

# KNOWLEDGE

# ORGANISER

Year 10  
Half Term 1



Name:

Tutor Group:

Academic Year:



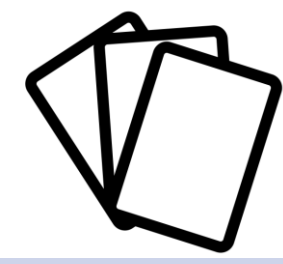
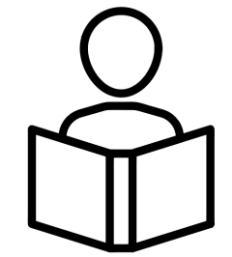
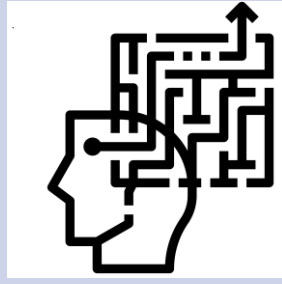
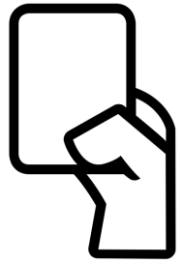



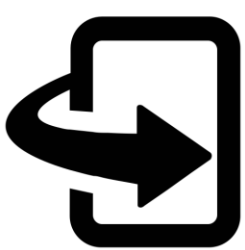
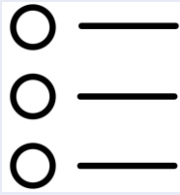


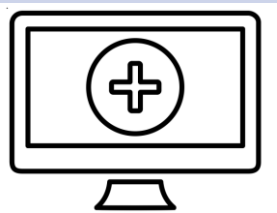
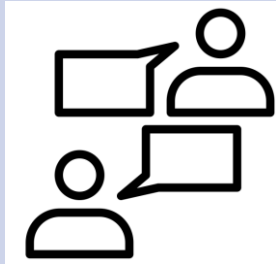

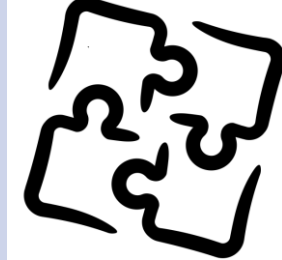

# How to use your Knowledge Organiser



The aim of the knowledge organiser is to ensure that **ESSENTIAL KNOWLEDGE** is stored and retrieved over a long period of time.







You need to ensure that you keep your knowledge organiser in your bag, ready for revision, quizzing and to refer to at any time in all of your subjects.

	Look, Cover, Write, Check	Definitions to Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	<p>Look at and study a specific area of your knowledge organiser</p> 	<p>Write down the key words and definitions.</p> 	<p>Use your knowledge organiser condense and write down key facts and/or information on your flash cards.</p> 	<p>Read through a specific area of your knowledge organiser</p> 	<p>Create a mind map with all the information that you can remember from your knowledge organiser.</p> 	<p>Ask a partner or someone at home to have the quiz questions or flash cards in their hands.</p> 
Step 2	<p>Flip the knowledge organiser and write everything you can remember.</p> 	<p>Try not to use the solutions to help you.</p> 	<p>Add diagrams or pictures if appropriate. Write the solutions on the back of the cards.</p> 	<p>Turn over and answer the questions related to that area.</p> 	<p>Check your knowledge organiser to correct or improve your mind map.</p> 	<p>Ask them to test you by asking questions on the section you have chosen from your knowledge organiser.</p> 
Step 3	<p>Check what you have written. Correct mistakes and add extra information. Repeat.</p> 	<p>Check your work. Correct using red pen and add more information if appropriate.</p> 	<p>Self quiz using the cards or ask some to help by quizzing you.</p> 	<p>Turn back over and mark your quiz. Keep quizzing until you get all questions correct.</p> 	<p>Try to make connections that links information together.</p> 	<p>Either say or write down you answers.</p> 




**CORE**

# A Christmas Carol

## Context

	<p><b>Poverty:</b> Dickens had a comfortable childhood until the age of twelve, when his father was sent to a debtors' prison and Charles had to work in a factory. The harsh conditions made a lasting impression: through his works of social criticism, he sought to draw attention to the plight of the poor.</p>
	<p><b>The Poor Law:</b> In order to deter people from claiming financial help, the government made claimants live in workhouses – essentially prisons for the poor. Dickens spent 1843 touring factories and mines in England and wished to highlight the situation facing the poor. 'A Christmas Carol' was published in December of that year. <b>"Are there no Prisons?...and the Union workhouses?"</b></p>
	<p><b>The Victorian era</b> was between 1837 and 1901 (most of Dickens' life). Whilst this was a time of industrial revolution, it was also an extremely harsh time to live, with huge differences between the lifestyles of the rich and poor. The Victorian era was a period of great change. In this time, the population of England doubled – from 16.8 million 1851 to over 30 million in 1901. Rapid population growth fuels concerns that there would not be enough food to go around: <b>"If they would rather die," said Scrooge, "they had better do it, and decrease the surplus population."</b></p>
	<p><b>Social Class:</b> Despite industrial changes altering the social landscape, there were still relatively distinct social classes in operation: the nobility upper class, the middle class, and the working class. Life was terrible for the poorest: lack of money resulted in a negligible food supply. For some working families, money was so tight that they required their children to work in order to survive.</p>



## Big Ideas

<p><b>Poverty and Greed</b></p> 	<p>Dickens wanted to highlight the plight of the poor in Victorian England, and how they are exploited by the greed of the wealthy. He used the harshness of winter to further emphasise this. He also uses Scrooge as a vehicle to show that financial wealth does not mean contentment; Scrooge is impoverished in other ways (family, friends, happiness). <b>"Darkness was cheap, and Scrooge liked it."</b></p>
<p><b>Redemption</b></p> 	<p>Characters like Fred and Bob demonstrate compassion and forgiveness towards Scrooge; both are seen to live happy lives – they demonstrate the path to Scrooge's redemption. Scrooge's kindness towards Bob Cratchit in Stave 5 is the antithesis of his treatment of Bob in Stave 1, with each act emphasising his redemption. <b>"I am as light as a feather, I am a happy as an angel, I am as merry as a school-boy. I am as giddy as a drunken man."</b></p>
<p><b>Isolation vs. Family</b></p> 	<p>Scrooge is <b>"solitary as an oyster"</b> – isolated and unhappy. Scrooge was Marley's <b>"sole friend and sole mourner"</b>. The warmth and emotional richness of families is used as a contrast to Scrooge's self-determined isolation. The disruption to Scrooge's childhood and family life may also have contributed to his future behaviour. Dickens' message may be that family is the cornerstone of a happy society.</p>

