the presence of God is the reward then being separated from God is the punishment. Those who through their own free will ultimately reject God's grace and forgiveness, have chosen to live eternally outside of God's presence. This total lack of God for all eternity is what Christians call hell. The two parables (The Unforgiving Servant and The Rich Man and Lazarus) demonstrate that it is the free choices made by humans that led to them going to hell after death. It is not that God chooses to punish, it is that the individual chooses to reject the love, mercy, compassion and God. The imagery of fire and torture has been used by artists, writers and poets to explore the concept of being separated from God for eternity, but again, these are attempts to describe something that we cannot fully understand.

4 Other Christian views on purgatory

Most Christians believe in heaven and hell but Protestant Christians do not accept the idea of purgatory. They simply believe that people either accept God and are in a state of grace with God, or they reject God.

8 The Parable of the Unforgiving Servant

In the Parable of the Unforgiving Servant Jesus tells of a man who owes money to the king. Fearing being put in debtors' prison, the man begs the king for mercy. After receiving that mercy and being free from his debt, the man then goes in search of a man who owes him money. This other man asks him for mercy, however he rejects the requests for mercy. The king is furious about such hypocrisy and puts the first man in prison until he pays what he owes! Jesus finishes the story with these words:

'This is how my heavenly Father will treat each of you unless you forgive your brother and sister from your heart.'

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe Catholic teaching on life after death [5]

b) Describe Catholic teaching on judgement [5]

THE MAGISTERIUM

The magisterium is the authority of the Pope and the bishops of the Church.

The nature of the magisterium
The Catholic Church has three distinct sources of authority to support its teaching about Christian beliefs:



The Bible as the Word of God is the primary source of authority for all Christians. Christians believe that the writers of the Bible were inspired by the Holy Spirit and the Church believes that the Holy Spirit continues to work through the Church.

Over the centuries important theologians have explained beliefs to the Christian community. This is called the 'Tradition'.

The leaders of the Church, the popes and bishops, have also clarified and made statements on certain aspects of Catholic faith. Their particular authority is called the 'magisterium'.

The Latin word 'magister' means a 'master' or 'teacher'. After his resurrection Jesus gave the Apostles the instruction to **'make disciples of all nations'** (Matthew 28:18-20).

In this way they received their authority to teach the faith directly from Jesus. Catholics believe that the present Pope and bishops can trace their own appointment and ordination back to the first apostles.

This is called the 'apostolic succession' and is why the Pope and bishops have the authority to make statements about the Catholic faith.



SOURCES OF WISDOM AND AUTHORITY

Jesus gave the Apostles the instruction to **'make disciples of all nations'** (Matthew 28:18-20). Catholics believe that the Pope and bishops can trace their appointment and ordination back to the first apostles. That is why they have authority. This is known as 'apostolic succession'.

You will also need to know about the documents published at the Second Vatican Council, in particular the four key documents known as 'Constitution'.

The Bible

Tradition

The Magisterium 'Apostolic Succession'

Ordinary Magisterium

Popes and bishops regularly preach the Good News in homilies and in their regular letters to their dioceses. Most often, these are to encourage faith and devotion, clarify a point of faith or to give instructions. The most well-known are those written by the Pope. These are called encyclicals and an example is *Evangelium Vitae* (Gospel of Life). This was written by Pope St John Paul II to clarify the Church's responses to a variety of modern ethical issues that affect the sanctity of life.

'Taking into account these distinctions, in harmony with the magisterium of my predecessors and in communion with the Bishops of the Catholic Church, I confirm that ...' *Evangelium Vitae* 65 – Pope St John Paul II 1995.

The function of the magisterium is to present Catholic teaching in the modern context. It is important for the Church to be able to respond to issues that were not considered by the writers of the Bible (such as IVF and genetic engineering). The authority of the magisterium gives confidence to the next generation of Catholics that they are following the Church's teaching as they face the issues of modern society.

Extraordinary Magisterium

Sometimes the Church needs to respond to specific disputes or particular circumstances. These have more importance than the ordinary teaching role of the Pope and the bishops, so they are called the 'extraordinary magisterium'.

Conciliar magisterium:

Sometimes the bishops of the Church are asked to sit in a General Council. The task of a General Council is to explore matters of significance to the life of the Church. This could be a specific doctrine or guiding the Church's response to developments in the modern world. The first record of a General Council is in the Bible (Acts 15) when the leaders of the Christian community gathered in Jerusalem to decide what procedures were required of new converts to Christianity.

The decisions made at these General Councils have great significance in the life of the Catholic Church, for example, the decisions of the Councils of Nicea and Constantinople resulted in the Nicene-Constantinopolitan Creed, which is still regularly said in churches on Sundays (see page 88). The Council of Trent (1545-63) responded to the Protestant Reformation by, for example, reinforcing Catholic belief that Christ is fully present in the Eucharist.

The Conciliar magisterium is an example of the bishops of the Church working together to make sure that they are speaking to the worldwide Church. This working together also includes synods, such as the 2015 Synod on the Family.

Pontifical magisterium:

Another form of 'extraordinary magisterium' concerns specific and rare declarations by a pope.

The Pope has the authority to make the final decision on some disputed matters of faith or morals. The rules for such declarations were finally set down by a General Council in 1870.

They are called **ex cathedra declarations**.

Before making such a declaration, the Pope is expected to **consult widely, have discussions with key advisers and spend time in prayer**. When a pope makes an ex cathedra statement in this way the teaching is considered to be without error (infallible).

It is important to note that this papal infallibility is limited to faith and morals. The use of this form of extraordinary also includes synods, such as the 2015 Synod on the Family.

Summary

- Catholics use the Bible, Tradition and Magisterium as sources of authority.
- Magisterium can be 'ordinary' and 'extraordinary'.
- Pontifical magisteria are rare, but Catholics believe these teachings to be infallible (without error/mistake).
- The last extraordinary magisterium was the Second Vatican Council which led to many significant changes and developments.

Knowledge Check



- What are the three main sources of authority in the Catholic Church?
- What is meant by the term *apostolic succession*?
- What is meant by *extraordinary magisterium*?
- What instruction did Jesus give to the Apostles in Matthew 28: 18-20?
- What is the function of the magisterium?
- What is the role of a General Council?
- What does the Latin word *magister* mean?
- What must a pope do before making an ex cathedra statement?



Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question



b) Describe Catholic belief on the role of the Magisterium [5]

The Second Vatican Council

Who?

Called by **Pope St John Paul XXIII**
Completed under **Pope Paul VI**

What?

The Council published **sixteen documents**. These documents were about how the Catholic Church needed to change in order to change with society. The most important of these documents are known as 'Constitution.'

When?

1960's
Called by Pope St John XXIII on 11th October 1962 and completed its work under Pope Paul VI on 8 December 1965.

Where?

The **Vatican**, in Rome. It is named 'Second Vatican Council' as it was the second council to be held there.

Why?

The Second World War ended in 1945. In the years that followed there was **considerable change in society, technology and in politics**. John XXIII became Pope in 1958 and wanted the Catholic Church to respond to these changes and to represent the faith in this new context.

The Second Vatican Council was the Catholic Church's response to the challenges of the modern world. It published sixteen documents stating the Church's position on different issues.



The four key documents **CONSTITUTION**

Four of the documents of Second Vatican Council were given the title of 'Constitution'. This made them the most important of the sixteen documents published. These have been guiding the Catholic Church since **1965**.

2. Sacrosanctum Concilium (Constitution on the Sacred Liturgy)

This document covers changes to the Church's liturgy, which means the official public worship of the Church.

Before the Council most people attended Mass that was said in Latin. Everyone, priest and people, faced the altar to emphasise the link between the Eucharist and Jesus' sacrifice on the cross.

The reforms encouraged by Vatican II were that the people should be more involved, have better understanding of the symbolism and be able to understand what was being said. So the words were translated into the local language and the altar was moved so that the priest now faces the people and his actions are more easily seen.

In addition, the lectionary has been revised so that Catholics get a richer and wider selection of Bible readings at church.

Changes to the Mass (e.g. no longer in Latin, facing the people, a wider selection of readings...)

3. Lumen Gentium (Dogmatic Constitution on the Church)

The First Vatican Council produced documents about the roles of the Pope, the bishops and priests.

The Second Vatican Council wanted to make sure that all members of the Church knew that they had important roles to play.

Lumen Gentium means 'the light of the peoples' and this document encouraged ordinary Catholics to take a more active role to be part of the mission of the Church and to serve Jesus.

This means that all Catholics should act on the promise they made at their baptism to be 'lights to the world' by being of service to others.

Emphasised the importance of taking an **ACTIVE** role in the Church

4 Gaudium et Spes (Pastoral Constitution on the Church in the Modern World)

This document was published at the end of the Council in 1965.

In the years before the Council, the Catholic Church was seen as being separate from the rest of world.

Gaudium et Spes was written to respond to the changes in society, the issues of poverty and social justice, the impact of science and technology and, above all, to encourage the people of faith to engage with the modern world.

By working for peace and social justice, Pope John XXIII wanted the Catholic Church to be a source of 'joy and hope' to the world.

Gaudium et Spes set the foundations and principles that later enabled the charity CAFOD to be set up to respond to the needs of the developing world.

The influence of this document has been dramatic. In the years since Vatican II

- dioceses and parishes have set up Justice and Peace Groups to consider local peace and justice issues
- international organisations like Pax Christi, which works for peace, have been created
- national organisations, such as the Catholic Association for Racial Justice, have developed.

Responding to changes in society, poverty, social justice, impact of science and technology and how to engage people in their faith in the modern world

Knowledge Check

1. When was the Second Vatican Council?
2. What was the Second Vatican Council in response to?
3. How many documents were published?
4. What are the four key documents known as?
5. What does the document *Dei Verbum* contain? (write a summary)
6. What does the document *Sacrosanctum Concilium* contain? (write a summary)
7. What does the document *Lumen Gentium* contain? (write a summary)
8. What does the document *Gaudium et Spes* contain? (write a summary)

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

- a) Describe the purpose and importance of Vatican II [5]
- b) Describe the purpose and importance of Vatican II [5]
- c) Explain the teachings of Vatican II [8]

1. Dei Verbum (Dogmatic Constitution on Divine Revelation)

This is the document that sets out the relationship between the Bible, Tradition and the Magisterium.

It explains how these are each inspired by the Holy Spirit and have authority for the Catholic Church.

It also emphasises the importance of proper biblical scholarship, which means the study of the different literary styles in the Bible and the historical context of the Bible writers.

It also encourages Catholics to use the Bible as part of their prayers. It has led to an increase in specialist biblical scholars and more Bible study groups in parishes.

Using the Bible effectively

SARCOPHAGI: 'Jesus' Passion'

Passion: Latin: Suffering

Who?

The scene depicts Jesus' final days, including his trial, death and resurrection.

What?

Sarcophagi are stone coffins that have carved images on them. The images often feature scenes from the Bible or the lives of saints.

This particular sarcophagi has a variety of images that reinforce the belief that Jesus' death and resurrection were a triumph over sin and a sign of hope. The entire decoration is based on the Passion and resurrection of Jesus.

When?

It dates from the 4th Century.

Where?

The Museo Pio Cristiano in the Vatican, Rome.

Why?

Humans often use images and symbols to help explore ideas and to find ways of expressing beliefs.

The Jesus' Passion sarcophagi expressed beliefs about death, resurrection and eternal life.



The sarcophagus in the Museo Pio Cristiano in Rome is decorated with images showing events from the last days of Jesus' life

The Cross: Chi-Rho Symbol of Resurrection

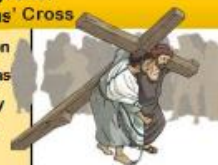
For the centre piece there is a stylised cross with the Chi-Rho symbol representing Jesus. The Chi-Rho is an ancient symbol of the resurrection. It is formed from the first two letters of the title 'Christ' in Greek (Chi = X, Rho = P). When merged together they form the 'Chi-Rho'. To reinforce the fact that Jesus' death was a victory over sin, the Chi-Rho is placed within a wreath that is held in the beaks of two eagles. The wreath is the Roman symbol of victory. The eagles represent God because in Roman religion they were used to represent the god Jupiter. This cross sits above two soldiers who are looking up at it in awe.



The Chi-Rho is a traditional symbol for the Resurrection of Jesus

Simon of Cyrene: Carrying Jesus' Cross

On one panel there is an illustration of the scene where a man known as Simon of Cyrene was instructed by the Romans to carry Jesus' cross to the crucifixion.



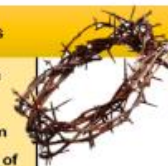
Jesus' Trial before Pilate

Another panel shows Jesus being presented for trial before the Roman governor Pilate.



The Crown of Thorns

The next panel shows Jesus being given a crown of thorns by the soldiers guarding him - they gave him the crown to mock him as he was accused of calling himself King of the Jews. However, the crown in the image is actually filled with jewels which symbolises that Jesus' death was actually a triumph over sin.



Pilate Washes his Hands of the Blame

Next to it is the scene of Pilate, who did not want to execute Jesus but gave in to the pressure of the crowd and the Jewish authorities, washing his hands to symbolise that he wouldn't take responsibility for crucifying Jesus.



Summary

- The sarcophagus with scenes of the Passion conveys Christian beliefs about eternal life

Knowledge Check

1. What are sarcophagi?
2. What does the 'Jesus' Passion' sarcophagus depict?
3. What does the word *passion* translate to?
4. What are the four main events of the Passion?
5. What does the Chi-Rho symbol represent?
6. What is the wreath a symbol of?
7. Why is the crown of thorns filled with jewels?
8. Why is Pilate depicted washing his hands?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

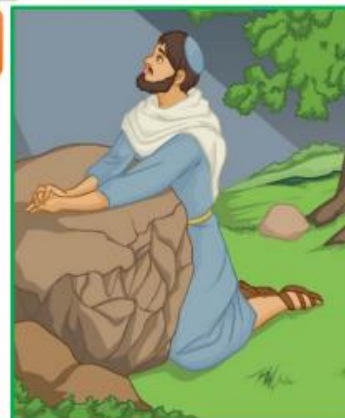
Exam Question

b) Describe how the Sarcophagus reflects Catholic belief in life after death [5]

What is meant by Jesus' Passion?

This term comes from the Latin word for 'suffering' and is used to refer to the suffering Jesus endured during the last few days of his life. The Gospels describe the main events of the Passion:

- **Garden of Gethsemane:** Where Jesus prayed for the strength to face the difficulties he was to endure. This was where he was arrested.
- **Two trials:** Jesus appeared before the Jewish authorities to face religious charges. He then was tried by the Roman official (Pontius Pilate) and charged with rebellion.
- **Suffering:** Under instructions from Pilate, Jesus was whipped, hit and had a crown made out of thorns placed on his head.
- **Crucifixion:** This is a cruel and painful way to die. Jesus was nailed to a cross (nails in the hands and the feet). The Gospel accounts say that he was on the cross for six hours. Eventually, his body could take no more and he died. The soldiers checked that he was dead before removing him from the cross and placing him in a tomb.



The Garden of Gethsemane scene shows Jesus humanity, where he struggles to come to terms with his fate.

✠ Then Jesus went with his disciples to a place called Gethsemane, and he said to them, "Sit here while I go over there and pray." ✠ He took Peter and the two sons of Zebedee along with him, and he began to be sorrowful and troubled. ✠ Then he said to them, "My soul is overwhelmed with sorrow to the point of death. Stay here and keep watch with me."

✠ Going a little farther, he fell with his face to the ground and prayed, "My Father, if it is possible, may this cup be taken from me. Yet not as I will, but as you will."

✠ Then he returned to his disciples and found them sleeping. "Couldn't you men keep watch with me for one hour?" he asked Peter. ✠ "Watch and pray so that you will not fall into temptation. The spirit is willing, but the flesh is weak."

✠ He went away a second time and prayed, "My Father, if it is not possible for this cup to be taken away unless I drink it, may your will be done." (Matthew 26)

THE PASCHAL CANDLE

Paschal = Pesach

Also known as the 'Easter Candle'

Who?

The candle represents the **eternal presence of Jesus Christ** and his light overcoming sin. It features in **Catholic churches**.

What?

The name '**Paschal**' comes from the Hebrew word **Pesach** which means Passover.

In the Church, at the Saturday vigil before Easter Sunday, a 'new' fire is lit. The candle is then lit from this sacred fire. There are four key symbols on the paschal candle: the five wounds, the cross, the year and the alpha and omega.

When?

It is lit throughout **Easter** time and then relit for **baptisms** and other special events including feast days in the year.

Where?

The candle has a **prominent place** in the **church** throughout the Easter season so that it is visible to all.

Why?

It is a **special candle** that symbolises the fact that Jesus' resurrection was a triumph over death.



The Paschal candle represents Jesus' light overcoming sin and it is decorated with symbols to show this.

The five wounds: The candle has five studs on it to represent the five wounds Jesus received during his crucifixion.

The cross: This is the symbol of Christian faith because it is due to the crucifixion of Christ that the Resurrection was possible.

The year: Each year the candle is marked with that particular year. It reminds people that Jesus is the same for all time and that the salvation earned by Jesus is as real now as it was in the past. The candle will be used by the Church until the following Easter, especially at baptisms.

The 'Alpha' and 'Omega': These are the first and last letters in the Greek alphabet. They symbolise Christ as the 'first' and the 'last'; the 'beginning' of all things and the 'end' of all things.



The Easter candle has a prominent **place** in the church throughout the whole Easter season. As a reminder of the triumph of the **Resurrection** the Easter candle is lit at every Mass from Easter Sunday through to Pentecost.



"The Light of Christ"

The Easter candle and baptism

Historically, baptisms took place at the Easter Vigil. Many parishes still baptise adults during the Easter Vigil. Baptism is the sacrament of entry into the Church. Water is used during the baptism ceremony to symbolise that sin is washed away by Jesus. The water used to baptise the new Christians during the Easter Vigil is blessed using the Easter candle.

The Easter candle is used in other baptisms throughout the year. To remind the people of the Resurrection, it is lit and placed near to the font. A smaller baptismal candle is lit from its flame and is given to the baptised person or their family to remind them that the 'Light of Christ' has defeated the darkness of sin. The liturgy encourages them to keep the light of faith 'burning brightly'. A further link to Easter is contained in the instructions to priests that, where possible, baptisms should take place on Sundays. This is because Sunday is the weekly reminder of the celebration of the death and resurrection of Christ.

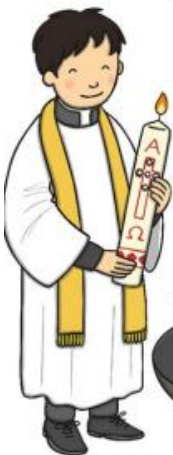
The Flame



The candle represents the eternal presence of Christ. The lighting of the flame is to help people remember that Jesus is the Light of the World and that before he came, the world was in spiritual darkness.

It begins here!

At the beginning of the Easter Vigil the church is in darkness. Outside the church a fire is lit. The Easter (Paschal) candle is lit from that fire and processed into the church. This symbolises the 'light of Christ' overcoming the 'darkness of sin'. The procession is completed with an ancient hymn, called the **Exultet**, that proclaims Jesus' triumph over sin because his resurrection defeats death. The candle itself has a variety of symbols on it to reinforce belief in this triumph over sin:



"The light of Christ, rising in Glory, dispel the darkness of our hearts and minds."

Knowledge Check

- When is the paschal candle lit?
- Which Hebrew word does *paschal* come from?
- What does the paschal candle represent?
- What are the four key symbols on the paschal candle?
- What do the five studs represent?
- What do the alpha and omega symbols represent?
- Historically, which sacrament took place at the Easter Vigil?
- What is the *Triduum*?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain why the paschal candle is used in the Easter Vigil and during a Catholic baptism [8]

The Triduum

Each year during Holy Week the events of the last week of Jesus' life feature in a series of liturgies. The most important of them are three from the 'triduum':

- Holy Thursday:** Mass of the Last Supper to remember Jesus' last meal with his disciples
- Good Friday:** a commemoration of the Crucifixion
- Easter Vigil:** in remembrance of the Resurrection

Summary

- The Paschal candle conveys Christian beliefs that the Resurrection brought humankind light and hope. The symbols on it are a reminder of the Crucifixion through which Jesus brought salvation.
- The Paschal candle is used at Easter (the festival that remembers the Crucifixion and Resurrection) and at baptisms as a reminder that 'the light of the world' has defeated death and that salvation from sin is possible.

THE CATHOLIC MASS, MUSIC AND WORSHIP

The Introductory Rites

The greeting, Penitential Act and Collect (also referred to as the opening prayer) that form the beginning of the Mass.

1

Many people find that music can help them pray, as it can help them express themselves in different ways. Recorded music can support an individual in prayer and live music is often used in churches to help the community bring their prayers together.

The Catholic Mass

The exam will not have specific questions about the structure of the Catholic Mass, however it is useful to know that it has distinct sections.

2

Liturgy of the Word

This part of the Mass takes place at the ambo (a pulpit or lectern). The focus of this part of the Mass is on the readings from the Bible that are being proclaimed. On Sundays there would be three readings, usually one from the Old Testament, followed by a psalm that follows the same theme. The second reading is usually from one of the New Testament 'letters'. The most important reading is the Gospel. The community stands to hear the words of Christ, read by the priest or deacon. The Gospel is often greeted in song. The priest or deacon explains the meaning of the Gospel in the homily (sermon). The community says the Creed together and prays for the needs of the community.

Which type of music is best for worship?

Through the centuries numerous composers and hymn writers have created music for prayer. There is a wide range of musical styles available, but there are differences of opinion within the Catholic community (and other Christian communities) about what is the best way to use music in prayer.

- Some Catholics would say that traditional Latin music is the best way to appreciate the beauty and majesty of the liturgy.
- Others would say that the older hymns are more appropriate church music and the words of the classic hymn writers are more poetic.
- Others would say that the Church needs to sing in the style of the younger generation, otherwise it is not speaking to them at all.

4

The Concluding Rites

The Mass ends with the final prayers, blessing and dismissal.

3

Liturgy of the Eucharist

The focus is on the altar, where the priest says the Eucharistic prayer.

This is the great 'thanksgiving prayer' that recalls the sacrifice of Jesus on the cross. This is when Catholics believe the bread and wine become the 'body and blood' of Jesus. Catholics refer to this as 'Real Presence' and 'Blessed Sacrament'. The community says the Lord's Prayer together, offer each other a sign of peace and receive the 'body and blood' of Jesus during the distribution of communion.

Knowledge Check

1. What are the four parts of the Catholic Mass?
2. What is the alleluia?
3. What is the gloria?
4. What are eucharistic acclamations?
5. What is the purpose of the eucharistic acclamations? (what do they highlight?)
6. When are hymns typically used?
7. What are the Psalms and what do they express?
8. Which religious communities have built on the Psalms?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain how and why music is used in the liturgy [8]

Music in the Liturgy:

The Catholic Mass has several elements which are appropriate to sing:

Alleluia



Alleluia: This is a chant for welcoming the Gospel. To

acknowledge the importance of listening to the teaching of the Gospel, the congregation stand and the alleluia is chanted. Where possible the alleluia should be sung.

The Gloria



The Gloria: This is a great song of praise for God.

The words can bring a greater sense of joy or awe/wonder through music.

Eucharistic Acclamations



Eucharistic Acclamations: These are the chants that the

congregation says/sings during the Liturgy of the Eucharist. They are the 'Holy, Holy', the 'Memorial Acclamations' and the 'Great Amen'. They punctuate the great prayer of thanksgiving at which the bread and wine become the 'body and blood of Christ'. Marking these moments with sung responses highlights their solemnity and importance. These can be sung in a variety of different styles ranging from the very modern to more traditional styles in Latin.

Hymns



Hymns: There is a wide number of hymns in the

Christian tradition. Many parishes use hymns at the start and the end of Mass. Hymns can be appropriate to support quiet prayer at, or after, the distribution of communion. Hymns are also used sometimes to accompany the procession of the gifts of bread and wine before the Eucharistic prayer.

The Psalms



In the Old Testament, the Psalms are ancient collections of Jewish prayers and hymns to God. They express emotions; from joy and praise, to anxiety and despair. These have been sources of prayer for the Christian community since the time of Christ. This is because Jesus, and most of the first Christians, had lived most of their lives as part of the Jewish community. The Psalms would have been important to their worship and it is no surprise, therefore, that they used them in prayer.

The religious communities of monks and nuns built on these types of prayer. Their daily prayers were based around the biblical prayer from the Psalms. Gradually they developed ways of singing or chanting the Psalms to add to the beauty of the prayers. The most famous of those styles is known as 'Gregorian chant'. It is a type of chant that was developed for them to sing together without musicians. Psalms are still sung in monasteries, convents and cathedrals today.

At the Catholic Mass, the Liturgy of the Word includes a psalm selected to reflect the theme of the reading that comes before it. Parishes are encouraged to sing the psalm where possible and many have been set to music by modern composers. Chant versions of the psalms are also available.

THE CATHOLIC FUNERAL RITE

Symbols on the coffin

The coffin is covered in a white cloth, called a 'pall'. This is a reminder of baptism when the newly baptised person is presented with a white garment as a symbol of being washed clean of the sin that separates humans from God. Also, because every coffin is covered in a pall, it is a reminder that all are equal in the eyes of God. So everyone is worthy of salvation through Christ.

The Book of the Gospels is sometimes placed on the coffin. This is to remind people that Christians live by the teachings Jesus gives and the example he sets in the Gospel and that by doing this they will have eternal life. A cross is often placed on the coffin. The baptism ceremony includes the priest or deacon making the sign of the cross on the person to mark their joining the Christian community. It is through Jesus' death on the cross and his resurrection that he defeated death and brought salvation for humans.

'In baptism, (name) received the sign of the cross. May he/she now share in Christ's victory over death.'

The Paschal candle is often placed beside the coffin as a symbol of belief in the Resurrection. Flowers may be placed on the coffin but in moderation, so that they do not hide these important symbols of faith and hope.

Liturgical colour and final commendation

Priests wear white at Easter for a funeral, the liturgical colour of the Resurrection, and may wear white for the rest of the year, or purple, which is a sign of mourning. As with all the parts of the funeral, the purpose is to express Christian hope in the Easter story and faith that the deceased person will have eternal life with God after death, which is also expressed in the prayers of the Final Commendation:

'May the angels lead you into paradise: may the martyrs come to welcome you and take you to the holy city, the new and eternal Jerusalem.'



The coffin is incensed which means the priest walks around the coffin with incense to honour the dead person.

The pall placed over the coffin symbolises the white robes the priest wears at baptisms and also that everyone is equal in the eyes of God.

A variety of symbols and actions are used during a Catholic funeral to remind the family and friends of the deceased person of their faith in the Resurrection. The purpose is to allow the family to grieve for the dead person, to celebrate the love they have for them and to find comfort in the hope that they have gone on to eternal life with God.



Symbolic actions

At the beginning and end of the funeral the coffin is sprinkled with holy water. The coffin is also sprinkled with holy water before being buried or cremated. Once again this is a reminder of the water used in baptisms and the gift of eternal life. The accompanying prayer is:

'In the waters of baptism, (name) died with Christ and rose with him to new life. May he/she now share with him eternal glory.'

At the end of the funeral the coffin is incensed as a sign of honouring the person, whose body was a temple of the Holy Spirit. The incense also symbolises the prayers of those gathered rising up to God.



Processions are a traditional way of acknowledging the importance of the occasion. It is common for the coffin to be carried out of the church in a solemn procession. It brings the community together to show the grieving relatives and friends that everyone present is in solidarity with them.

Sources of Wisdom and Authority

Key quotations have been highlighted.

Summary

- Requiem uses serene, calm melodies to convey beliefs about death and eternal life, for example, that the Resurrection gives hope and that death is not to be feared. Instruments such as harp and violin and soprano voices give the composition a sense of the 'heavenly'.
- A Catholic funeral uses symbols, prayers and readings to convey beliefs about eternal life.

Catholic Beliefs about Eternal Life: Fauré's Requiem

Many classical composers have used Christian liturgy as a source of inspiration for their work. There are several well-known versions of music composed for funerals. These are known by the term 'requiem', which is from the Latin for 'rest'.

Gabriel Fauré (1845–1924) composed a requiem that is full of beautiful melodies. Written just after the death of his father and first performed just before the death of his mother, the requiem brings a sense of calm and peace. *In the requiem he wanted to show that you could be sad about the death of loved ones while also hoping that after death they had gone on to eternal life with God. Fauré said that he did not want to express a fear of death.* Instead the requiem focuses on the hope that the dead will be in heaven and he expresses this in the music using harps, violins and the sound of angelic sopranos.

'It has been said that my Requiem does not express the fear of death and someone has called it a lullaby of death. But it is thus that I see death: as a happy deliverance, an aspiration towards happiness above, rather than as a painful experience.' Gabriel Fauré.

The Final Commendation is the part of the funeral where the mourners say their final goodbye to the dead person.

The *In Paradisum* is a prayer that is sometimes used in the Final Commendation. It asks for the deceased to be welcomed into paradise. Fauré's music for *In Paradisum* reflects this hope. The gentleness of the music reflects the tranquility of life's trials being left behind and the music rises and soars before fading. The music of this section of Fauré's requiem is lighter and more delicate than previous sections, and has a steady, rhythmic beat. The choir sings in a higher pitch, sounding like the angels in heaven. Like the symbols and symbolic actions in the funeral, Fauré's music helps the grieving to have faith, comfort and hope. It does not focus on sadness, but on the peaceful and fear-free nature of death. In contrast, Verdi's Requiem 'Dies Irae' ('Day of Wrath') has loud, violent music that changes rapidly and conveys restlessness. The singing sounds like wailing and it is very different to the sense of calm and tranquility in Fauré's requiem. Fauré himself said: *'...my Requiem is dominated from beginning to end by a very human feeling of faith in eternal rest.'*

Prayers and readings



The readings from Scripture will be chosen to remind those present of the promise of resurrection and eternal life. Those readings will be a source of comfort for those grieving and a declaration of hope.

The prayers throughout the funeral will refer to baptism, to Easter and the Resurrection, to Jesus' sacrifice on the cross and the fact that because of this, Christians can hope for eternal life after death.

The priest or deacon will use their homily (sermon) to explain the Christian belief that Jesus defeated death through his resurrection and that this means that Christians can hope to have an eternal life with God after death. This should bring further comfort to the family and friends. The prayers of intercession will include prayers for the dead, for the grieving family and friends and for the wider community.

Although not a requirement of the funeral rite, many funerals in Catholic churches would include the Liturgy of the Eucharist. This would be particularly appropriate if the deceased or members of the family regularly attended Mass. Some funerals include a short 'eulogy'. This is a where a relative or friend speaks about the life of the deceased person and can be a celebration of their positive contribution to the lives of their family and friends.

Knowledge Check



1. What is the name of the white cloth that covers the coffin?
2. What two things does the white cloth remind us of?
3. Why is the Book of the Gospels sometimes placed on the coffin?
4. When and why is the coffin sprinkled with holy water?
5. For what two reasons is the coffin incensed?
6. What is the Latin term for rest?
7. What did Gabriel Fauré want to show in his requiem?
8. What do the prayers throughout the funeral refer to?

Choose a Task



1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question



- b) Describe how Fauré's requiem reflects Catholic belief in eternal life [5]
b) Describe how the Catholic funeral rite reflects Catholic belief in life after death [5]*

PRAYER WITHIN CATHOLIC COMMUNITIES

The Catechism of the Catholic Church (CCC) defines prayer as:

'... the raising of the mind and heart to God, or the petition of good things from him in accord with his will' (CCC 534).

Prayer can be more than simply asking for something or reciting a familiar set of words. As the definition above indicates, prayer is about setting aside time to be in the presence of God. Regular prayer can become a habit that deepens a relationship with God. This is what 'raising the mind and heart to God' can mean for Christians.

Prayers of various kinds suit different occasions

Adoration God is wonderful!	This is when Christians simply acknowledge that God is wonderful and worthy of praise. Such prayer could be to sit silently to worship God. Other times Christians may use words or songs to express adoration. In the Catholic tradition, many parishes (and schools) place the Blessed Sacrament on display so that people can pray quietly and adore God who is present in the Eucharist. The Catholic practice of starting prayer with the words 'In the name of the Father, and of the Son and of the Holy Spirit' is itself an act of prayerful adoration.
Thanksgiving Thank you God!	As the term suggests, it is common for people to thank God. People give thanks for the wonderful things that happen, for answers to prayers and simply for the wonder of creation. For Catholics, the most important act of thanksgiving is the Liturgy of the Eucharist during the Mass. 'Eucharist' is a Greek word that translates as 'thanksgiving', and this part of the Mass is prayer that gives thanks for the sacrifice of Jesus in his death and resurrection.
Repentance Sorry!	When Christians sin they feel sorry and express regret about having sinned - this is called repentance. Catholics repent during a section of the Mass called the penitential rite. For more significant sins Catholics can seek the Sacrament of Reconciliation to experience more personally God's forgiving response to repentance.
Intercession Please help my friend...	These are the prayers that ask God to help others. Most Christians will have intercessory prayer during their regular Sunday acts of worship. At every Mass there are intercessory (or bidding) prayers.
Petitions Please help me...	Individual Christians will ask God to help them. They will 'petition' God to respond to their own needs.