## Key Quotes

- "Hard and sharp as flint" (Description of Scrooge, Stave 1)
- "I wear the chain I forged in life" (Jacob Marley, Stave 1)
- "From the crown of its head there sprung a bright clear jet of light" (Stave 2)
- "...the master passion, Gain, engrosses you." (Belle to Scrooge, Stave 2)
- "Scrooge entered timidly, and hung his head before this spirit." (Stave 3)
- "The boy is Ignorance. The girl is Want. Beware them both." (Ghost of Christmas Present, Stave 3)
- "Avarice, hard dealing, griping cares? They have brought him to a rich end, truly!" (Scrooge, Stave 4)
- "I will not shut out the lessons that they teach." (Scrooge, Stave 4)





## Transferable knowledge

<p><b>Allegory</b></p> 	<p>A story, poem, or picture that can be interpreted to reveal a hidden meaning, typically a moral or political one.</p>
<p><b>The text is a construct</b></p> 	<p>Don't forget! <b>Nobody in the novella is real:</b> every character has been <i>created</i> by Dickens in order to make a specific point or serve a purpose. For example, Fred <b>embodies</b> the ideas of kindness, generosity and the importance of family that Dickens was eager to communicate.</p>






# A Christmas Carol

## Context

	<ul style="list-style-type: none"> <li>• What happened to Dickens' father when Dickens was 12?</li> <li>• In what year was 'A Christmas Carol' published?</li> <li>• What did the Poor Law require of people who claimed financial support?</li> </ul>	
	<ul style="list-style-type: none"> <li>• What happened to the population of England during the Victorian era?</li> <li>• Briefly describe living conditions for the poorest families in Victorian England.</li> <li>• Research Thomas Malthus and his views on population growth. How do his ideas relate to 'A Christmas Carol'?</li> </ul>	



## Big Ideas

<p><b>Poverty and Greed</b></p> 	<ul style="list-style-type: none"> <li>• What does Dickens use the character of Scrooge to show?</li> <li>• How does the setting in Stave 1 reflect Scrooge's own attitudes?</li> </ul>
<p><b>Redemption</b></p> 	<ul style="list-style-type: none"> <li>• What is the significance of the characters of Bob Cratchit and Fred?</li> <li>• Examine Scrooge's treatment of Bob Cratchit in Stave 1. Compare this with his actions in Stave 5. What do you notice?</li> <li>• Using a page of your reflection log, write down all the factors that influence Scrooge's redemption. At what point does he begin to change? Which spirit do you think has the most impact? Why?</li> </ul>
<p><b>Isolation vs. Family</b></p> 	<ul style="list-style-type: none"> <li>• Why does Scrooge live in isolation? What are the events in his life that have caused this?</li> <li>• In what way do Scrooge's attitudes differ to Fred's in Stave 1?</li> <li>• Describe Scrooge's experience of childhood. How might this have influenced his actions as an adult?</li> <li>• Write a page of your reflection log on the Cratchit family. How do their ideas and attitudes differ to Scrooge's? What point might Dickens be making?</li> <li>• Re-read Stave 3. How does Dickens show that family and friendships are vital?</li> </ul>

## Key Quotes

<ul style="list-style-type: none"> <li>• For each of the key quotations listed on the knowledge organiser (highlighted in yellow and in the 'key quotes' box), write down the quotation and then complete an 'explosion' task, exploring its links to themes and characters.</li> <li>• Use a page of your reflection log to copy out the quotes from memory – categorise them by theme or character.</li> </ul>
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## Transferable knowledge

<p><b>Allegory</b></p> 	<ul style="list-style-type: none"> <li>• What is an allegory? How does this term apply to 'A Christmas Carol'?</li> </ul>
<p><b>The text is a construct</b></p> 	<ul style="list-style-type: none"> <li>• Explain what is meant by this phrase.</li> <li>• For each character, explain why they have been constructed – what might Dickens have wanted to achieve through each one?</li> </ul>

## Vocabulary

Key vocabulary is included on the knowledge organiser in bold and italics.

- Find each word and write a list of key vocabulary.
- Look up and write down a definition for any word you don't understand or are unsure of.
- Write a new sentence for each word, relating it to an aspect of 'A Christmas Carol'.

## Extra research: Characters

- What is the significance of the charity collectors in Stave 1?
- Write a page of your reflection log on the character of Fred and what he represents.
- How is Bob Cratchit treated in Stave 1? How does this compare with Scrooge's treatment of him in Stave 5?
- Write a page of your reflection log on the characters of Belle, Fan and Mrs Cratchit – how are the women in the text presented by Dickens?
- How does Fezziwig contrast with Scrooge as an employer?
- What is meant by 'The boy is Ignorance. The girl is Want.'? What does this say about Victorian society?

# Chemistry Knowledge Organiser

## Structure and Bonding part 1

### Three types of bonding

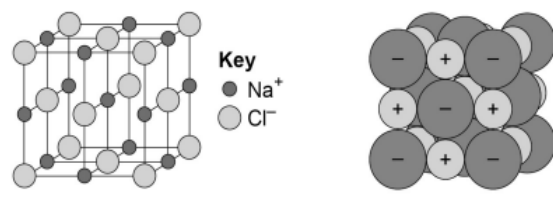
#### Ionic

**Occurs in :** in compounds formed from **metals combined with non-metals.**

**Details:** In ionic bonding **electrons in the outer shell of the metal atom are transferred.** Metal atoms lose electrons to become positively charged ions. Non-metal atoms gain electrons to become negatively charged ions. This can be shown like...