Formulaic ('set') prayers

There are a great number of prayers that have been said by Christians over the centuries. Some have been written down and collected in prayer books. Many Christians like to use these when they pray because they believe they come from people who were close to God. Some of these 'formulaic' prayers are similar to a 'formula', in that the same words are said in the same way every time. They are often very well-known and provide a source of inspiration for many, for example, The Lord's Prayer (Our Father), Glory Be, or the Hail Mary.

Some formulaic prayers have become extended, so that set prayers are repeated. This helps to stop people becoming distracted and enables them to pray more deeply. Examples include:

- The 'Jesus Prayer' is when the person simply repeats the name 'Jesus' or a statement like 'Jesus, I love you'.
- The Rosary is another example of this technique within the Catholic community. There is a formula for reciting the most familiar prayers ('Our Father', 'Hail Mary' and 'Glory Be') so that Catholics can meditate on the 'mysteries' of faith (see pages 114-115).
- A more complicated formulaic prayer is the Liturgy of the Hours. This involves reciting psalms, Scripture readings, canticles (songs from the Bible text) and intercessions at different times of the day. Priests, nuns and monks promise to say these prayers every day. Some lay people join in with part of these prayers when they can.

Extempore (random) Prayers

The risk of formulaic prayers is that people become so familiar with them that they simply repeat them and they lose their meaning. There will also be times when the formulas do not express the feelings and wishes of the person.

Extempore prayer is when Christians use their own words to speak with God. It is possible for people to use their own words to 'raise their hearts and minds to God' in a more spontaneous way.

There are some Christians, including some Catholics, who feel so moved by the Holy Spirit that they worship God with unusual sounds. This is called 'charismatic' prayer or praying in 'tongues'.



"The raising of the heart and mind to God"

Summary

- ✓ Prayer is 'the raising of the mind and heart to God'.
- ✓ Prayers can be 'set' or more spontaneous.
- ✓ Prayers can have different purposes, for example, to praise, thank or request.
- ✓ The Lord's Prayer ('Our Father') was taught by Jesus himself and includes different types of prayer within it.
- ✓ Catholics believe that their prayers can intercede on behalf of someone who has died and that God can be asked to welcome them into eternal life.

Praying for the dead

Within the Catholic community there is long tradition of praying for the dead. These prayers are intercessions on behalf of the person who has died, asking God to welcome them into his presence so they can have eternal life in heaven. The most commonly used prayer is:

'Eternal rest grant unto him/her, O Lord. Let perpetual light shine upon him/her. May he/she rest in peace. Amen. May his/her soul, and the souls of all the faithful departed, through the mercy of God, rest in peace. Amen.'

Another feature of praying for the dead is the practice of asking priests to offer a Mass for a relative or friend who has died. On such occasions, the priest will remember that person in his own prayers during the Mass. The person's name may be mentioned during the Eucharistic prayer. Within that prayer there is always a formula of words to remember those who have died and a variation that enables an individual to be named.



The Lord's Prayer

The best known formulaic prayer is the Lord's Prayer (the 'Our Father'). It is called the Lord's Prayer because the Gospels tell us that these words were Jesus' instructions on how to pray (Matthew 6:9-13).

Knowledge Check

1. What does the Catechism of the Catholic Church define prayer as?
2. What are the five different types of prayer?
3. What is extempore prayer?
4. What is formulaic prayer?
5. What is the best known formulaic prayer?
6. What is meant by charismatic prayer?
7. What will a priest do when asked to offer a Mass for a relative or friend who has died?
8. What is the Liturgy of the Hours?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!
Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the importance of different types of prayer for Catholics [8]

CRIME AND PUNISHMENT

What is crime?

Crime can be defined as an action that breaks the law. Laws are made by the government of a country. As such they can be very different in different countries and what is lawful can change over time. Laws are there to protect the weak, give guidance on acceptable behaviour and allow people to live safely and without fear. The role of the police is to detect and prevent crime; the role of the justice system is to enforce the laws and punish those who break them.



What is sin?

A sin is an action which goes against the will of God. Some sins are crimes, for example, murder. Other sins such as adultery are not against the law.



What is the difference?

A crime is something that is against the law of a country, whereas a sin is against God's will. Some things, for example stealing, might be both a sin and a crime.

Making Moral Decisions

Crime and sin are linked because they are about what is right and wrong or good and bad behaviour. The set of principles we use for deciding what is right and wrong is known as morality. Making decisions on how we behave is complex, but put very simply there are two common forms of morality:

Relative Morality

This is the idea that a moral principle can be adapted or adjusted in certain situations. So stealing in principle is wrong, but if someone has no other way to get food, then stealing is justifiable. Killing is usually wrong, but if someone kills in self-defense, then it may be acceptable.

Absolute Morality

This is when a person holds a principle such as 'stealing is wrong' and never alters it. This applies to all situations, no matter what the context or circumstance. So even if someone was starving it would not be right for them to steal a loaf of bread. Stealing is always wrong. Another example would be the belief that it is wrong to kill. This would apply in all situations such as war, abortion and euthanasia.

Why do we punish?

When a criminal is found guilty of a crime, there are a number of punishment options available to a judge, such as fines, community service and prison. A judge will consider several different purposes when sentencing a person for the crime they have committed.



Deterrence – put people off!

Deterrence means to discourage, or put someone off committing a crime. Punishment may put someone off doing that action again. It also makes an example of the criminal and seeing the punishment given might deter someone else from doing the same thing. This is often one of the main arguments for the death penalty. Execution for murder should put others off committing murder. However, many argue that deterrence does not work and that people are not really discouraged by the example of others receiving punishment.

Deterrence also has to be just. Punishments should be no harsher than they need to be to put criminals off. The threat of hanging would probably deter someone from speeding but it would not be fair.



Retribution – make them pay!

Retribution is the idea that punishment should make criminals pay for what they have done wrong. To put it simply, this means getting even or taking revenge. It makes the victim of a crime feel a sense of justice that the offender got what they deserved. This goes with the Old Testament idea of 'an eye for an eye, and a tooth for a tooth', but it does not reflect Jesus' teaching that we should 'turn the other cheek' and not seek revenge. Sometimes victims feel that criminals do not get severe enough punishment, or there is a fear that the punishment could be too harsh. For Christians, the punishment has to be connected to justice and not revenge.

Rehabilitation – help them start again!

Rehabilitation Punishment should help the offender to see what they have done wrong and to change their behaviour so they do not repeat the offence. It is the idea that criminals can somehow be 'cured' if we understand why they commit crimes and help them to change. This may mean providing criminals with education, counselling, skills or training so they can become productive members of society and avoid breaking the law again. This is also known as reform. It is really the only type of punishment that works in the long term because if criminals are not reformed, they will continue to commit crime when they are released from prison. Rehabilitation is the aim of punishment which is most in line with Christian ideas on forgiveness. However, some see it as being soft on criminals and not really a punishment at all.



Knowledge Check

1. What is a crime?
2. What is a sin?
3. What is the definition of morality?
4. What is relative morality?
5. What is absolute morality?
6. What is deterrence?
7. What is retribution?
8. What is rehabilitation?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

- b) Describe the difference between crime and sin [5]*
b) Describe the difference between absolute and relative morality [5]

Summary

- A crime is an offence against the law and a sin is an offence against God
- There are several aims of punishment such as retribution, deterrence and rehabilitation
- At the heart of the Christian message is forgiveness. Christians should follow Jesus' teaching and example
- The Catholic Church has allowed, but not encouraged capital punishment
- Some Christians are against the death penalty for such reasons as it goes against the commandment 'Do not kill', and there is a risk the wrong person is killed
- Some Christians are for the death penalty because the Church allows it and the Old Testament argues for it

WHY SHOULD CHRISTIANS FORGIVE?



The Lord's Prayer (‘Our Father...’)

The importance of forgiveness is emphasised in the Lord's Prayer. Christians ask God to **'forgive their sins, as they forgive those who have sinned against them'**. This implies that Christians are not open to God's mercy if they are not forgiving towards others.

If we do not forgive others, we are not open to the mercy of God

The Parable of the Unmerciful Servant

77

In Matthew 18:21-22, the Parable of the Unmerciful Servant, Peter came to Jesus and asked, **'Lord, how many times shall I forgive my brother or sister who sins against me?'** **'Up to seven times?'** Jesus answered, **'I tell you, not seven times, but seventy-seven times.'** By saying this, Jesus made it clear that there was no limit to forgiveness.

There is no limit to forgiveness

Forgiveness is at the heart of the Gospel message. Jesus' example and teaching shows Christians that they should treat others with love, compassion, mercy and forgiveness.



Forgiveness



The Parable of the Prodigal Son

The Parable of the Prodigal Son is one of Jesus' best known stories where the father forgives his son and welcomes him back even though he had done wrong.

The father in the story forgives his son, even though he had done wrong.

John's Gospel: Chapter 8

There are many other examples from Jesus' life for Christians to follow. For example, Jesus forgave the woman caught in adultery (John 8:1-11) telling her **'to go and sin no more'**.

Jesus' example shows us we should forgive adulterers.

The Last Moments of Jesus' life

Jesus showed forgiveness in the last moments of his life as he was being put to death. While he was on the cross he said, **'Father, forgive them for they do not know what they are doing.'**

Jesus asks God to forgive others even while experiencing deep suffering on the cross.

Matthew's Gospel: Chapter 6

'For if you forgive other people when they sin against you, your heavenly Father will also forgive you. But if you do not forgive others their sins, your Father will not forgive your sins.'

(Matthew 6:14-15)

God will not forgive us if we do not forgive the sins of others first

Knowledge Check



1. What do we learn from the Parable of the Unmerciful Servant?
2. What is the name of the parable where the father forgives his son?
3. What does Jesus tell the adulterer in John's Gospel?
4. What do we learn about forgiveness in the Lord's Prayer (Our Father)?
5. What does Jesus ask his Father to do whilst he is dying on the cross?
6. What is the definition of justice?
7. How was Stephen Lawrence murdered?
8. Why were the police accused of racism in this case?

Forgiveness Versus Punishment

Justice.
Fairness in the way people are treated.

Some people might think that because Christians believe in forgiveness, they don't believe in punishment. However, as well as teaching about forgiveness Jesus also spoke about justice. He spoke about God's punishment for wrong-doers in the next life. On Judgement Day, God will judge all humans according to how they have behaved. If they have behaved justly they will be rewarded in heaven. It is up to God to judge people and he will forgive those who are truly sorry for what they have done and want to change. Many Christians believe that punishment and forgiveness can go together. Many Christians would see the main role of punishment as being to help the person involved to reform. Christians also need to look at the motives and reasons for crime. Christians should be actively involved in trying to create a better and fairer society where people don't feel the need to turn to crime.

Christians believe that forgiveness and punishment can go together but that reform should be the main aim of punishment.

Stephen Lawrence



Stephen Lawrence was stabbed to death waiting for a bus in 1993 in London. It was a racist attack by a gang he did not know. The police were also accused of being racist for not doing enough to catch the killers. Five men were arrested but were never convicted.

Telegraph Article: 15th April 2018

'The father of murdered teenager Stephen Lawrence has made the humbling decision to forgive his son's killers, nearly 25 years after losing his first child.

Neville Lawrence, 76, said the decision was the hardest he has ever made, and that he struggles to put into words the devastation caused to his family when his son was killed.

Stephen was murdered by a gang of racists in Eltham, south-east London, on April 22 1993 at the age of 18.

His father said: **"The fact that I had to lose my first child has been devastating. I can't begin to explain the pain and the anguish me and my family have suffered over the past 25 years."**

He said the decision to forgive Stephen's killers **"will be the hardest I will ever make in my lifetime"**, but that he is embracing Christian faith. He plans to spend the 25th anniversary of his son's death in church.'

Choose a Task



1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question



c) Explain the importance of forgiveness in Christianity (8 Marks)

Arguments For Capital Punishment



Some Christians believe the death penalty is acceptable. They believe that because:

- Jesus never taught the death penalty was wrong
- The Old Testament teaches that the death penalty should be used for some crimes:

"He who sheds a person's blood, shall have the blood shed, for in the image of God humans were made."

Genesis 9:5

"Life for life, eye for an eye." Exodus 21:24

- Some Christians would argue that the death penalty upholds the commandment "thou shalt not kill" by showing the seriousness of murder as a crime
- St Paul teaches that Christians should accept and obey the laws of their country, which might include the death penalty.
- The Catholic Church has not cancelled its statement that capital punishment can be used by the state
- Religious and non-religious people might argue that some crimes are so dreadful that the most extreme form of punishment is justified. They might also argue that it is wrong to spend money on keeping someone in prison long term, when that money is needed by others in society

CAPITAL PUNISHMENT CP



Capital punishment, or the death penalty, is punishment that takes the life of the criminal. Some people think it is a good form of punishment because it deters people from murdering others and takes a life for a life. Other people disagree with capital punishment because evidence shows it does not deter, and innocent people can be killed for crimes they did not commit.

Arguments Against Capital Punishment



Many Christians believe that capital punishment is un-Christian. They believe this because:

- Jesus came to save (reform) sinners, but you cannot reform a dead person
- The commandment says: **"Do not kill"**
- Jesus said that revenge is wrong: **"You have heard that it was said, 'Eye for eye, and tooth for tooth.' But I tell you, do not resist an evil person. If anyone slaps you on the right cheek, turn to them the other cheek also."** – Matthew 5:38
- Christianity teaches that all life is sacred and that humans are made in God's image. If abortion and euthanasia are wrong, then so is capital punishment. Only God has the right to give and take away life
- The overall message of Christianity is love and forgiveness, so capital punishment goes against this
- Religious and non-religious people might say that there is always a risk that the wrong person might be executed and that killing a murderer is still killing and 'two wrongs don't make a right'
- Christians would agree with humanists that we should value the lives of all, human rights are important, and that governments should defend all their people. Therefore, killing as a punishment is wrong.

Knowledge Check



1. What is Capital Punishment?
2. What biblical quote might Christians cite in support of Capital Punishment (CP)?
3. What arguments do Christians give in support of CP? (Give three examples)
4. What biblical quote might Christians cite against CP?
5. What arguments do Christians give against CP? (Give three examples)
6. What is Pope Francis' view on CP?
7. What did St Pope John Paul II say about CP in Evangelium Vitae 56? (summarise)
8. What was St Augustine's view on CP? (summarise)

Choose a Task



1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question



c) Explain different Christian attitudes to Capital Punishment (8 Marks)

Catholic Teaching on Capital Punishment



The Catechism of the Catholic Church (CCC)

The Catholic position on capital punishment has developed over many years. Traditionally the Catholic Church has allowed, **but not encouraged** capital punishment.

The Catechism of the Catholic Church states: **"Assuming that the guilty party's identity and responsibility have been fully determined, the traditional teaching of the Church does not exclude recourse to the death penalty."** CCC 2267

Pope Francis: completely against CP!



In recent years Pope Francis has stated that he is against the death penalty, saying that it is no longer justifiable and there is also the possibility that the wrong person could be killed.

St Pope John Paul II: Evangelium Vitae 56



Pope St John Paul II in his Evangelium Vitae 56, suggested that capital punishment should be avoided unless it is the only way to defend society from the offender. This is the position set on in the new Catechism of the Catholic Church:

"If bloodless means are sufficient to defend human lives against an aggressor and to protect public order and the safety of persons, public authority must limit itself to such means, because they better correspond to the concrete conditions of the common good and are more in conformity to the dignity of the human person."

St Augustine's Letters



In two famous letters, St Augustine emphasises the need to seek other punishments if at all possible.

"... we pity the person, but hate the offence or transgression. In fact, the more we dislike the vice in question, the less do we want the offender to die without correcting his vices... There is no space to reform character except in this life. After that, each person will have whatever he has won for himself here [in this life]. That is why we are forced to intercede for the guilty, out of love for the human race. For otherwise [capital] punishment will end this life for them, and once it is ended, they will not be able to bring their punishment to an end."

– Letter 153 to Macedonius, 3

"...we would prefer to have them set free than to have the sufferings of our brothers avenged by shedding their blood."

– Letter 134 to Apringius, 4



What is 'salvation'?

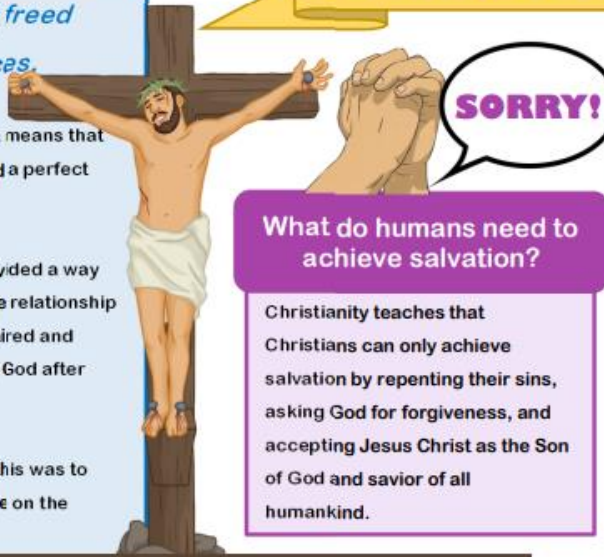
In Christianity, salvation means *being freed from sin and its consequences*.