**Structure:** a giant structure of ions called a **giant ionic lattice**. Ionic compounds are held together by strong **electrostatic forces of attraction** between oppositely charged ions. These forces act in all directions in the lattice and this is called ionic bonding. Ionic compounds can be represented as follows...



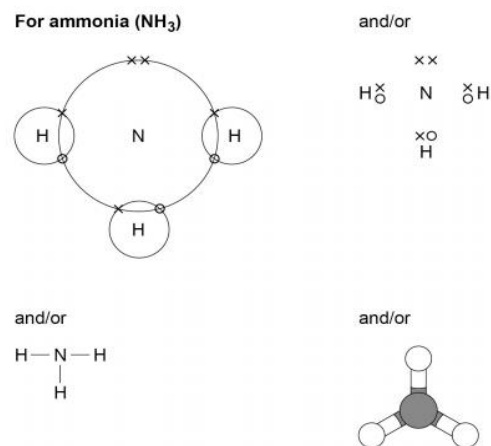
#### **Properties:**

- **High melting points and high boiling points** because of the large amounts of energy needed to break the many strong bonds.
- **Conduct electricity when melted or dissolved in water** because the ions are free to move and so charge can flow.

#### Covalent

**Occurs in:** most non-metallic elements and in compounds of **non-metals.**

**Details :** Covalent bonds form when **atoms share pairs of electrons.** These bonds between atoms are strong. Covalent bonds can be represented in the following forms:



**Structure :** Covalently bonded substances may consist of small molecules.

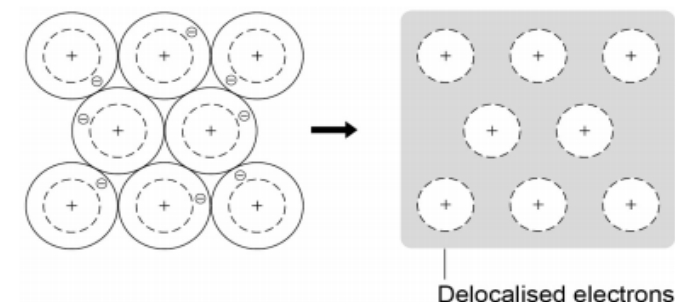
#### **Properties (of small molecules):**

- **Usually gases or liquids that have relatively low melting points and boiling points.** These substances have only weak forces between the molecules (intermolecular forces). It is these intermolecular forces that are overcome, not the covalent bonds, when the substance melts or boils.
- **Do not conduct electricity** because the molecules do not have an overall electric charge.

#### Metallic

**Occurs in :** in **metallic elements and alloys.**

**Structure :** Metals consist of **giant structures of atoms arranged in a regular pattern.** The **electrons** in the outer shell of metal atoms are **delocalised** and so are free to move through the whole structure. The sharing of delocalised electrons gives rise to strong metallic bonds. The bonding in metals may be represented in the following form:



#### **Properties:**

- **High melting and boiling points.** As metals have strong metallic bonds.
- **Pure metals are malleable (can be bent and shaped),** as they atoms are arranged in layers that can slide over each other.
- **Good conductors of electricity** because the delocalised electrons in the metal carry electrical charge through the metal.
- **Good conductors of thermal energy (heat)** because energy is transferred by the delocalised electrons.

Most metals in everyday use are alloys.

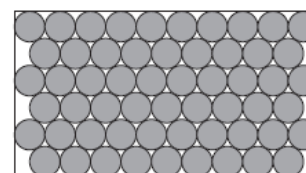
Pure metals are too soft for many uses and so are mixed with other metals to make alloys which are **harder than pure metals.**

Alloys are **mixtures of metals** (sometimes metals and non-metals like steel that is an alloy of metal(s) and carbon.

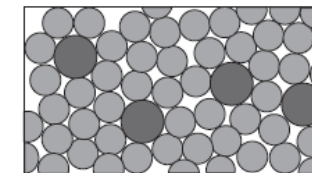
e.g Bronze is an alloy of copper and tin. Brass is an alloy of copper and zinc.

#### Alloys

#### Pure metal



#### Alloy



In an alloy there are **different size metal ions** as they are a mixture of metals.

These means **the layers are distorted/** there are no distinct layers. The layers can't slide over each other like in pure metals so **alloys are harder than pure metals.**

# Chemistry Knowledge Organiser

## Structure and Bonding part 1

### Self Quizzing Questions

#### Ionic bonding

1. What does ionic bonding occur in?
2. Describe what happens to electrons to form ionic bonds.
3. How do metal atoms form positive ions?
4. Why do non-metal atoms become negative ions?
5. Describe the structure of an ionic compound.
6. Draw a diagram to show the structure of an ionic compound
7. Give 2 properties of ionic compounds.
8. Explain why ionic compounds have the 2 properties you gave in Q7.

#### Metallic bonding

15. What does metallic bonding occur in?
16. Describe how the atoms are arranged in metals.
17. The electrons in the outer shell of metal atoms are delocalised- what does this mean?
18. Why do metals have high melting and boiling points?
19. Why are metals malleable?
20. Why are metals good conductors of electricity?
21. Why are metals good conductors of thermal energy?

#### Covalent bonding

9. What does covalent bonding occur in?
10. Describe how covalent bonds are formed.
11. Are covalent bonds strong or weak?
12. Draw 2 different ways you can represent the covalent bonds in ammonia (NH<sub>3</sub>)
13. Give 2 properties of small molecules
14. Explain why small molecules have the 2 properties you described in Q13.

#### Alloys

22. What are alloys?
23. Why are pure metals made into alloys?
24. What is bronze an alloy of?
25. What is brass an alloy of?
26. Explain (using diagrams if you want) why alloys are harder than pure metals. You should use the following words in your answer: ion, layer, distort.

#### Further Opportunities

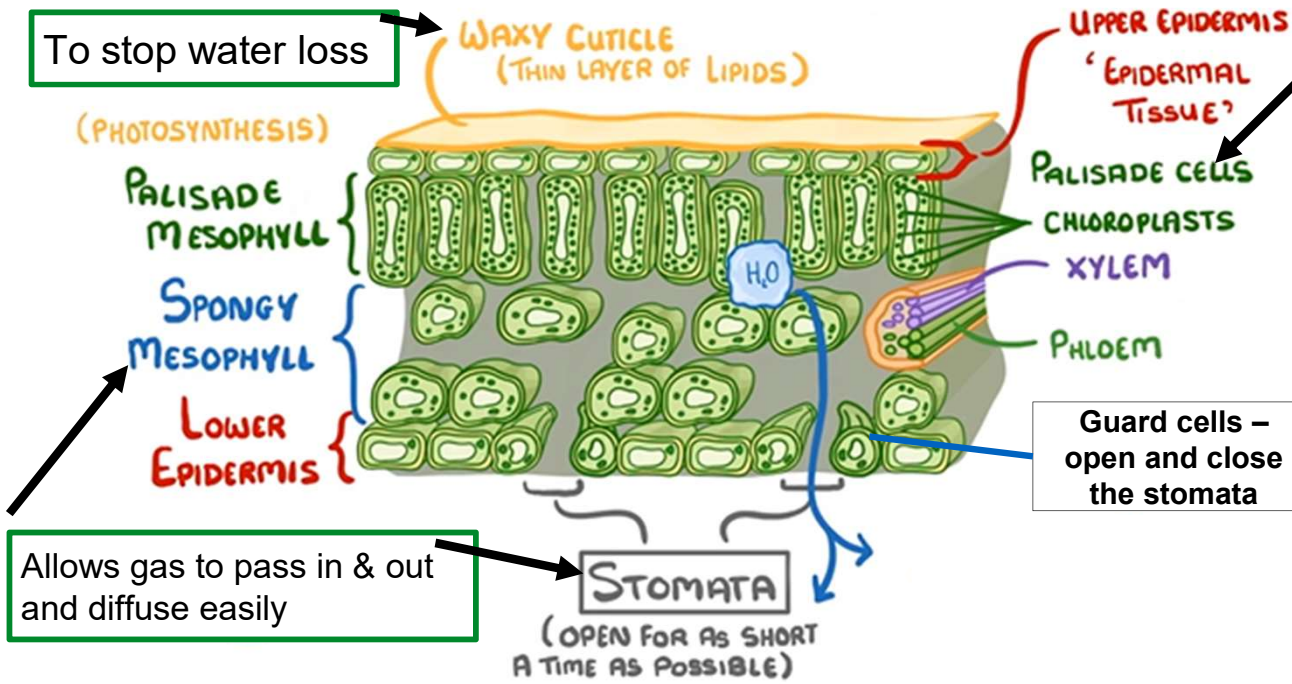
1. Visit Oak Academy and work through the Structure and bonding topic L1-5 and L10, answer the questions in your reflection log: <https://classroom.thenational.academy/units/bonding-structure-and-the-properties-of-matter-e93f>
2. Visit Kayscience and work through Chemistry topic 2- Bonding Structure and properties of matter, answer the questions in your reflection log: <https://www.kayscience.com/chemistry.html>