Christians believe that human sinfulness means that they had rejected God and no longer had a perfect relationship with him.

However, God loves humans and so provided a way for human sins to be 'paid for' so that the relationship between humans and God could be repaired and humans can hope to spend eternity with God after death.

Christians believe that the way God did this was to become human, as Jesus, and then to die on the cross.

Christians believe that by sacrificing his life Jesus paid the price for human sin once and for all.



SALVATION



Grace

For Christians, grace is the love and mercy shown by God because God wants them to have it, not because they have done anything to deserve or earn it.

It is a free, generous and undeserved gift from God. If Christians repent of their sins, they are truly sorry for them. Catholics believe that this makes them children of God and gives them the desire to change and do good.

Grace comes about in a special way in the sacraments, which Catholics believe are an encounter with God. Salvation brought by Jesus comes to the world today through the sacraments of baptism, confirmation and the Eucharist. As a result of receiving these sacraments, Catholics should try harder to live a Christian life. All Christians are called to a life of holiness, so they should try to live up to the teachings of Jesus.

The importance of grace, free will and salvation for Catholics

Salvation from sin is important because without it, a person sin will stop them from having a relationship with God and ultimately might mean hell or purgatory after death. The salvation of humankind was the purpose of Jesus' life, death and resurrection.

Jesus is the saviour of the world for Christians. Christians believe they do not deserve this but are given it freely by God. It is up to humans how they respond. God created humans with free will. They can choose to accept what Jesus has done or reject it. God wants everyone to have a relationship with him, but it cannot be forced.

Salvation is important for Catholics because it explains why the sacraments of baptism, reconciliation, confirmation healing and the Eucharist are at the heart of Catholic life.



How did Jesus' death bring salvation?

Christians use a range of ways to describe how Jesus' death and resurrection reconciled (reconcile means to forgive and restore relationships) God and humans. The most common is the idea of a sacrifice. In the Old Testament animal sacrifice was common practice. People sacrificed an animal, often a lamb, as an offering to God. The person making the sacrifice hoped to mend their relationship with God. However, they had to make frequent sacrifices as they continued to sin.

John the Baptist describes Jesus as *'the lamb of God that takes away the sins of the world'* (John 1:29) This means that just as people had sacrificed a lamb, Jesus, death was a sacrifice to make up for human sin. But because Jesus was divine (meaning 'perfect or God like'), perfect and without sin his sacrifice restored the human relationship with God for all times, unlike the animal sacrifices.

So by sacrificing his life, Jesus 'paid the price' for human sin. Human beings could not do this for themselves, as they were sinners. He earned salvation by suffering this punishment on behalf of all human beings. Christians believe that, in turn, Jesus extends the salvation he earned to all those who believe in him. So Jesus is the savior of the world.

Knowledge Check

1. Define the term *salvation*
2. What do humans need to achieve salvation?
3. What do Christians believe is a consequence of human sinfulness?
4. Why do Christians believe Jesus died for them?
5. Why is Jesus known as the "Lamb of God"? Where does the idea of the lamb as a sacrifice come from?
6. What is Jesus described as in John 1:29?
7. Define the term *grace*
8. What are the seven sacraments?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

- b) Describe Catholic teaching on belief in God's grace [5]
b) Describe Christian belief in salvation [5]



"Lamb of God"

THE PASCHAL MYSTERY

The last few days of Jesus' life, death and resurrection and ascension

The Paschal mystery is one of the central concepts of Christian faith. It relates to the last few days of Jesus' life, his death and the events after his death. Christians believe that Jesus was resurrected and that he was then taken from earth to be with God in an event known as the Ascension. They believe that dying and rising from the dead was the work God the Father sent his Son to do on earth. They believe this is how Jesus offers salvation to all. The last few days of Jesus' life are remembered during Holy Week, the week running up to Easter Sunday. The suffering that Jesus went through at this time is traditionally called the Passion (from a Latin word meaning 'suffering').

Start

1. The Last Supper

The Last Supper was the meal that Jesus had with his disciples on the evening before he was arrested. The events of the Last Supper are remembered on Maundy Thursday, which takes place on the Thursday of Holy Week. At the Last Supper, Jesus reassured his disciples that, after he had left the earth, the Holy Spirit would be sent to them to help keep his message and teaching alive. Jesus gave his disciples two symbols, in the form of bread and wine, to be used in remembrance of him. The bread represented Jesus's body, which was to be sacrificed on behalf of all human beings, and the wine his blood.

Today, the symbols of bread and wine are an important part of Christian worship in a ceremony known as the Eucharist (or Mass, as Catholics call it).



2. Jesus' arrest in the garden of Gethsemane

The Gospels record that after the Last Supper Jesus went with his disciples to a garden called Gethsemane, where he prayed. This was a time of great sorrow and torment for him, because he knew that he would die. Christians refer to the hours Jesus spent at Gethsemane as the 'agony in the garden'. He was arrested there after one of his disciples Judas told the authorities where to find him.



3. Jesus is tried and found guilty

Jesus was tried by the Sanhedrin (the Jewish religious leaders and authorities). He was found guilty of blasphemy, the crime of either insulting God or pretending to be God. The punishment for blasphemy was death. Although the Sanhedrin found Jesus guilty some scholars today argue that it was the Romans who hurried Jesus to his death, because they wanted to nip in the bud any unrest.



4. Pontius Pilate

Pontius Pilate, the Roman Governor in charge of the city of Jerusalem, sentenced Jesus to be whipped and crucified. Roman soldiers then mocked and beat Jesus before leading him away to be crucified. As regards who was responsible, the Catholic Church teaches that it was the sins of all humankind that brought Jesus to the cross.



5. Good Friday Jesus is crucified

Christians commemorate Jesus' crucifixion and death on Good Friday, the Friday of Holy Week and treat it as a day of mourning for his death. However, Christians believe that Jesus' death ultimately had good consequences for humankind. Christians believe that Jesus' suffering and death were part of God's plan, which can only be understood within the context of Jesus' resurrection after his death.



6. The Resurrection and its significance for Christians

The Gospels record that after Jesus died on the cross, his body was buried, but he rose from the dead three days later. This event is known as the Resurrection. It is the central belief of Christianity and lies at the heart of the Christian faith. The reason for its importance is that Catholics believe Jesus's ability to overcome death proved he was the Son of God and had a divine nature. It confirms their belief in the Trinity and an omnipotent (all-powerful) God who holds ultimate power over the universe he created, because only the creator of life could resurrect life after death. Catholics also think the Resurrection demonstrates that Jesus is their Saviour. They believe he has the power to help anyone who believes in him to overcome death. By forgiving their sins Jesus can grant them the gift of eternal life with God.



7. The Ascension and the promise of the Holy Spirit

The Gospels tell how Jesus was taken up into heaven 40 days after his resurrection, as witnessed by his disciples. This is known as the 'Ascension'. The significance of the Ascension for Christians is that this is the end of Jesus' time on earth. Catholics believe this means his mission, or reason for being on the Earth, was successful. He had completed everything God the Father had intended him to do and could, therefore, return to heaven to prepare a place for his followers. Catholics also believe that Jesus' Ascension opened the way for an outpouring of the Holy Spirit to energise and encourage Christians everywhere, as Jesus had promised at the Last Supper.



8. Hell and the consequence of a loving God

Some people might ask the question 'surely a loving God would want to save everyone. He would not want to condemn anyone to hell?' God does not send anyone to hell. Humans have free will and will choose how to spend their life. If a person chooses to do evil then they will be far from God no matter how much God wants them to come to him. God's love is unconditional and universal but he cannot force it upon us, we have to accept it. Hell is not a punishment, but a consequence of choosing to go against God. We choose our eternal destination by our choices in life. The concept of free will means that God can only offer salvation; it is up to the individual to accept that offer.



Knowledge Check



1. What is the suffering Jesus went through in the last few days of his life traditionally known as?
2. When are the events of the Last Supper remembered?
3. The symbols of bread and wine are an important part of Christian worship. What is this ceremony known as?
4. Where was Jesus arrested?
5. What was Jesus found guilty of?
6. Who does the Catholic Church teach are responsible for Jesus' death?
7. What did Jesus' resurrection prove?
8. Jesus was taken up to heaven 40 days after his resurrection. What is this known as?



Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

b) Describe Catholic teaching on the role of the Paschal Mystery in achieving salvation [5]

c) Explain the importance of belief in the Paschal Mystery [8]

Summary

- Humans have rejected God by their sinfulness, but Jesus offers salvation and redemption.
- Christians believe that their relationship with God, and their salvation, depends on Jesus' life, death, resurrection and ascension.
- This is a freely given gift offered through God's grace and cannot be earned.
- God is all-loving and merciful but it is human free will but chooses to reject God which leads to hell.

THE NATURE OF THE CHURCH

The Nicene Creed

At the Councils of Nicea and Constantinople in the fourth century CE, Church leaders agreed upon a single statement of faith called the Nicene Creed. It identifies four marks, or distinguishing qualities, of the Church. The 'four marks' of the Church are that it is one, holy, catholic and apostolic.



"...one, holy, catholic and apostolic"

The four marks of the Church (The Nicene Creed)

The Nicene Creed

Catholics recite this every Sunday. A creed is a statement of belief. A council of bishops met in a place called Nicea, in Turkey, to settle the question of how Christians should speak about God. In this creed it is clear that Christians believe in:

- ✓ One God
- ✓ But also in the 'Son of God' who is equal with the Father
- ✓ And in the Holy Spirit who is 'adored and glorified' with the Father and the Son
- ✓ One, holy, catholic and apostolic Church
- ✓ Forgiveness and Resurrection

I believe in one God, the Father almighty, maker of heaven and earth, of all things visible and invisible.

God the Father

I believe in one Lord Jesus Christ, the Only Begotten Son of God, born of the Father before all ages. God from God, Light from Light, true God from true God, begotten, not made, consubstantial with the Father.

God the Son

I believe in the Holy Spirit, The Lord, the giver of life, who proceeds from the Father and the Son, who with the Father and the Son is adored and glorified, who has spoken through the prophets.

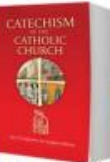
God the Holy Spirit

I believe in one, holy, catholic and apostolic Church.

I confess one Baptism for the forgiveness of sins and I look forward to the resurrection of the dead and the life of the world to come. Amen.



One, holy, catholic and apostolic Church



One



The Catechism notes that the Church is one for three reasons:

- because of its source, which is the Holy Trinity, a perfect unity of three divine persons, Father, Son and Holy Spirit
- because of its founder, Jesus Christ, who came to reconcile and unite all humankind through his death on the cross, taking away their sins.
- because of its soul, the Holy Spirit, who lives in the souls of Catholics and unites them into one group or 'communion' of believers, and who guides the church.

Catholics are united in their beliefs, the prayer which sums up what Catholics believe, the other teachings and the celebration of the sacraments. For example, wherever you go to Mass in the world, the Mass is always the same.

'One' doesn't mean that everything should be exactly the same everywhere you go. In the Church's oneness, there is diversity: there is room for many different types of people who work together to continue the mission of Jesus. The Catholic Church teaches that these various cultures and traditions enrich the church in the different expressions of the one faith.



Holy

Catholics believe Jesus is the source of all holiness. Jesus makes the Church holy and the Church makes people holy through its teaching, prayer, worship and good works. Catholics believe that each member of the Church has been called to holiness. This means that through baptism, a Catholic has been freed from original sin, filled with God's grace, and become a member of the holy People of God.

'Holy' doesn't mean that there are no sinners in the Church. Catholics recognise that they are weak human beings, and at times they sin and fall short of what God wants them to be. They are taught to ask for God's forgiveness and try again. In a sense, the Church considers itself to be a Church of sinners, rather than of the self-righteous. One of the prayers of the Mass asks:

"Lord, look not on our sins, but on the faith of your Church."

UNIVERSAL

Catholic

Saint Ignatius of Antioch (c.35-108CE) used this word, meaning 'universal' or 'whole', to describe the Church. The Church is Catholic in that Christ is universally present (present everywhere) in the Church, and because he has given the Church the task of 'evangelising' which means telling the whole world the message of Jesus. The Church is Catholic because Jesus gives the Church everything they need to be saved.

Apostolic

Catholics believe that Jesus Christ founded the Church and gave his authority to his apostles – these were the 12 men he called to follow him. He entrusted a special authority to St Peter, the leader of the Apostles, to act as his representation on earth. Peter was the first pope. The Church is apostolic means that the faith that Catholics have has been handed down from the first apostles, through the pope and bishops right up to the present day.

Knowledge Check

1. What are the 'four marks' of the Church?
2. When is the Nicene Creed recited?
3. Who do Catholics believe is the source of all holiness?
4. How does the Church make people holy?
5. Define the term *Catholic*
6. Define the term *evangelising*
7. What does it mean that the Church is apostolic?
8. What is the Greek word for Church?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the importance of belief in the four marks of the Church [8]



Church

In Greek, 'ecclesia' is the word for Church. It means assembly, or gathering together of God's people. The Church *is* the people of God gathered together. The word *church* with a small c is used to refer to building where Christians come to pray. When it is written with a capital C, Catholics mean everyone who is a member of the Church, all believers together. The Church is an important idea to Catholics.

MARY AS A MODEL OF THE CHURCH

Mary is a model of the Church. This means that during her life she modelled what it means to be Catholic:

Discipleship

Catholics believe that Mary was the greatest example of discipleship. She spent her whole life dedicated to Jesus. When Mary was told by the angel that she was to be the mother of the Christ, she accepted willingly and joyfully. This makes her a role model and a guide to the way Christian should serve God.



Faith

Mary had total faith in God and in her son. She did not question God when she was told that she would have a child, even though she was a virgin. At the very end she did not desert her son, but was one of the few of his followers to follow him right up to the foot of the cross.

Charity

Mary is also a model of charity. She gave her whole life to God and showed kindness and compassion. This is how Christian should be too. At the wedding feast at Cana (John 2:1-11) she asks her son to help, knowing that he would do what was needed. The celebration had run out of wine, but Mary knew that Jesus had the power to help. As a result of Mary's request Jesus performed his first miracle and turned water into wine. This is also an example of how Jesus listens to his mother and fulfils her request. This is one of the reasons why Catholics pray to Mary, because they believe she will pray to Jesus for them and he will listen.



Other Names:

Our Lady
Ave Maria (Holy Mary)
Mother of God
Mother of the Church
Blessed Mother
Blessed Virgin
Immaculate Mary

Knowledge Check

1. Mary is sometimes known as a 'model of the Church'. What does this mean?
2. What other names are attributed to Mary?
3. Why is Mary believed to be the greatest example of discipleship?
4. How did Mary demonstrate her faith in God?
5. In what way is Mary a model of charity?
6. What happened at the wedding feast at Cana (John 2:1-11)?
7. Why is Mary special to Catholics today?
8. Catholics believe that Mary *intercedes* for them. What does this mean?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain why Mary is important for Catholics (8 Marks)

Why is Mary special to Catholics today?

Catholics hold Mary in great honour. She was chosen to be the human mother of Jesus Christ, and you will often hear her described as Mary, Mother of God. So Mary is really important in the work of salvation. Without Mary, there would be no Jesus, no incarnation and, therefore, no salvation.

Mary is often called 'Our Lady' by Catholics. This is a special title given to no one else, showing how special she is. All Catholic churches will have a statue of Mary and there is a special devotion to her.

As Mary had such a special relationship with God, Catholics believe that she acts as a mediator between them and God. Catholics pray to Mary, but not in the way they pray to God. They do not believe that she can answer prayers in the way God can, but they believe that she will pray to God on their behalf. This is known as interceding. Catholics might light a special candle called a votive candle and place it on a special stand by the statue in church as a symbol of their prayer. Most Catholic churches will have a statue of Mary showing her importance.

THE CHURCH AS THE BODY OF CHRIST

This topic links with baptism

The Church is described as the body of Christ in both the New Testament and the Catechism. According to the Bible, when Jesus entered the world, *he took on a physical body that was 'prepared' for him* (Hebrews 10:5; Philippians 2:7). This is known as the incarnation; God became a human being.

While on earth in his physical body Jesus showed God's love in the things he said and did. He taught people how God wanted them to live and he cared for the sick and the infirm by curing them. Ultimately, he gave his life as a sacrifice so that all Christians could have a closer relationship with God. After he rose from the dead, Christians believe that he physically (bodily) ascended (went up) into heaven. This is known as the Ascension.

The teaching that the Church is the body of Christ means that Catholics believe that the work of Christ on earth did not end with the Ascension. They believe that *Jesus lives on through his followers, and in the Church*. In this way, it is believed that Christ continues his work in the world and shows the love of God through members of the Church. In this way, the Church functions as 'the body of Christ'. The Church is not a club or association to belong to; it isn't just a gathering of like-minded people. It continues the work that Jesus started off making the world holy. *The Church offers a way of continuing what Jesus started.*

So, according to Catholic teaching, all Christians continue the work of Jesus on earth. Christian people are now the physical body of Jesus as he is no longer physically present in the world. *When someone is baptised, Catholics believe that they are united with other Christians and with Christ and become part of this 'body'.*

Why is the Church as the body of Christ important for Catholics?

In the New Testament, the Church is described as 'the body of Christ' especially by St Paul in his first letter to the Corinthians (1 Corinthians 12:27). As Catholics consider themselves to be the physical form of Jesus on earth (the body of Christ), they must continue with his physical work, giving help and teaching. For Catholics, this means that Jesus is still active in the world. His work didn't end with his death, but it continues in those that follow and believe in him.

Following this teaching, individual Catholics can continue Jesus' work in different ways and yet be united. Each person, just like each part of a body, has a different function and is used for the good of the whole body. The Church remains a unity because its entire people are working together as the body of Christ.

It is for this reason that the Mass (or Eucharist) is so important for Catholics. It is central to their faith that the bread and wine which have been offered up in prayer have now become the body and blood of Christ. As they share these in communion, Catholics believe that they are given strength to be the followers of Christ in the world. The also reaffirms their unity and gives them a sense of identity.

Some Christians, for example Anglicans, believe that the bread and wine just symbolise Jesus' body and blood. However Catholics believe that Christ is fully present in the Eucharist. This is known as the Real Presence. This means that at Mass the bread and wine, while keeping the appearance of bread and wine, are actually transformed into the body, blood, soul and dignity of Christ.

"Outside the Church there is no salvation"

The phrase 'outside the Church there is no salvation' is a very old one and comes from the writings of early Christian thinkers. For example, it occurs in one of the letters of St Cyprian, a Catholic bishop in Africa in the third century. For St Cyprian, and many others since, this phrase has expressed *the belief that only Catholics will go to heaven*. This is the most straightforward reading of the meaning of this phrase which can still be found in the Catechism of the Catholic Church today (CCC 845). But does the Church teach that anyone who is not a Catholic is going to hell? *The Church does not teach this*; but what it does teach needs to be looked at carefully.

So, what does the Church teach about salvation?

Firstly, the Church teaches that everyone is saved through Jesus Christ's death and resurrection – whether they know it or not. The way you can be most certain of receiving salvation is to be a baptised and practising member of the Catholic Church. This is stated in the Catechism:

Jesus 'explicitly asserted the necessity of faith and Baptism, and thereby affirmed at the same time the necessity of the Church which men enter through Baptism as through a door', therefore, 'they could not be saved who, knowing the the Catholic Church was founded as necessary by God through Christ, would refuse either to enter it or to remain in it' – (CCC 846, citing LG 16)

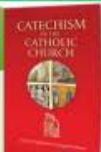
However, they also teach that the Church of Christ is wider than the Catholic Church. Catholics believe that the full way to get to God is through the Catholic faith. However, God is bigger than the Church, so people who are not Catholics can be saved by God's power.

Secondly, they also teach that people who have not heard the Gospel of Jesus but have lived good lives can be saved because it is not their fault that they are not Christians. They are sometimes referred to as 'anonymous Christians'. This is because Catholics believe these people are living good lives. So the Church also believes that people who are not Christians can also be saved:

'Those who, through no fault of their own, do not know the Gospel of Christ or his Church, but who nevertheless seek God with a sincere heart, and, moved by grace, try in their actions to do his will as they know it through the dictates of their conscience – those too may achieve eternal salvation.' (LG 16 cited CCC 847).

The Catholic Church still believes that the most certain route to salvation is to be a baptised and practising member of the Catholic Church, but it does believe that other good people outside of the Church can be saved.

Everyone is saved through Jesus Christ's death and resurrection!



Baptism

God is bigger than the Church

Anonymous Christians



Summary

- The Church is the people of God
- The Church is one, holy, catholic and apostolic
- Mary is a model of the Church as an example of discipleship, faith and charity
- The Church is known as 'the body of Christ' and 'people of God'
- There are multiple meanings of the phrase 'outside of the Church there is no salvation'.

Knowledge Check

1. How did Jesus show God's love?
2. What does it mean to say: 'the church is the body of Christ'?
3. Which Catholic saint in particular describes the Church as 'the body of Christ'?
4. Catholics believe that Christ is fully present in the Eucharist. What is this known as?
5. What do Anglican Christians believe about the bread and wine?
6. Which saint wrote in his letters that 'outside the Church there is no salvation'?
7. How can Christians be certain of receiving salvation?
8. How do Catholics believe non-Christians can be saved?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!
Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

C) Explain the significance in understanding the Church as the body of Christ [8]

FEATURES OF A CATHOLIC CHURCH

A place of worship

A Catholic church is the place of worship where Catholics gather as a community to celebrate their faith. Most Catholics will attend a local parish church. A parish is the local Christian community around a church building. They are usually looked after by a priest, who leads the community and celebrates the sacraments. Christians call their church 'the house of God'. Many Christians believe that the community of believers (the Church) is more important than the church building, which is simply a meeting place for the Church.

Inside a Catholic Church

The interior of Roman Catholic churches can vary from very plain and simple to fancy and ornate, but whatever the design, the whole church will be focused on the sanctuary. Sanctuary means 'holy place'. This is where the altar, lectern and tabernacle are. The sanctuary is the centre of public worship. These are features you would expect to find in a Catholic church:



Knowledge Check

1. What is a parish?
2. What is the difference between Church/ church?
3. What is a confessional?
4. What takes place at the altar?
5. What command Jesus gave does baptism follow?
6. What is a lectern?
7. What is a tabernacle?
8. What other features are there inside a church and how are they used?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

- c) Explain the features and symbolism found within a Catholic church [8]
c) Explain how the altar and font represent Catholic beliefs about Salvation [8]

Summary

- A Catholic church is the place of worship where Catholics gather as a community to celebrate their faith
- The focal point of a Roman Catholic Church is the sanctuary. You will find the altar and lectern here. The altar is the stone table at which the liturgy of the Eucharist takes place
- The font is a wooden or stone basin, filled with holy water where baptism takes place
- Other features of the building are the confessional, the stoup and the tabernacle
- Stations of the Cross and statues are there as aids to prayer
- Some churches have towers or steeples which are symbolic of prayer rising up to God
- Traditionally, churches face towards the east and are built in a cruciform shape

The Confessional

This is a small room or box-like structure in which the Sacrament of Reconciliation takes place. This is when Catholics confess their sins to a priest. Inside the confessional there is a screen so that the person confessing their sins (the penitent) can make their confession anonymously. The priest sits on one side while the penitent kneels in the other. When penitents confess their sins, the priest gives them a penance. A penance is something that penitents have to do, for example say a prayer. The priest then absolves them. They are given the assurance that by the power of God they have been forgiven their sins through the priest. By penance and absolution they are reconciled to God, which means that their relationship with God is restored. The fact that there is a room dedicated to it shows how important the Sacrament of Reconciliation is to Catholics.

The Altar

A table, usually made out of stone. The main part of the Mass, the liturgy of the Eucharist, takes place at the altar. Mass is one of the most important sacraments for Catholics and during the liturgy of the Eucharist, the priest consecrates (blesses) bread and wine at the altar and then the congregation comes to the altar to receive them. The altar reminds Christians of the sacrifice and death of Jesus on the cross and that Jesus offers salvation and redemption from sin. The fact that the altar is also a table, reminds Catholics that they are sharing in a meal, in the same way Jesus shared a meal with his disciples at the Last Supper. On or nearby the altar are candles, representing the Christian belief that Jesus is the light of the world.

The baptismal font

This is a big basin, sometimes made of stone, filled with holy water where baptisms are performed. Baptism is the sacrament by which a person becomes a Christian; it is the first sacrament to be received. Fonts were traditionally positioned by the main door to the church to symbolise that people entered the Christian life through baptism. Now the font tends to be at the front so that all those present can easily see about it and when it takes place. Jesus himself was baptised by John the Baptist and baptism was one of the very earliest Christian practices, following Jesus's final command to: *'go and make disciples of all nations... Baptise them in the name of the Father, Son and Holy Spirit.'* Matthew 28: 19.

The lectern

Near the altar is the lectern, or it is sometimes called an ambo, used for the Liturgy of the Word. The lectern is a book stand where the priest, deacon or reader stands to read to the congregation; they read from a lectionary, which is the book containing a collection of scripture readings for use on a given day. Catholics believe that at Mass there are spiritually nourished and fed by listening to the word of God.

The crucifix

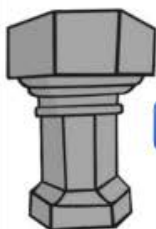
In Catholic churches there is always a crucifix – a cross with an image of the crucified Christ on it. It is usually on or near the altar. It serves as a reminder of the suffering and death of Jesus. Catholics believe that the death of Jesus was the price he paid for their salvation. Catholics, like all Christians, believe that Jesus died for them to pay for their sins and so that they could have eternal life.

The Tabernacle

The tabernacle is a safe-like box in which the consecrated (blessed) hosts are kept. The hosts are put in the tabernacle after Mass so that communion can be taken to the sick and those who are unable to come to church. The tabernacle is also a focus for private prayer and devotion. Catholics will genuflect (go down on one knee) towards the tabernacle in honour of the presence of Jesus in the form of the blessed bread and wine. The tabernacle is often behind the altar, but in some modern churches it is sometimes placed in a side chapel so that people can pray in private. A sanctuary lamp (a small lamp showing that the Blessed Sacrament is present) is found nearby, which reminds Catholics of the presence of God in the tabernacle.

Other features

- ✓ As people come into to the church they pass a **holy water container or stoup**. Catholics dip their fingers in the water and make the sign of the cross beginning on their head, down to their torso and then to their left and right shoulder. This reminds them of the Trinity, the death of Jesus and their own baptism. It also helps to focus their mind into a respectful attitude as they enter the church.
- ✓ Featuring importantly in a Roman Catholic church are the **Stations of the Cross**. These are usually pictures or carvings of each of the 14 stages of Christ's passion (trials, death and resurrection). They are especially used in Lent to focus worship on the death of Jesus. **Statues** are usually found around the church to help people pray. One of them will usually be of our Lady (Mary - Jesus' mother).
- ✓ In front of the statues there will probably be **votive candles**, which are small candles symbolising prayers. The statues are not worshipped in any way, they are just used to focus the mind and as aids to prayer.



Cruciform

It is common for churches to be cruciform in shape. This means that they are in the shape of a cross. This is to signify the importance of the death of Jesus.



THE ARCHITECTURAL FEATURES OF A CATHOLIC CHURCH

Towers/ Steeples

Some churches have towers, others have steeples. The tower or steeple can be seen from long distances away. This helps the church to stand out from other buildings as something special. Towers and steeples represent prayer and worship rising up to heaven, a physical representation of what takes place inside the building. Many towers have bells that are rung to call people to worship.

Vatican II

Modern church buildings tend to be simpler than those that were built a long time ago. As a result of Vatican II and the changes it made to worship, some churches built since the 1960s are radically different from those that were built before.

For example, some churches are circular in design with the altar in the middle. This signifies the oneness of the worshippers and that they are all sharing in the sacrificial meal at the altar. It can also stand for the eternity of God.

Facing towards the East (Jerusalem)

Traditionally, churches face toward the east. This tradition is based on historic practices. Following Jewish practices, the first Christians prayed facing the Holy Land, where Jesus was born, lived, died and rose again. Also the sun rises in the east and is a reminder of the resurrection of Jesus bringing new life.

Christian symbols

Many churches have crosses or other Christian symbols to mark them out as Christian places of worship. It is not unusual for Catholic churches to have a recreation of the grotto at Lourdes, a site of Christian pilgrimage where a vision of Mary was seen in the nineteenth century. This shows how important Mary is.



Stained glass windows

Very often stained-glass is used in churches. These windows usually display stories from the Bible or the lives of saints.

Knowledge Check

1. What is the name of church that takes the form of a cross?
2. Why do modern church buildings tend to be much simpler?
3. Some churches are circular in design. What does this signify?
4. Why do churches traditionally face the east?
5. What do stained-glass windows typically depict?
6. Why are churches often tall with domes or vaulted ceilings?
7. Why do many churches have towers or steeples?
8. Some churches have a recreation of the grotto at Lourdes. Why is this?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain how the architecture of Catholic churches helps Catholics reflect on the mystery of salvation [8]

Domes/ Vaulted Ceilings

Churches are often very tall with domes or vaulted ceilings. This creates a space which is pointing up, showing a connection with God and heaven.



The Seven Sacraments

The seven sacraments lay the foundation of every Christian life. Most Christians believe there are two sacraments. These are known as the 'Dominical Sacraments' as they are based on the actions of Jesus.

The first of these is **baptism**, which was inspired by Jesus' baptism by John the Baptist and his command to his disciples to go out and baptise others.

The second is the **Eucharist** (also known as Holy Communion). This is a ceremony based around eating bread and drinking wine in memory of the Last Supper.

Some Christians, particularly Catholics and Orthodox Christians, believe there are five further sacraments (therefore seven sacraments in total). **This is what you need to know for your exam.** Some Christians do not believe in any sacraments. An example of this are **Quakers**. They believe that *all life is sacramental*, not just individual actions. They therefore try to act in a good manner in every part of their life.



St Augustine defined a sacrament as 'An outward and visible sign of an inward and invisible grace'. Sacraments are therefore important actions that allow Christians to achieve God's blessing.

Key Terms/Key Concepts

- **Eucharist** – meaning 'thanksgiving'. The name Catholics use to describe the rite where the bread and wine become the body and blood of Jesus and are received by the people. Also the name for the Real Presence of Jesus in the Sacrament of Holy Communion
- **Anoint** – to rub with oil
- **Laying on of hands** – A bishop or priest laying their hands on someone receiving a sacrament
- **Ordained** – Made a member of the clergy (e.g. a priest).



Sacraments of initiation

These lay the foundation of every Christian life.



For Catholics, baptism is the point at which they **enter the Catholic Church**. At the service of baptism, water is poured on a baby's head while the priest says: "I baptise you in the name of the Father, and of the Son and of the Holy Spirit."
The person being baptised becomes part of the family of God. Baptism takes away **original sin** (which all humans have inherited through the first sin of Adam and Eve in the Garden of Eden) and gives a new birth in the Holy Spirit. **The 'sign' through which they receive God's grace is the pouring of water.**

Catholic families are encouraged to baptise their children soon after birth, however sometimes people are baptised later, or even as adults.

Baptism



Confirmation completes the sacrament of baptism. As most Catholics are baptised as babies, confirmation is done when they are older. The person confirms the promises made on their behalf by their parents/guardians when they were baptised and this is a sign that they are mature enough to make the decision to be a Christian on their own.

For Catholics confirmation gives them the strength to follow Jesus and to become involved in the mission he left to the Church. **Its signs are the laying of hands on a person's head, most often by a bishop, and the anointing with oil.**

Confirmation



At the Last Supper before Jesus' death, he and his disciples ate bread and wine. He told them that the bread was his body and the wine was his blood, which he would sacrifice when he was crucified. He asked his followers to re-enact the meal when they came together after his death. Now when Catholics come together at Mass they take bread and wine in memory of Jesus' sacrifice. Catholics believe that when the bread and wine are consecrated (blessed), although their appearance doesn't change, they are actually transformed into the body and blood of Jesus. By receiving his body and blood, they are nourished spiritually. **The signs are the bread and wine.**

Eucharist

Sacraments of healing

These celebrate the healing power of Jesus.



By confessing and expressing sorrow for their sins, Catholics experience God's forgiveness and healing through absolution (forgiveness) by the priest. Their relationship with God and their unity as a Church is made whole again. **The signs of this sacrament are the confession of sins and the priest's words of absolution.**

Penance



This unites a sick person's suffering with that of Jesus and brings forgiveness of sins. The individual is anointed with oil (a symbol of strength) and receives the laying-on of hands from a priest. In the past, this sacrament was only given to those close to death, but more recently the Church has encouraged its use for illness which is not necessarily life-threatening. **The signs are the anointing and the laying on of hands.**

Anointing of the Sick

Sacraments at the service of communion

These help individuals to serve the community and bring about the salvation of others



In matrimony, or marriage, a baptised man and woman are united. Matrimony needs the consent of the couple, as expressed in the marriage promises (vows). **The couple and their wedding rings are the signs of this sacrament.**

Matrimony



In holy orders, men are ordained as priests, deacons, or bishops. Priests serve as spiritual leaders of their communities, and deacons serve to remind us of our baptismal call to help others. Bishops carry on the teachings of Apostles. **The signs of this sacraments are the laying on of hands* and for a priest anointing with oil by a bishop.**

Holy Orders

Knowledge Check

Answer in full sentences or copy out the question.