# Biology Knowledge Organiser

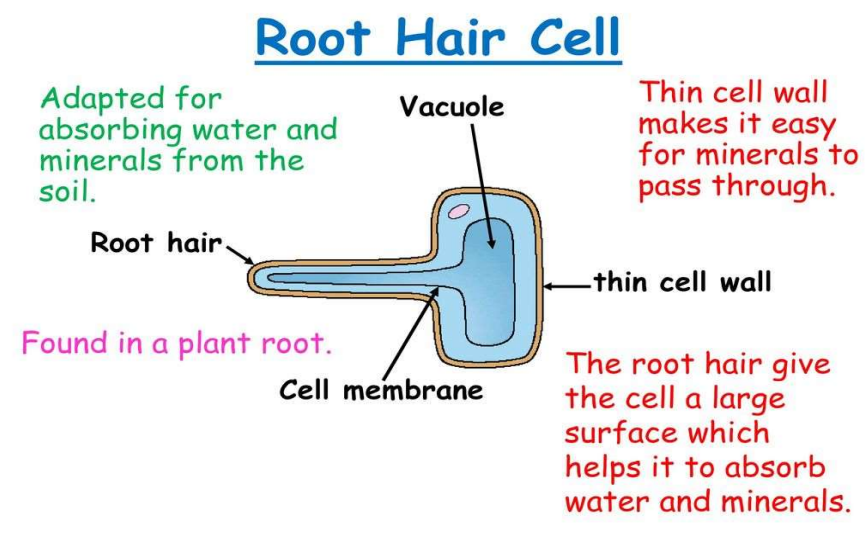
## Organisation Part 2 - Plants

### LEAF ADAPTATIONS

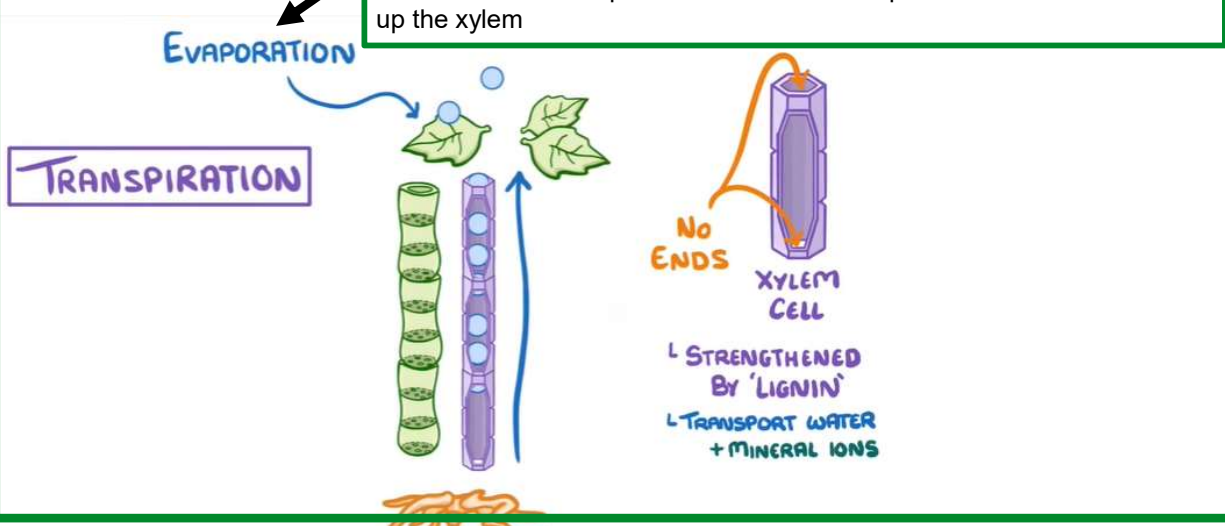


Lots of chloroplasts for photosynthesis  
Tightly packed near the surface to maximise light absorption

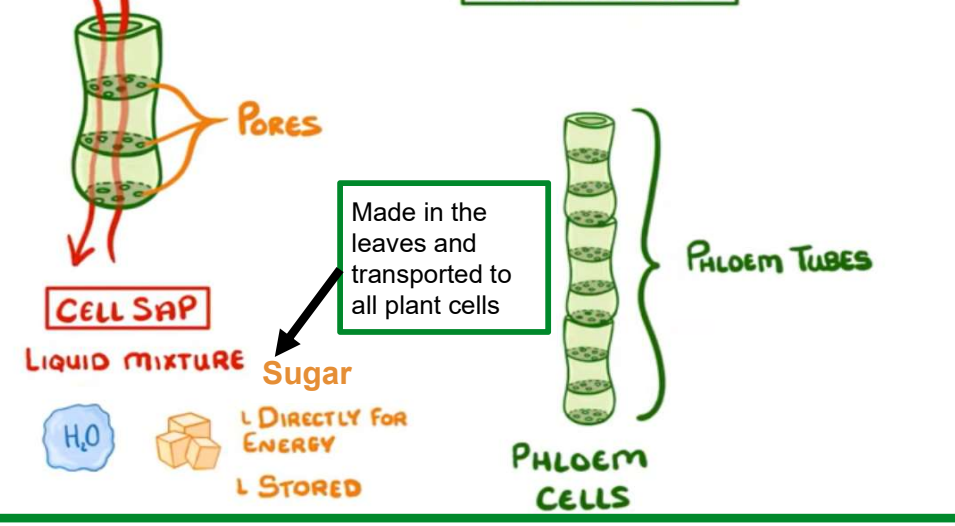
### ROOT ADAPTATIONS



### TRANSPORT



### TRANSLOCATION



### Leaf adaptations

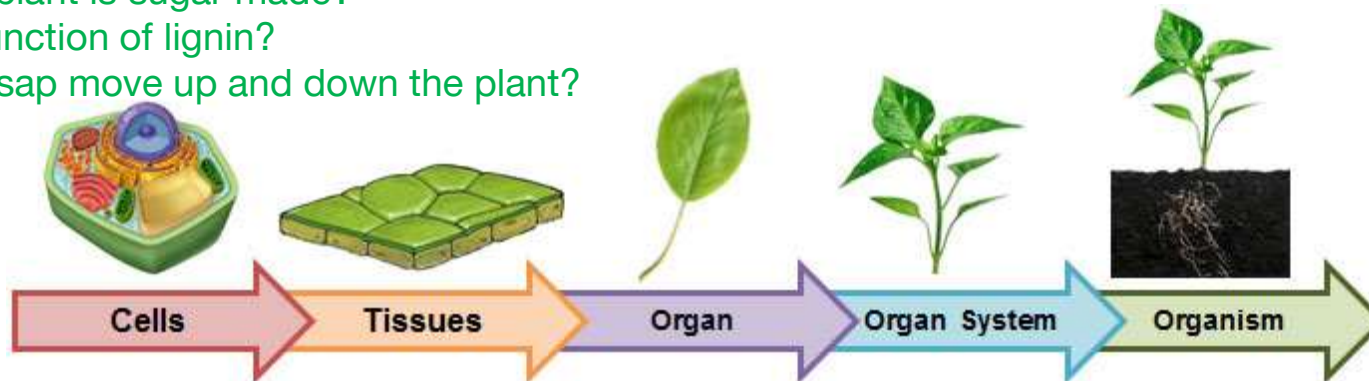
1. Name the top layer of cells in a leaf.
2. Which layer of a leaf contains the most chloroplasts?
3. Where are stomata found?
4. What do stomata and guard cells do?
5. Why is the top layer of a leaf waxy?
6. Why are there so many chloroplasts in the cells of a leaf?
7. Describe how palisade cells are adapted to absorb the maximum amount of sunlight
8. Which layer has large airspaces to allow gases to easily diffuse?

### Root adaptations

9. Why do root hair cells have a large surface area?
10. Name 2 substances found in the soil needed by plants.
11. Why does the root hair cell have thin walls?

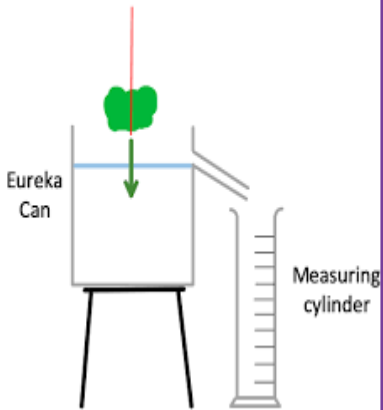
### Transport

12. What is transported up the plant in the process of transpiration?
13. Where in the plant is water absorbed?
14. Why is the evaporation of water important in the process of transpiration?
15. Which tissue (tube) transports cell sap (food)?
16. What is the process called that transports cell sap?
17. Where in the plant is sugar made?
18. What is the function of lignin?
19. Why can cell sap move up and down the plant?



### Further Opportunities

1. Visit Oak Academy and work through lessons 15-18, answer the questions in your reflection log  
<https://classroom.thenational.academy/units/organisation-2345>
2. Explain how different factors can affect the rate of transpiration.
3. Research the use of a potometer and describe how it can be used to measure the rate of transpiration.



#### Measuring the density of regular shaped object

Measure the mass using a balance, measure the length using a ruler, calculate the volume, use the density equation to calculate density.

#### Measuring the density of an irregularly shaped object

Measure the mass using a balance, Fill a eureka can with water, place the object in the water- the water will be displaced by the object will transfer into the measuring cylinder, measure the volume of the water, this equals the volume of the object, use the density equation to calculate density.

**Solids** have strong forces of attraction.

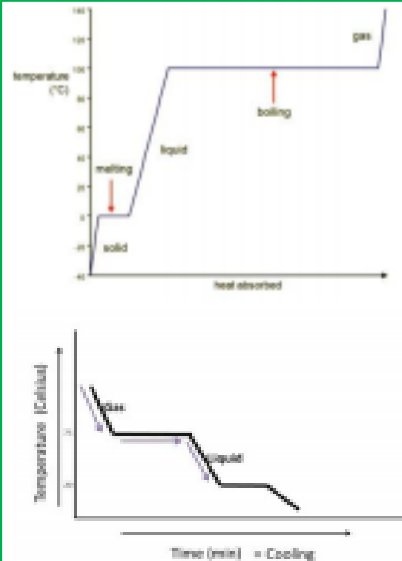
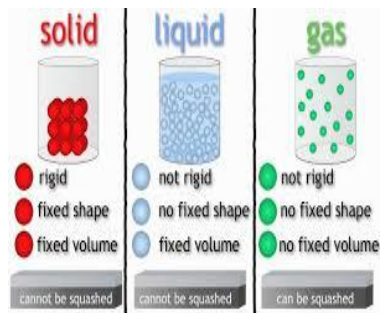
They are held together very closely in a fixed, regular arrangement. The particles do not have much energy and can only vibrate.

**Liquids** have weaker forces of attraction.

They are close together but can move past each other. They form irregular arrangements.

**Gases** have almost no forces of attraction between the particles.

They have the most energy and are free to move in random directions.



#### Specific Latent heat

Energy is put in during melting and boiling. This increases the amount of internal energy. This energy is being used to break the bond so the temperature does not increase. This is shown by the flat parts on the graph.



A **change of state** can be brought about by changing the **temperature** or **pressure** of a material.

If the solid shown above has a mass of 1kg, then the liquid and gas will both have a mass of 1 kg.

**Mass is conserved when a substance changes state, only the volume changes.**

**Changes of state are physical changes not chemical changes.**

The change can be reversed in a physical change so the material recovers its original properties. This does not happen with a chemical change.

Regular shape

Irregular shape

Solid

Liquid

Gas

Density

Specific latent heat

Change of state

Conserved

Equations

$$\text{Density (kg/m}^3\text{)} = \text{Mass (kg)} / \text{Volume (m}^3\text{)}$$

## Density:

1. State the equation for finding *density*.
2. Give the unit for density.
3. Why would you place an object in an eureka can?

## Particles:

1. Draw the particles in a solid.
2. Draw the particles in a liquid.
3. Draw the particles in a gas.
4. Describe the arrangement of particles in a solid.
5. Describe the arrangement of particles in a liquid.
6. Describe the arrangement of particles in a gas.

## Change of state

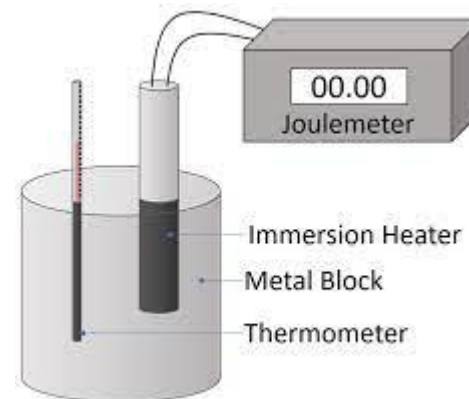
1. Name the 6 changes of state.
2. How is boiling different to melting?
3. How is melting different to freezing?

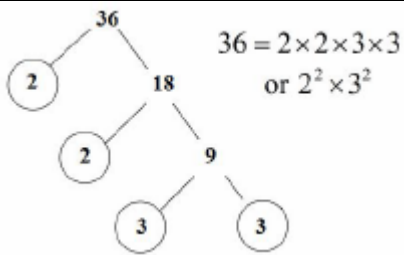
## Specific latent heat

1. What is specific latent heat?
2. On a temperature-energy graph, what does a line going up show?
3. What does a horizontal (flat) line show?
4. What does a line going down show?

## Further Opportunities:

Research and describe the required practical for Specific Heat Capacity.



Topic/Skill	Definition/Tips	Example
1. Multiple	The result of multiplying a number by an integer. The <b>times tables</b> of a number.	The first five multiples of 7 are:  7, 14, 21, 28, 35
2. Factor	A number that <b>divides exactly</b> into another number without a remainder.  It is useful to write factors in pairs	The factors of 18 are: 1, 2, 3, 6, 9, 18  The factor pairs of 18 are: 1, 18 2, 9 3, 6
3. Lowest Common Multiple (LCM)	The <b>smallest</b> number that is in the <b>times tables</b> of each of the numbers given.	The LCM of 3, 4 and 5 is 60 because it is the smallest number in the 3, 4 and 5 times tables.
4. Highest Common Factor (HCF)	The <b>biggest</b> number that <b>divides exactly</b> into two or more numbers.	The HCF of 6 and 9 is 3 because it is the biggest number that divides into 6 and 9 exactly.
5. Prime Number	A number with <b>exactly two factors</b> .  A number that can only be divided by itself and one.  The number <b>1 is not prime</b> , as it only has one factor, not two.	The first ten prime numbers are:  2, 3, 5, 7, 11, 13, 17, 19, 23, 29
6. Prime Factor	A factor which is a prime number.	The prime factors of 18 are:  2, 3
7. Product of Prime Factors	Finding out which <b>prime numbers multiply</b> together to make the <b>original</b> number.  Use a <b>prime factor tree</b> .  Also known as 'prime factorisation'.	 <p><math>36 = 2 \times 2 \times 3 \times 3</math> or <math>2^2 \times 3^2</math></p>