1. According to St Augustine, what is a sacrament?
2. Why do Christians receive the sacraments?
3. What are the dominical sacraments?
4. Which type of Christians believe that 'all life is sacramental' and therefore do not accept the sacraments?
5. Which Christians believe there are seven sacraments in total?
6. Name each of the seven sacraments
7. What is the purpose of the sacraments of initiation?
8. What do the sacraments of healing celebrate?
9. Which two sacraments help individuals to serve the community and bring about the salvation of others?
10. What is meant by the term 'laying on of hands'?
11. What is meant by the term 'anoint'?
12. Which sacrament completes the sacrament of baptism?
13. What is another term used for the sacrament of Holy Communion?
14. Create a table outlining the signs of each sacrament

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Challenge

"Baptism is the most important sacrament."

Discuss the statement showing that you have thought of **more than one point of view**. (some might agree/disagree with this statement because...however I agree/disagree with this statement because...)

For each sentence, use PEEA (Point, Evidence, Explain, Analysis).

For example:

P – Make your point

E – Back it up with evidence or examples

E – Explanation (link back to the statement)

A – Say what is good or bad about the point you have just made

THE IMPORTANCE OF THE EUCHARIST FOR CATHOLICS

For Catholics, the most regularly celebrated sacrament is the Eucharist or the Mass. The Mass or Eucharist is the liturgical service where Catholics gather to remember the Last Supper, when Jesus took bread and wine and asked his disciples to remember him when they did the same. Sunday, the day of the Resurrection, is the most holy day. To attend Mass on Sunday and certain holy days is obligatory for all Catholics who are capable of doing so. Mass is celebrated every day except Good Friday and Easter Saturday.

Eucharist: Means 'thanksgiving'. The name Catholics use to describe the rite where the bread and wine become the body and blood of Jesus and is received by the people. Also the name for the Real Presence of Jesus in the Sacrament of Holy Communion.



The eucharist is said to be *'the source and summit of the Christian life'*, because being unified with God is the most important thing to Catholics. It is at the heart of their spiritual life and they become closer to God because they receive Jesus' body and blood in communion.

Catholics believe that the bread and wine are transformed into Jesus' body and blood. The technical word for this is 'transubstantiation'.

Mass re-enacts the sacrifice of Jesus on the cross, so it is the highest form of prayer that a believer can make

The eucharist makes individual Catholics part of the body of Christ (the Church)

By receiving the blood and wine in communion, Christ's body and blood spiritually sustain the believer. In the Eucharistic prayer, said by the priest to give thanks to God, the central part is the 'prayer of consecration', when the priest repeats Jesus' words at the Last Supper:

"This is my body... This is my blood..."

Catholics believe that Christ is present in the Mass

- In the consecrated bread and wine, which are Jesus' body and blood
- In the readings (especially those from the Gospels)
- In the believers gathered together because Jesus said, 'Where two or three are gathered in my name, I am there among them'.
- In the person of the priest (Catholics believe that Christ works through the priest to transform the bread and wine into his body and blood).

Sources of Wisdom and Authority

- ✓ The Last Supper
- ✓ "The source and summit of the Christian life"



Knowledge Check



1. Define the key concept *eucharist*
2. What is the most regularly celebrated sacrament for Catholics?
3. What is the most holy day of the week for Christians?
4. On which two days in the year is mass *not* celebrated?
5. In what ways is Christ present in the Mass?
6. The eucharist is said to be *"the source and summit of the Christian life"*. What does this mean?
7. Define the key term *transubstantiation*
8. What is the highest form of prayer that a believer can make?

Choose a Task



1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the importance of the Eucharist for Catholic Christians [8]

Sacraments Summary

- A sacrament is 'an outward sign of inward grace, ordained by God, by which grace is given to the soul'. There are seven sacraments.
- The sacramental nature of reality means that God can speak to us through the world.
- The Eucharist/Mass is at the heart of Catholic worship. It re-enacts the sacrifice of Jesus on the cross and unites Catholics into the body of Christ.



EVANGELISATION

Sources of Wisdom and Authority

"Go out and make disciples of all nations..."
Matthew's Gospel
Evangelii Gaudium - The Joy of the Gospels

Why does the Church engage in evangelisation?

Catholics believe that Jesus brought salvation through his death and resurrection. In doing this, he atoned (made up for) the sins of humankind.

However, **to be 'saved', individuals have to have faith in Jesus and believe in his atoning death and his resurrection.**

The Catholic Church believes it has a **duty and an obligation to spread this faith** as Jesus told his disciples to do, so that as many people as possible can be saved.

Helping the poor and those in need is an important part of evangelisation as it puts Jesus' teachings about love and compassion into practice.

Jesus gives his Apostles their mission

At the end of Matthew's Gospel, Jesus gives his Apostles their mission. **Mission means the calling to go out into the world and spread the Christian faith.** This mission is also the mission of the Church.

The mission of the Church is to go out into the world:

- To go out to the ends of the Earth
- To baptise people into the church
- To teach the teachings of Christ



The Church began in Jerusalem and within a few decades of the resurrection of Jesus it had spread through the Roman Empire. Soon it reached the centre of the empire, Rome itself.

St Paul, whose letters make up a large part of the section of the New Testament called the Epistles, was one of the first missionaries. From Rome, missionaries went to many parts of the empire. Many were persecuted or even killed for their beliefs.

In the last 500 years, the Church has become truly worldwide. Missionaries have gone from Europe and started churches in Africa, South America and in Asia.

Going out to preach the gospel is known as evangelisation.

In recent years the focus of evangelisation changed and the Church is no longer evangelising in places that have not heard the gospel before. Instead they are focusing on Western countries, like European countries, which are becoming increasingly secular – this means an increasing number of people are saying they don't have a religious faith.

Knowledge Check

1. Define the key concept: *evangelism*
2. Define the key term: *mission*
3. What is the mission of the Church?
4. Where did the Church begin?
5. Which author of the Epistles was one of the first missionaries?
6. Why does the Church engage in evangelisation?
7. How has the Church's focus altered in recent years?
8. How does the Church engage in evangelisation?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the importance of evangelisation for Catholics [8]

How does the Church engage in evangelisation?



Locally

- This basic message of God's love is passed on by the Church, most importantly, through the whole life of the parish (celebration of the Mass, sacraments, Bible study, charitable work, social events, parish retreats, outreach events, etc.). Pope Francis talks a lot about the parish and says that the parish "possesses great flexibility", which means there are many ways they can spread God's message.
- Also the parish can engage with other organisations (other Christian churches, other faith communities, social workers and agencies) to work for justice, social cohesion and the common good, which is also part of evangelisation, because it is living out the Gospel message of love.
- There may be local diocesan newspapers that the church uses to help people learn more about their faith, such as the Catholic Pictorial in Liverpool or the Westminister Record in Westminster.

Nationally

- On a national level, the Bishops' Conference of a country helps Catholics to know and share the Gospel
- In 2015, a national evangelisation initiative called 'Proclaim' 15: building missionary parishes' was introduced by the Church by Cardinal Vincent Nichols, leader of the Catholic Church in England and Wales. It was designed to acknowledge all the good work that is already being done by the Catholic community, and to provide resources to develop new expressions of Catholic missionary outreach.
- There may be national Catholic publications used by the Church to help evangelise such as *The Universe*, *The Tablets*, *The Catholic Herald* and *The Catholic Times*.

Globally

- The Catholic Church is a global presence. The Vatican has a specific department that focuses on evangelisation called *the Congregation for the Evangelisation of Peoples*. The global reach of the Church means it can share the message of the Gospel with the whole world, for example, through the global figure of the Pope (e.g. World Youth Days) and through its own Vatican Radio and TV station.
- - The Church lives out the Gospel in the work of international charities like CAFOD
- -specific organisations exist, such as *Missio*, which is concerned with overseas evangelisation.



The Parish
Other faith communities
Social Workers
Diocesan Newspapers



Proclaim 15
The Universe,
The Tablets, The Catholic Herald, The Catholic Times
Bishop's Conference

The Congregation for the Evangelisation of Peoples
CAFOD
Just one world
CAFOD
Missio

EVANGELISATION Continued...

Sources of Wisdom and Authority

“Go out and make disciples of all nations...” - Matthew’s Gospel
Evangelii Gaudium - The Joy of the Gospels



Evangelii Gaudium The Joy of the Gospel

In 2013, Pope Francis wrote a letter to the world, called Evangelii Gaudium, which, in Latin, means ‘The Joy of the Gospel’. Its theme is the Church’s mission of evangelisation in the modern world.

Pope Francis says that the heart of the Christian message is love for one another, which must motivate Christians to share the Gospel, help the poor and work for social justice.

Catholics must care for ‘the homeless, the addicted, refugees, indigenous peoples, the elderly who are increasingly isolated and abandoned, and many others.’

Pope Francis says that when God became human as Jesus, he made himself lowly and poor. For this reason, the pope wants **‘a Church which is poor and for the poor’** (EG 198). He wants the Church to have a special love and care for **‘above all the poor and the sick, those who are usually despised and overlooked’** (EG 48).

Pope Francis also says that **the parish (the local community) is important in spreading the Church’s message.** As well as a church, many parishes have a Catholic primary and secondary school connected to them. These provide catholic education and help to spread the teachings of Jesus. Parishes should be welcoming places, ready to greet new people and receive them into the community. The Pope says that **Catholics should be outward looking; this means they should look for new ways to spread the Gospel message.**

Fewer men becoming priests

Church attendance is on the decline

The UK is a multi-faith society in which people of different religions, and no religion, live alongside each other. According to the 2011 census, the profile of religious belief in Britain has changed considerably since 2001. Half of the people questioned still consider themselves as Christian, but Britain is now a place which has an increasingly diverse pattern of religious and nonreligious beliefs and practices.

This diversity brings benefits and challenges in evangelising in Britain. Although Christianity is still the largest religion, church attendance is on the decline. This means that churches have had to close, making it less easy for the Gospel to be spread. There are now fewer men becoming priests and existing priests are getting older. In the past, parishes might have two or more priests. Now priests have to serve several parishes, making celebration of the sacrament more difficult.

Catholics are much more likely to come into contact with people from different faiths backgrounds than ever before. The Catholic Church teaches that people of other faiths should be respected and Catholics should be sensitive to those who have no religious beliefs yet still seek to do good. Catholics should try to respect different and work in unity showing common values such as respect, tolerance, charity and non-violence.



2011 Census: Half of the population consider themselves Christian

The role of religion in education

Today, about one third of state-funded schools in England and Wales are faith schools. This means that, although the bulk of their income comes from public funds, these schools have a ‘religious character’.

Of the 7,000 primary and secondary schools in England and Wales, 98% have a Christian character: 68% of Church of England schools and 30% are Catholic.

All pupils must, by law, be taught religious education and all schools should provide a daily act of worship. Religious education should reflect the fact that the traditions of the UK are, in the main, Christian. For state schools without a religious character, more than half of the acts of worship should be Christian. However, many schools celebrate a variety of religious traditions throughout the school year.

98% Christian Character

68% Church of England

30% Roman Catholic

Evangelising in Britain

Knowledge Check

1. What does it mean to be a multi-faith society?
2. According to which census did half of those questioned consider themselves Christian?
3. What has made the celebration of the sacrament more difficult?
4. Which Pope wrote a letter to the world named “The Joy of the Gospel”?
5. What is this translated in Latin?
6. In this letter, Pope Francis says that when God became human as Jesus, he made himself lowly and poor. What does he therefore call the Church to do?
7. What does it mean for the Church to be ‘outward looking’?
8. Of the 7,000 primary and secondary schools in England and Wales, what percentage have a Christian character?

Choose a Task

1. Create a detailed mind-map (try to make this visual)
2. Create a multiple-choice quiz (aim for at least 10 questions)
3. Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the possible benefits and challenges of Catholic mission and evangelisation in Great Britain today [8].

In your response you must reference to the fact that religious traditions in Great Britain are in the main Christian and also diverse.

Summary

- The mission of the Church is to go out into the world and spread the Gospel
- The 2013 letter by Pope Francis, Evangelii Gaudium, deals with evangelisation. It is all Christians’ responsibility to preach the Gospel by loving one another, helping the poor and working for social justice
- Britain is a multi-faith society which brings benefits and challenges for evangelism
- UK law and culture is rooted in Christian tradition. However, the influence of other faiths and those with no faith has increased

UK LAWS, FESTIVALS AND TRADITIONS



The **Church of England** is the 'established' religion of England. This means that it has links to the government and other official bodies such as the judiciary (the court system).

Laws

The UK Parliament is the body that makes all UK laws by passing Acts of Parliament.

It is made up of two houses.

The House of Commons is made up of elected representative, MPs.

The House of Lords is not elected and its members are of two types: Lords temporal are appointed by the monarch, but the Lords spiritual are **26 of the most senior Church of England bishops**.

For laws to be passed they must be approved by both houses of Parliament. **So the Church of England has a direct role in shaping UK law.**

Meetings of both houses of Parliament **open with Christian prayers** and indeed, many of the laws of the UK reflect the teaching of some of the **Ten Commandments**, such as 'Do not kill' and 'Do not steal'.

Knowledge Check

- Who introduced Christianity in the UK?
- When did Henry VIII break away from the Catholic Church?
- What is the established religion of England?
- Give three examples of our customs and ways of life that have their foundation in Christianity
- How does the Church of England have a direct role in shaping UK law?
- How many Church of England bishops are members of the House of Lords?
- What are the two major Christian festivals that are widely celebrated in the UK?
- What non-religious festivals are widely celebrated in the UK?

Choose a Task

- Create a detailed mind-map (try to make this visual)
- Create a multiple-choice quiz (aim for at least 10 questions)
- Create a poster/leaflet

CHALLENGE!

Turn over the mat and try to complete your task without looking at the information. Then refer back to the task mat to see what you have missed/could have included.

Exam Question

c) Explain the influence of Christianity in the UK today [8]

Non-Religious

There are also many other non-religious festival celebrated in the UK. **Bonfire Night** for example remembers the Gunpowder Plot when plotters led by Guy Fawkes attempted to blow up Parliament. Some non-religious festivals, for example the **Notting Hill Carnival** that happens every summer in London, celebrate the diversity of modern Britain with no-specific focus on religion. Non-religious groups, such as humanists, might recognise **World Humanist Day** (in June) or **Human Rights Day** (in December) but these are not widely celebrated in the UK.



In the **16th century**, **King Henry VIII** broke away from the Catholic Church and the authority of the Pope and made himself head of the Church of England. Today as well as being head of state, the monarch is the Supreme Governor of the Church of England. All monarchs are crowned by the Archbishop of Canterbury.

Traditions

Many of our customs and ways of life have their foundation in Christianity, for example:

- ✓ **'Keep holy the Sabbath day'** is a Commandment. Traditionally Christians go to church on a Sunday and it was regarded as a **'day of rest'**. As a result the hours shops can trade on a Sunday are restricted.
- ✓ In the UK court of law witnesses giving evidence are asked to **swear they are telling the truth**. They often do this **on the Bible**, although if they are from a different religious tradition they can swear on their own holy book or if they are non-religious they can make a 'witness affirmation' where they promised to tell the truth without reference to holy book.
- ✓ **Christian hymns and readings are often made at public events**, for example the National Service of Remembrance held each year to commemorate those who died in the two World Wars in later conflicts.
- ✓ Lots of people in the UK mark important life events, like **marriage in a church**, even if they are not religious.



Festivals



The Christian calendar influences UK public holidays. **The two major Christian festivals,**

Christmas and Easter, are still widely celebrated in the UK. School holidays fall over these periods and many businesses will close. All the Christian festivals such as

St Valentine's Day are also celebrated, though for most people the religious context of the day is no longer important and it has become a more 'secular' festival, celebrating romantic love.

As the 2011 census results show, the UK is a place where many religions are practised.

Today people of all the religious traditions may take time off school work to celebrate their own festivals. For example, the biggest celebration of the Muslim festival Eid al-Fitr happens in Small Heath Park in Birmingham, where 75,000 people gather to celebrate the end of fasting during the month of Ramadan. There are games, entertainment and food stalls and people of all religious traditions (and none) are welcome to come and celebrate.

Worship in the Synagogue

Worship in the Synagogue:

- The nature and importance of Orthodox and Reform synagogue services
- Shabbat service, the significance of prayer including the Amidah

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- Describe how Jewish women might worship differently to men (5)
- You will need to explain the differences between Orthodox and Reform synagogue services. Create a Venn diagram to show Orthodox practices, Reform practices and those practices that are shared by Orthodox and Reform.