## Topic: Factors and Multiples

Topic/Skill	Question
1. Multiple	<p>Here is a list of numbers.</p> <p style="text-align: center;">21    22    23    24    25    26    27    28    29</p> <p>From the numbers in the list, write down a number that is a multiple of <b>both</b> 4 and 6</p>
2. Factor	Write down all the factors of 18
3. Lowest Common Multiple (LCM)	<p>Find the lowest common multiple of 12 and 18.</p> <p>Find the lowest common multiple of 60 and 84.</p>
4. Highest Common Factor (HCF)	Find the highest common factor of 72 and 90.
5. Prime Number	<p>Here is a list of numbers.</p> <p style="text-align: center;">21    22    23    24    25    26    27    28    29</p> <p>Write down all the prime numbers in the list.</p>
6. Prime Factor	List the prime factors of 24
7. Product of Prime Factors	Express 56 as a product of prime factors.

## Algebra

Topic/Skill	Definition/Tips	Example
1. Expression	A mathematical statement written using <b>symbols, numbers or letters,</b>	$3x + 2$ or $5y^2$
2. Equation	A statement showing that <b>two expressions are equal</b>	$2y - 17 = 15$
3. Identity	An equation that is <b>true for all values</b> of the variables  An identity uses the symbol: $\equiv$	$2x \equiv x+x$
4. Formula	Shows the <b>relationship</b> between <b>two or more variables</b>	Area of a rectangle = length x width or $A = l \times w$
5. Simplifying Expressions	<b>Collect 'like terms'</b>  Be careful with negatives. $x^2$ and $x$ are not like terms.	$2x + 3y + 4x - 5y + 3 = 6x - 2y + 3$  $3x + 4 - x^2 + 2x - 1 = 5x - x^2 + 3$
6. $x$ times $x$	The answer is $x^2$ not $2x$ .	Squaring is multiplying by itself, not by 2.
7. $p \times p \times p$	The answer is $p^3$ not $3p$	If $p=2$ , then $p^3=2 \times 2 \times 2=8$ , not $2 \times 3=6$
8. $p + p + p$	The answer is $3p$ not $p^3$	If $p=2$ , then $2+2+2=6$ , not $2^3 = 8$
9. Expand	To expand a bracket, <b>multiply</b> each term <b>in the bracket</b> by the expression <b>outside</b> the bracket.	$3(m + 7) = 3m + 21$
10. Factorise	The <b>reverse</b> of <b>expanding</b> . Factorising is writing an expression as a product of terms by ' <b>taking out</b> ' a <b>common factor</b> .	$6x - 15 = 3(2x - 5)$ , where 3 is the common factor.

## Topic: Algebra

Topic/Skill	Question
1. Expression	Which of the following is an expression? $5x + 2 = 7$ $5y$ $3x + 5y$
2. Equation	Solve the following equations: $4x + 4 = 24$ $10x - 12 = -7$
3. Identity	Are the following identities? $5x + 3x \equiv 6x + 2x$ $5y - y \equiv 6y$ $p + p + p \equiv 2p + p$
4. Formula	What is the formula for the area of a triangle?
5. Simplifying Expressions	Simplify the following: $5p - 3p + p$ $m^3 + m^3$ $10 + 3c + 5d - 7c + d$
6. Multiplying terms	Simplify: $t \times t$ $4a \times 3a$
7. Multiplying terms	Simplify: $r \times r \times r$ $f \times f \times f \times f$ $5g \times 3g \times 2g$
9. Expand	Expand the following: $5(x + 2)$ $8(2x + 7)$ $9(9x - 5)$
10. Factorise	Factorise the following: $6x + 12$ $20 - 5x$ $24x + 36$

## Topic: Fractions

Topic/Skill	Definition/Tips	Example
1. Fraction	A mathematical expression representing the <b>division</b> of one integer by another.  Fractions are written as <b>two numbers separated by a horizontal line.</b>	$\frac{2}{7}$ is a 'proper' fraction.  $\frac{9}{4}$ is an 'improper' or 'top-heavy' fraction.
2. Numerator	The <b>top</b> number of a fraction.	In the fraction $\frac{3}{5}$ , 3 is the numerator.
3. Denominator	The <b>bottom</b> number of a fraction.	In the fraction $\frac{3}{5}$ , 5 is the denominator.
4. Unit Fraction	A fraction where the <b>numerator is one</b> and the denominator is a positive integer.	$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ etc. are examples of unit fractions.
5. Reciprocal	The reciprocal of a number is <b>1 divided by the number.</b>  The reciprocal of $x$ is $\frac{1}{x}$  <b>When we multiply a number by its reciprocal we get 1.</b> This is called the 'multiplicative inverse'.	The reciprocal of 5 is $\frac{1}{5}$  The reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$ , because  $\frac{2}{3} \times \frac{3}{2} = 1$
6. Mixed Number	A number formed of both an <b>integer part</b> and a <b>fraction part.</b>	$3\frac{2}{5}$ is an example of a mixed number.
7. Simplifying Fractions	<b>Divide the numerator and denominator by the highest common factor.</b>	$\frac{20}{45} = \frac{4}{9}$
8. Equivalent Fractions	Fractions which represent the <b>same value.</b>	$\frac{2}{5} = \frac{4}{10} = \frac{20}{50} = \frac{60}{150} \text{ etc.}$
9. Comparing Fractions	To compare fractions, they each need to be rewritten so that they have a <b>common denominator.</b>  <b>Ascending</b> means <b>smallest to biggest.</b>  <b>Descending</b> means <b>biggest to smallest.</b>	Put in to ascending order : $\frac{3}{4}, \frac{2}{3}, \frac{5}{6}, \frac{1}{2}$ .  Equivalent: $\frac{9}{12}, \frac{8}{12}, \frac{10}{12}, \frac{6}{12}$  Correct order: $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$
10. Fraction of an Amount	<b>Divide</b> by the <b>bottom</b> , <b>times</b> by the <b>top</b>	Find $\frac{2}{5}$ of £60 $60 \div 5 = 12$ $12 \times 2 = 24$
11. Adding or Subtracting Fractions	Find the <b>LCM of the denominators</b> to find a common denominator. Use equivalent fractions to change each fraction to the <b>common denominator.</b>	$\frac{2}{3} + \frac{4}{5}$ Multiples of 3: 3, 6, 9, 12, <b>15..</b> Multiples of 5: 5, 10, <b>15..</b> LCM of 3 and 5 = 15