Key Sources of Authority:

- The Shema and Amidah prayers
- The siddur- prayer book

Key Beliefs and Practices:

Synagogue services	Synagogue services are important for both Reform and Orthodox Jews as they draw the community together and seen as less selfish than personal prayers . Most synagogues have daily prayers and celebration of festivals but the main community time is the Shabbat service. Reform services allow music and rabbis can be male or female. Orthodox services do not allow music as after the destruction of the second Temple in AD70 no music was allowed as an act of mourning. It is rare that Jews kneel for worship apart from on Yom Kippur .
Shabbat Service	The main service will last about two hours and includes important prayers such as the Shema and Amidah . In Reform synagogues the service is mainly in the language of the country. Orthodox services mainly use Hebrew considered as a holy language. Portions of the Torah and haftarah are read which the rabbi (always male in Orthodox synagogues) usually refers to in their sermon . After the service there will be a Kiddush which includes a special blessing recited over a cup of wine. Reform services omit prayers which make references to a personal Messiah or resurrection .
Importance of prayer in the synagogue	Through prayer a relationship is built with God . The weekday and Shabbat prayer book (siddur) contains many different types of prayer such as praising God, requests of God and thanksgiving. The prayer books for Jewish festivals is called the machzor . Important prayers are recited by standing e.g. the Amidah. In some synagogues the Shema prayer is said standing as it is considered important. Some worshippers cover their eyes when reciting the Shema so they can concentrate.
The Amidah Prayer	This is an important prayer which speaks directly to God and is said facing Jerusalem . Many Orthodox Jews will recite the Amidah at each of the three daily prayer services in addition to the Shabbat service. Prior to the Amidah, the entire congregation rises and takes three steps back, then three steps forward. Worshippers step back and forward as if entering the presence of the King with reverence. The 19 blessings are divided into three sections: praising God, requests of God, thanks to God.

Key Connections:

How does worship in the synagogue relate to *beliefs about God*?

How does worship in the synagogue relate to the *importance of Shabbat*?

Worship in the Home

Worship:

- Worship in the home
- Siddur; recitation of the Shema and Modeh Ani; display of mezuzah; preparation and celebration of Shabbat

Key Sources of Authority:

- **Remember and keep the Sabbath Day holy** - From the Ten Commandments Exodus 20
- **And on the seventh day God rested** - Genesis
- **Advice from Rabbis, interpretation of the Torah And Talmud; personal conscience**

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Key Beliefs:

Worship in the home

In the home values and beliefs are learnt and practiced. Prayers are said daily including for **Orthodox** Jews the **Modeh Ani** (prayer to thank **God** upon waking). The **Shema** (main declaration of faith) is recited at **prayer** times and throughout the day. Most **Jewish** homes have a **siddur** (prayer book) which is used for **prayers** and is considered **holy**. As decreed in the **Torah mezuzah** cases which contain the **mezuzah** scroll are fixed to the front door post. Many Jews also have them on the door post of each room apart from the bathroom. These contain a copy of the **Shema** prayer. They are not a good luck charm but remind Jews to live according to the **Shema** and they symbolise **God's** existence and protection. For a **mezuzah** to be considered **kosher** it has to be hand written by a **scribe**, on **kosher** parchment and checked twice every seven years.

Preparation and celebration of Shabbat

The weekly festival of **Shabbat** celebrates creation. Requirement in the **Ten Commandments** to remember and keep **Shabbat**. For many the preciousness of **Shabbat** is considered as a taste of the world to come. Jews prepare and celebrate **Shabbat** in different ways. Differences are often a result of interpretation of the **Torah**, advice from **rabbis** and **personal conscience**. Before **Shabbat** the house is cleaned, on the table there will be two **challah** (plaited loaves). The mother lights two candles to bring **Shabbat** in, the father blesses the children and then sings a song welcoming **Shabbat** angels. Father then makes **kiddush** (blessing) over the wine and the family wash their hands. **Blessings** are recited over the **challah** as a piece is cut for each member of the family. The bread is dipped into the salt and family say a blessing and the family sing **grace (birakhot hamazon)** after the meal. Many **Orthodox** Jews keep Shabbat by doing no work from Friday sunset to Saturday sunset. What counts as work comes from interpretations of the **Torah** and **Talmud**. Some **Reform** Jews consider that modern day living means that some people have to work or travel on **Shabbat**. The **Havdalah** ceremony is held at the end of **Shabbat** to separate **Shabbat** from the rest of the week. The **Havdalah** cup of wine is filled to overflowing as an expression of hope and blessings are said. A braided candle with a double wick is used for the **Havdalah** ceremony and a **spice box** is taken into each room of the house with the hope the week to come will be as sweet as the smell from the **spice box**.

Exam Practice:

- **Explain why the home is important in Judaism (8)**
- **It is important to recognise that there are a variety of Jewish beliefs and practices depending upon the interpretation of the Torah and the Talmud. This is why a study of the Torah is so important for many Jews.**

Key Connections:

How do beliefs about the importance of Shabbat relate to *God as Creator*?

How does the Shema that is placed in the mezuzah case relate to *God as One*?

Festivals:

- Diversity of practices between different Jewish traditions
- Origin, meaning and celebration of Pesach

Key Sources of Authority:

- **The Haggadah**
- **Duty to keep Pesach as a memorial - Exodus 12:14**

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Key Practices:

Why there are different practices	There are often different ways that Jews celebrate the same festival. This might depend upon how observant Jews are of following the Torah literally. Also, if Jews are Sephardic (family roots in countries such as Spain and Africa) or Ashkenazi (family roots in countries such as Eastern Europe) then foods at festivals will often reflect a country of origin. As with any festival there will be different traditions that each family has as a way of celebrating.
Pesach (Passover)	The night before Pesach is an important time as it's the final search for chametz (leaven) which the Torah states should not be eaten during Pesach . Pesach celebrates Moses leading the Israelites from Egypt to freedom and lasts for seven days in Israel and 8 elsewhere. The seder is a special service at home held on the first night of Pesach . The Haggadah is read. This is a small volume which recounts the story of the Exodus and contains many prayers and blessings . At the seder meal there is a dish of symbolic food including - marror (symbolising bitterness of the Israelites in captivity); shankbone (represents the lamb eaten by the Israelites on the night of the Exodus); charoset (a paste representing the mortar for bricks made by the Jews in slavery in Egypt). There are 4 cups of wine and wine is spilled when the Ten Plagues are recited. Some say as an expression of sorrow for each of the plagues . By the plate there is often a dish of salt water representing the tears shed as Israelites in slavery. There is a special goblet called the Cup of Elijah . After the Grace after meals has been recited the cup of Elijah is filled with wine and the front door is opened for Elijah to enter. Tradition states that Elijah will announce the time when the Messiah comes. The focus of the festival is to remember when Israelites weren't free and the importance of freedom.

Exam Practice:

- Describe how Pesach is celebrated (5)

Key Connections:

How does Pesach relate to Moses?

How does Pesach relate to beliefs about the Messiah?

The Nature of God:

- God as One; Creator; Law Giver and Judge
- Nature and significance of the Shekhinah

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- Describe Jewish beliefs about God as Creator (5)

Key Sources of Authority:

- 'Hear O Israel the Lord Our God the Lord is one' part of the Shema
- 'Thou shalt have no other gods before me' Exodus 20
- 'In the beginning God created heavens and earth' Genesis 1
- 'In the image of God, He created him, male and female He created them' Genesis 1

Key Beliefs:

God as One	Jews believe in one God (monotheism). The shema prayer states 'Hear O Israel the Lord Our God, the Lord is one'. God is believed to be all knowing (omniscient), all powerful (omnipotent) and always existing (omnipresent). Synagogues show this belief by not having statues of any living beings. Some Jews believe the name of God is so special that anything with God's name must be buried if no longer used.
God as Creator	Many Jews believe God alone created all life as stated in Genesis , the first book of the Torah . Some Jews believe God literally created the world in six days. Others believe the story should not be taken literally as what is important is the story shows God is creator of all. The weekly festival of Shabbat celebrates creation. As God gave life then the preservation of life Pikuach Nefesh is very important.
God as Law Giver	God revealed to Moses the duties that Jews should keep, including the Ten Commandments . Through the following of these laws Jews are fulfilling what God wants and forming a relationship with him.
God as Judge	God is a God of justice and mercy and is a judge of how the duties of the Torah are followed. At the festival of Rosh Hashanah God judges every person. God's ways may not be understandable, but they are considered to be just.
Shekhinah	Used in the Torah to describe God's dwelling on the earth. Some Jews believe the shekhinah never left the Temple and that is why Israel has a special spirituality. It is believed that through the shekhinah God's presence can be felt and creates a sense of peace and calm e.g. when Shabbat candles are lit.

Key Connections:

How do beliefs about the nature of God relate to other areas of your study?

Shabbat, Rosh Hashanah, Pikuach Nefesh, Care of the Environment, worship, Moses.

The Messiah (Mashiach):

- Different views within Orthodox and Reform Judaism about the nature and role of the Messiah

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- **Explain different Jewish beliefs about the Messiah? (8)**
- **You will also study Christian beliefs about the Messiah. Create a Venn diagram to show Jewish beliefs, Christian beliefs and those beliefs that are shared by Christians and Jews.**

Key Sources of Authority:

- **There are no direct references to the Messianic Age in the Torah so certain verses such as Isaiah 11 1-9 are interpreted**
- **Maimonides in the 12th century refers to a belief in the Messiah as one of the 13 Principles of Judaism**

Key Beliefs:

Why there are Different Beliefs about the Messiah?	There are no direct quotes about the Messiah in the Torah so there are many different beliefs as passages that might be relevant are interpreted with people giving different meanings. For some, especially Orthodox Jews, a belief in the Messiah is central to their faith. For some, especially Reform Jews, there is a belief that the Messianic Age can come from the good deeds (mitzvot) that people do to create peace.
What is the Messiah?	Messiah comes from ' Mashiach ' meaning ' anointed ', This refers to the placing of oil on the head of a king showing they are trusted by God . Many Orthodox Jews pray each day for the coming of the Messiah to bring about the Messianic Age .
What is the Messianic Age?	Many Jews believe that the coming of the Messiah will bring about the resurrection of the dead and begin the Messianic Age – a future time of peace on earth.
When Might the Messiah Come?	Some Jews believe there is an exact date when the Messiah will come but most Jews believe the Messiah will come when they are needed most in the world.
What Might the Messiah Do?	There are many different beliefs. The traditional belief was that the Messiah would be a great leader and judge who will bring the world to an end. Some believe he will be descended from King David and an inspiration to others. In the Tenakh there are references to the Messiah bringing Jews back to Israel ; rebuilding the Temple in Israel ; bringing about a time of peace for all.

Key Connections:

How do beliefs about the Messiah relate to the other areas of your study?

The Afterlife

Life on Earth

Life on Earth:

- Beliefs and teachings about Pikuach Nefesh
- The relationship between free will and the 613 mitzvot (duties)

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- **What is meant by mitzvot?** (2)
- **'All Jews should keep the 613 mitzvot (duties)'. Discuss this statement showing that you have considered more than one point of view.** (15)

Key Sources of Authority:

- *God created life in his image* (Genesis 1)
- *People should live not die by the Torah* (Talmud)
- *When I had not yet formed you in the womb I knew you* (Jeremiah 1)
- *The role of individual conscience*

Key Beliefs:

What is Pikuach Nefesh?	The saving of a life, although it is often used to refer to the sanctity of life .
Why is Pikuach Nefesh Important?	As God created life in his own image, life is therefore sacred. Saving a life is more important than all of the other mitzvot (apart from idolatry , incest and adultery). The Talmud teaches people should 'live' not 'die' by the Torah . Jews consider teachings about Pikuach Nefesh when making life and death decisions such as abortion; organ donation; transplants; euthanasia etc. They have to be certain that their actions will actually save a life.
What is free will?	Everyone is born with an inclination to do good and an inclination to do bad. Humans are not puppets. The Torah teaches God has given Jews the freedom to choose right from wrong.
What are the 613 mitzvot?	There are 613 mitzvot (duties) in the Torah although some can no longer be kept as they refer to practices in the Temple which is now destroyed. Orthodox Jews believe they should keep all the other mitzvot . Reform Jews believe some are not relevant to today and choose to follow those they consider most important for modern day life. The number of mitzvot are represented by the number of knots on the tallit worn by many Jews during worship . Through keeping the mitzvot many Jews believe they are keeping their relationship with God .
What is the relationship between free will and the 613 mitzvot (duties)?	Although the mitzvot are in the Torah God gave humans free will to follow them or not. It is believed that Jews are born with the inclination to do good or bad. Studying the Torah helps humans choose to do good. Once a year Mitzvah Day is celebrated when Jews do good deeds and actions for the local and wider community.

Key Connections:

- How does Pikuach Nefesh relate to beliefs about *organ transplants and abortion*?
- How does belief about free will relate to *keeping of the mitzvot and judgement*?

Festivals

Festivals:

- Origin, meaning and celebration of Rosh Hashanah and Yom Kippur
- Origin, meaning and celebration of Sukkot

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- Describe the origin and meaning of Sukkot (5)

Key Sources of Authority:

- Kol Nidre Prayer
- Story of Jonah
- Torah, Talmud and Midrash

Key Practices:

Rosh Hashanah and Yom Kippur	Known as the days of awe , they celebrate God's role as Master of the Universe . According to the Talmud all actions of the past year are judged by God . In the Rosh Hashanah service, the concept of ' return to God ' is stressed and that the ' gates of repentance ' stay open until Yom Kippur . The Midrash describes Rosh Hashanah as the birth of humankind on the sixth day of creation . Often on Rosh Hashanah Jews visit water to perform Tashlich (cast off) to symbolise self-purification . Round loaves are eaten to symbolise the hope that the coming year will be complete and unbroken. Apples and honey are eaten with the idea of a sweet new year. The ten days between Rosh Hashanah and Yom Kippur are the last chance to repent . Yom Kippur is the most solemn day when most Jews fast and spend most of the day in the synagogue . It begins with the Kol Nidre prayer and ends 24 hours later with the Neila service. A kittel is worn by some worshippers as symbol of humility and purity of thought. The Kol Nidre (all vows) is chanted and the story of Jonah is read. The shofar (ram's horn) is blown at the end of the Yom Kippur service.
Sukkot	It is a Pilgrim Festival and comes after Yom Kippur as a joyful time. Sukkot (festival of booths) lasts seven days and teaches Jews to have security in what seems transient. Sukkot is often described as a festival of simple things when Jews come closer to nature and liberate themselves from technology. With a Sukkot there is no difference between rich and poor as it shows that all are strangers on earth, temporary residents on God's universe . It commemorates Moses leading the Israelites through the desert from Egypt to the Promised Land . The main symbol is the sukkah . This is a booth with a roof through which the stars must be seen. Observant families sleep in it. During the festival the four species are waved indicating that God's power is everywhere. These are the palm branch; myrtle branches; willow branches and a citron. Some say they symbolise the different types of Jews.

Key Connections:

How does Sukkot relate to beliefs about *Moses*?

How do Sukkot, Rosh Hashanah and Yom Kippur relate to beliefs about *the nature of God*?

Daily Life:

- The Tenakh and Talmud in daily life
- Dietary Laws and the requirements of a kosher kitchen
- Keeping Kosher - benefits and challenges

Key Sources of Authority:

- Interpretations of the Tenakh and Talmud
- Beth Din
- List of animals considered kosher - in the Torah (Leviticus 11)

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- You have to keep kosher to be Jewish. Discuss this statement showing that you have considered more than one point of view. (15)

Key Practices:

The Tenakh and Torah in Daily Life	Tenakh is made up of the Torah , Prophets (Neviim) and holy writings (Ketuvim) . Although the Torah is the most important part, the other parts are used for study to show the history of the Jews and their relationship with God . The teachings from the Torah guide everyday practices, values and relationships.
Dietary laws: kosher/ treifah; parev; kosher kitchen	Kosher means something fitting and in keeping according to Jewish law and the mitzvot . Treifah describes food and practices that are not allowed e.g. pork and shellfish or not prepared in a way that complies with kosher regulations. Animals allowed and forbidden to eat are listed in the Torah (Leviticus 11) but no reasons are given. Later rabbinic discussions created the method of slaughter permitted (shechithah). It is believed this method of slaughter causes the least possible pain to animals. Interpretations of the Torah ('Do not cook a young goat in its mother's milk') has resulted in many Jews not mixing meat and milk in their meals. In the home this means that there will often be plates for food containing meat and plates for those containing milk. Many Orthodox Jews will wait six hours between eating something milk and meat. Some foods, e.g. vegetables and eggs, are considered neutral (parev) can be eaten with meat or milk dishes.
Benefits and challenges of keeping a kosher kitchen	Cost - Kosher meat must be glatt (without blemish) and killed according to shechithah regulations which is more expensive. Knowing what foods are kosher - however an app has now been created to help Jews know and the Beth Din certifies kosher shops and cafes. Legalities - In some countries the method of shechithah is illegal so it is difficult to get kosher meat. Relationship with God - many Jews consider they are strengthening their relationship with God by keeping the kosher regulations in the Torah . Identity - community of Jews is strengthened. Kindness to animals - Many Jews argue that shechithah is a kinder method of slaughter.

Key Connections:

How do kosher practices relate to beliefs about *the Torah*?

How does the study of the Torah relate to beliefs about *relationships with God*?

Covenant:

- The meaning and significance of the Abrahamic Covenant and the Covenant with Moses
- The Importance of the Ten Commandments

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- Explain why Moses is important in Judaism (8)
- Describe the Abrahamic Covenant (5)
- 'Keeping the ten commandments is the most important part of Judaism.' Discuss this statement showing that you have considered more than one point of view. (15)

Key Sources of Authority:

- 'You shall be circumcised through the flesh of your foreskin. This shall be the mark of the covenant between Me and you' Genesis 17 (part of Abrahamic Covenant)
- 'Proof that I have sent you will come when you get the people out of Egypt. All of you then will become God's servants on this mountain' Exodus 3 (part of the covenant with Moses)
- The Ten Commandments given by God to Moses - Exodus 20

Key Beliefs:

Covenant	In the Torah , God made relationships through a covenant or agreement with individuals or groups. Each marks a special time in God's relationship with the Jewish people.
The Abrahamic Covenant	There are three main parts of the covenant between God and Abraham . Firstly, God called Abraham and his family to the new land of Canaan (often referred to as the Promised Land). Secondly, God promised Abraham he would make a great nation from him. Thirdly, God promised to bless Abraham and his family. As part of the covenant God gave Abraham the rite of circumcision (Brit Milah) .
The Covenant with Moses	Moses is considered to be the greatest prophet . He is believed to have been the only person to have seen God face to face. Moses was chosen by God to lead Israelites out of slavery in Egypt . This journey is remembered and celebrated at the festivals of Succoth and Pesach (Passover) . God promised to be with him in his role. Moses was given the Torah by God on Mount Sinai . Orthodox Jews believe he was also given the Torah and also the oral Torah (commentary of the Torah). Moses formed a covenant with God that as God's chosen people the Israelites would keep the commandments .
The importance of the Ten Commandments	Many Jews believe these were revealed by God to Moses and they should be kept by every Jew and are central to Jewish beliefs and practices. The first four shows the relationship with God and humans and the final six show how people should relate to each other. The Ten Commandments forbid idolatry , blasphemy, adultery, stealing, murder, lying and envy and tell Jews to remember the importance of God, to remember and keep the Sabbath day and to honour parents. Each year there is a Mitzvah Day on which Jews aim to make a positive impact on their local community.

Key Connections:

How do beliefs about Abraham relate to *Brit Milah*?

How do beliefs about Moses relate to the festivals of *Pesach* and *Sukkot*?

How do the Ten Commandments relate to *Pesach*; *the Shema*; *nature of God*; *Shabbat*; *Pikuach Nefesh*

The Afterlife

The Afterlife:

- Orthodox and Reform beliefs about life after death, judgement, resurrection and immortality
- Focus on this life as a preparation for the next life

Key Concepts:

Covenant	A promise or agreement between God and the Jews	Shabbat	Day of rest for Jews from Friday to Saturday sunset
Shekhinah	Place where God's presence rests and can be felt	Kosher	Foods and practices allowed
Messiah	Anointed one who will bring about a new age for mankind	Synagogue	Place of worship and learning for Jews
Mitzvot	Duties or commandments	Torah	The five books of the Tenakh

Exam Practice:

- Describe different Jewish beliefs about resurrection. (5)
- 'Belief in the afterlife is not important in Judaism' Discuss this statement showing that you have considered more than one point of view. (15)

Key Sources of Authority:

- In the Torah there are no direct references to the afterlife. Some Jews interpret references to Sheol but the nature of this place is unclear.
- 'This world is like a lobby before the Olam Ha-Ba. Prepare yourself in the lobby so that you may enter the banquet hall.' Talmud
- Maimonides in his 13 Principles of Judaism refers to the resurrection of the dead one day but puts it in the context of the Messianic age.

Key Beliefs:

Beliefs about life after death	The afterlife is often called olam ha ba (the world to come). There are no direct references to the nature of an afterlife in the Torah , but there are different beliefs and interpretations. Some Jews believe there is a life after death and other Jews believe that what lives on is how you remember the person for the good deeds they have done in their life. For most Jews their concern is not what happens after death but what good they do while alive.
Beliefs about judgement	God is believed to judge according to how humans have followed the right or wrong inclination and kept the mitzvot . Rosh Hashanah is sometimes called Day of Judgement as Jews think about their deeds over the last year. God is a God of justice and mercy and is a judge of how the duties of the Torah are followed. At the festival of Rosh Hashanah God judges every person. God's ways may not be understandable but they are considered to be just.
Beliefs about resurrection and immortality	There are many different beliefs about resurrection. Orthodox Jews refer to resurrection daily in their prayers and at funerals . For some this is a bodily and soul resurrection and for others just a soul resurrection . The references to resurrection have been taken out of the prayer books (siddur) for Reform Judaism and a belief in resurrection either bodily or through the soul has been rejected.
Beliefs about this life as a preparation for the next life	Most Jews consider it more important to focus on living a good life on earth and not to try and understand the ways of God . Preparation comes from studying the Torah and carrying out the mitzvot . In the Talmud this life was described as a 'lobby' or entrance hall where you should prepare yourself for the world to come.

Key Connections:

- How do beliefs about life after death relate to *keeping the mitzvot*?
- How do beliefs about judgment relate to the *festival of Rosh Hashanah*?
- How do beliefs about the afterlife relate to *life on earth*?

Revision Techniques



Revision Made Easy

“Nobody ever left an exam wishing they’d revised less!”.

Need to start revising, but not sure what the best way is?
There are many different revision strategies to help you achieve the grades you deserve!

Revision misconceptions



Don't do hours of 'cramming'. 20 minute stints are recommended.



Re-reading, highlighting material and watching videos are popular BUT... your brain needs to 'DO' something with this info! (build the muscle – make it work)



Don't just stick with one technique – if it doesn't work for you try something else!



Review what the priorities for revision are. What is it that you struggle with the most? Start with this!



Create a revision timetable and start early.




Remove distractions, such as TV and mobile phone. Reward yourself with these for doing a stint of revision.



Stay healthy. Chunk revision, exercise, eat well, sleep well and drink lots of water.

Duel Coding

This means 'recalling' or 'remembering' information previously learnt. This is carried out by pairing text and images in your revision notes. If you keep it simple, this will help it remain in your memory.

Secondary Effects	Natural Hazards	Hazard Risk
Primary Effects	Immediate Responses	Structure of the Earth 
Conservative Plate Margin	Long-term responses	Plate Movement
Destructive Plate Margin	Constructive Plate Margin	Distribution of earthquakes and volcanoes

1. Cut out the grid and stick it across a double page (or print on A3).
2. Draw an icon to represent the contents in the box.
3. Using resources such as your exercise book and textbooks, write an overview of each factor on the outside of your sheet.
4. In a few days, repeat this, using **only your memory!**

Flash Cards

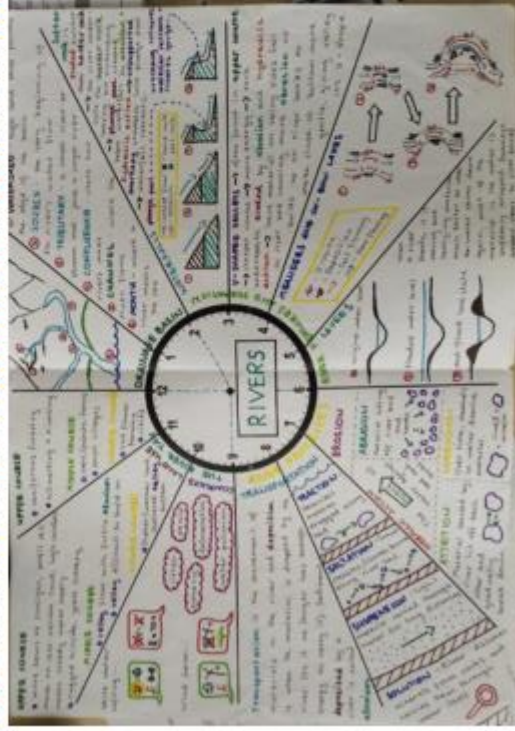
Revision cards are **small, double-sided flashcards that emphasise key information**. They usually mention the topic/question on one side and important details, keywords, mnemonics, etc. on the other. This helps the brain make better connections between those two pieces of information.

- These can be bought or made
- Use colour to separate and organise ideas
- Use images and text
- Don't overload
- Make as neat as possible
- Spread large topics over multiple cards
- Place quiz questions on the back of them and quiz in pairs



Revision Clocks

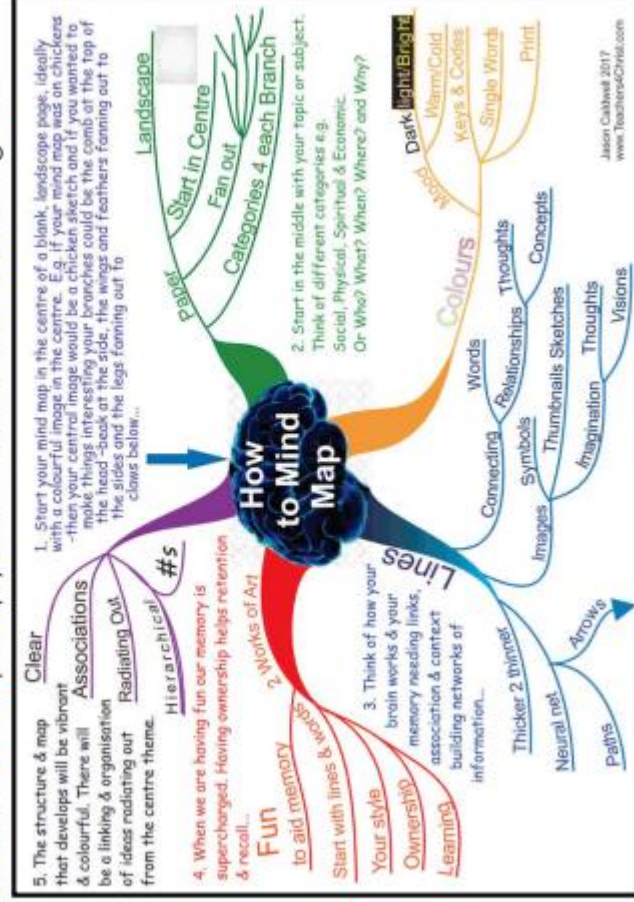
Revision clocks are a great way of **breaking down information in up to 12 manageable chunks**. By breaking down an area you are revising, it allows you to see the big picture, as well as focus on the important aspects of the unit. By spending 5 minutes on each chunk it helps keep you focussed and makes revision more manageable.



1. Take one topic
2. Divide into 12 small chunks of notes/diagrams
3. Each section is 5 mins of revision of that knowledge/ understanding/skill/ command words
4. Try to memorise the information then use it to quiz a friend, get an adult to quiz you!

Mind mapping

Mind maps provide a structured way to capture and organise ideas and information. They help users to understand concepts by **breaking them down** into their component parts. The technique is used to develop new ideas, or to break down and better understand existing information. Mind maps help you to see how information fits together.



Cornell Note taking

There are many different ways of making notes. Some prefer to take a structured approach and use an outline method to take notes, some may prefer a visual way and draw mind maps. Some may even use no structure at all. However, there is **one note taking technique that is considered superior to others** and science has proven that it is not only more efficient but also makes it a lot easier to review notes, for example when preparing for an exam. Cornell note taking helps with 4 important revision strategies:

Reduce. Chunk information down by 80%. Summarizing clarifies and strengthens memory.

Recite. Cover the Note Taking Area. Using only your questions in the Key Question column, say over the facts and ideas of the notes as fully as you can, not mechanically, but in your own words. Then, verify what you have said. (talk to yourself!)

Reflect. Draw out opinions from your notes and use them as a starting point for your own reflections on the topic.

Review. Spend 10 minutes every week in quick review of your notes, and you will retain most of what you have

Subject: Key Questions	Topic: Revision Notes
2: For each "note" think of a question that could be asked	1: Read text and write "short-hand notes" of key points
Summary	4: Cover the "notes" and use the questions to test yourself.
	3: Now write a summary of 5-10 key terms

Course Name	Topic/Subject	Name
XAVIAR	Identify significant literary devices that define a writer's style and how they affect the overall work.	Janet Davis
Key Dates	Plot: the sequence of events that take place in the story.	Plot: 15-2018
Character	Who are the main characters? What are their roles? How do they change over time?	
Setting	Where and when does the story take place? How does the setting affect the plot?	
Theme	What is the main message or lesson of the story? How is it conveyed through the characters and events?	
Style	How does the author use language to create a specific mood or atmosphere? What literary devices are used to achieve this?	
Context	What is the historical or cultural context of the story? How does it influence the plot and characters?	
Conclusion	What is the overall significance of the story? How does it relate to the larger world or human experience?	



Mnemonics

- A mnemonic device is a verbal mind memory learning aid such as a small poem, phrase or special word used to help you remember something.
- Mnemonics come in various different forms. For example, many mnemonics use the letters in a word that you need to remember to spell out sentences.

Never



Eat

Shredded

Wheat



College Study Tips 11

Maximize your mnemonics for memorization.

Can you say that 3 times? Try these tips:

- Keep it simple.
- Make it silly.
- Rhyming words are fantastic.
- Craft a story for a long list.

CollegeStudySmarts.com

The English Martyrs Catholic School and Sixth Form College

How to plan your revision





Top tips for planning your revision



WEEKLY REVISION PLANNER

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	TIME	SATURDAY	SUNDAY
8:30AM - 4PM	SCHOOL	SCHOOL	SCHOOL	SCHOOL	SCHOOL	9AM - 10AM	BREAKFAST / SHOWER	BREAKFAST / SHOWER
4PM - 5PM	HOMEWORK	TV / GAMING / SOCIAL MEDIA	HOMEWORK	TV / GAMING / SOCIAL MEDIA	HOMEWORK	10AM - 11AM	REVISION - ENGLISH	REVISION - SCIENCE
5PM - 6PM	DINNER	DINNER	DINNER	DINNER	DINNER	11AM - 1PM	SEEING FRIENDS / LUNCH	SPORT / LUNCH
6PM - 7PM	REVISION - GEOGRAPHY	HOMEWORK	REVISION - HISTORY	REVISION - FRENCH	REVISION - SCIENCE	1PM - 3PM	REVISION - MATHS	REVISION - FLASH CARDS
7PM - 8PM	REVISION - MATHS	REVISION - ENGLISH	FREE TIME	HOMEWORK	FREE TIME	3PM - 5PM	OUT WITH FAMILY	SPORT / TV / GAMING
8PM - 9PM	FREE TIME / SHOWER	FREE TIME / SHOWER	FREE TIME / SHOWER	FREE TIME / SHOWER	FREE TIME / SHOWER	6PM - 8PM	DINNER / FREE TIME	DINNER / FREE TIME

- Start by blocking out the time you spend doing hobbies or commitments. E.g., you might have football training on a Saturday morning.
- Block out time for relaxation and down time – you need time to relax and recharge.
- Break your revision into manageable chunks with short breaks in between. So, you could revise for 25 minutes on one subject with a 5-minute break.
- Colour code your timetable by subject so it's easy to see at a glance what subjects you are revising when.
- **Don't just revise the subjects you enjoy** – make sure you revise the ones you find tricky too!

Need some more support in planning your revision?

Have a look at this information on BBC bitesize by scanning the QR code





Revision timetable: School week

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Time	Saturday	Sunday
8:30-4pm	School	School	School	School	School	9am-11am		
4-5pm						11am-1pm		
5-6pm						1pm-3pm		
6-7pm						3pm-5pm		
7-8pm						5pm-7pm		
8-9pm						7pm-9pm		



Revision timetable: School holiday week

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Time	Saturday	Sunday
9am-11am						9am-11am		
11am-1pm						11am-1pm		
1pm-3pm						1pm-3pm		
3pm-5pm						3pm-5pm		
5pm-7pm						5pm-7pm		
7pm-9pm						7pm-9pm		

The English Martyrs Catholic School and Sixth Form College

If you need some support...

Getting through your GCSEs can feel overwhelming and challenging at times.

You should always tell someone about the things you are worried about. You can tell a friend, parent or a trusted adult at school.

Below are some other support services that you can also access.

YOUNGMINDS
fighting for young people's mental health

YoungMinds Crisis Messenger

Free 24/7 mental health support if you're experiencing a mental health crisis

Text **YM** to **85258**

kooth

Kooth is an online **mental wellbeing** community for young people

For ages: **11-18**

Sign up for free at [Kooth.com](https://www.kooth.com)

ChildLine
0800 1111

Childline

You can speak to someone at Childline about how you're feeling, no matter the issue.

Call free on **0800 1111**