	Then just <b>add or subtract the numerators</b> and keep the <b>denominator the same.</b>	$\frac{2}{3} = \frac{10}{15}$ $\frac{4}{5} = \frac{12}{15}$ $\frac{10}{15} + \frac{12}{15} = \frac{22}{15} = 1\frac{7}{15}$
12. Multiplying Fractions	<b>Multiply the numerators</b> together and <b>multiply the denominators</b> together.	$\frac{3}{8} \times \frac{2}{9} = \frac{6}{72} = \frac{1}{12}$
13. Dividing Fractions	Multiply by the reciprocal of the second fraction.	$\frac{3}{4} \div \frac{5}{6} = \frac{3}{4} \times \frac{6}{5} = \frac{18}{20} = \frac{9}{10}$

## Topic: Fractions

Topic/Skill	Question
1. Fraction	Give an example of an improper fraction
2. Numerator	What is the value of the numerator in the following fraction? $\frac{2}{7}$
3. Denominator	What is the value of the denominator in the following fraction? $\frac{5}{8}$
4. Unit Fraction	Give an example of unit fractions numerically and pictorially
5. Reciprocal	What is the reciprocal of: $\frac{1}{7}$ $\frac{4}{5}$
6. Mixed Number	Convert $\frac{13}{3}$ to a mixed number .
7. Simplifying Fractions	Simplify $\frac{12}{30}$
8. Equivalent Fractions	Give five equivalent fractions to $\frac{2}{3}$
9. Comparing Fractions	Write the following fractions in ascending order: $\frac{3}{5}, \frac{1}{3}, \frac{5}{6}, \frac{1}{2}$

10. Fraction of an Amount	Find $\frac{3}{4}$ of £45
11. Adding or Subtracting Fractions	Calculate: $\frac{2}{5} + \frac{1}{4}$
12. Multiplying Fractions	Calculate: $\frac{5}{8} \times \frac{7}{9}$
13. Dividing Fractions	Calculate: $\frac{2}{3} \div \frac{4}{5}$

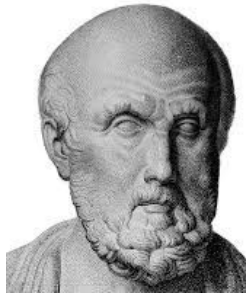
**EBACC**



# History Knowledge Organiser

## Britain: Health and the People Medicine stands still

### Key individuals



Hippocrates



Claudius Galen



Al-Razi  
(Rhazes)



Ibn-Sina  
(Avicenna)

#### Surgery

- Albucasis
- Frugardi
- Hugh and Theodoric of Lucca
- Mondino
- Guy de Chauliac
- John of Arderne

### Islam

Doctors in hospitals  
 'For every disease Allah has given a cure'  
 Mental illness treated with compassion  
 Settled empire  
 Ibn-Sina's book documented 760 drugs

### Both

Medical books  
 No human dissection  
 Universities at Padua and Bologna  
 Observation

### Christianity

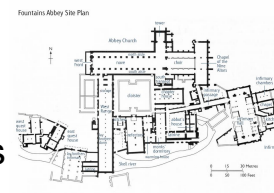
Care not cure  
 Illness comes from sinning.  
 Use Galen and Hippocrates' ideas  
 700 hospitals - mostly small and centres of rest

### Public health

Towns  
 Built near rivers for both drinking water and waste disposal.  
 Rubbish thrown onto the street.  
 Privies were usually over cesspits that were emptied by gong farmers.  
 No knowledge of germs and infection believed in bad air.



Monasteries  
 Built near rivers isolated areas.  
 They had systems of pipes for water, a lavatorium to wash and an infirmary to care for the sick.  
 Keeping clean was part of the daily routine of monks. Monks copied books including medical books.  
 Care not cure.



### Key beliefs

The Theory of the Four Humours and use of opposites.



Diagnosis included checking urine using taste and urine charts. Treatments included purging by vomiting and bloodletting. People used wise women, doctors, monasteries, prayer, the apothecary barber surgeons.



### Key dates

c1230	Compendium Medicine written by Gilbert Eagle. A medical book of European and Arab knowledge.
1348	The Black Death arrives in England. Bubonic and Pneumonic. No understanding of cause or known cure.

### KEY VOCABULARY/TERMS

Bad air, gong farmer, pilgrimage, trepanning, sanitation, monk, cesspit, Theory of the Four Humours, Theory of Opposites, Church, Islam, Christianity, dissection, purging, vomiting, blood letting, apothecary, urine chart, planets, Black Death, superstition, cauterisation, flagellation, privies, buboes, infirmary, monastery, barber surgeon, cesspit, prayer.

# History Knowledge Organiser

## Britain: Health and the People Medicine stands still.

### Questions \*based on your key people knowledge organiser

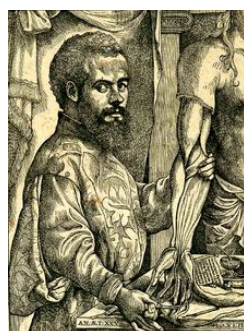
### Answers

1	Who was Hippocrates?*	
2	Who was Galen?*	
3	Who was Ibn Sina?*	
4	Who was Al Razi?*	
5	What were the Four humours?	
6	How was the Four Humours used?	
7	What was used for diagnosis?	
8	Who could you go to for medical treatment?	
9	What did Gilbert Eagles write?	
10	Name three medieval surgeons.	
11	When did the Black Death arrive in England?	
12	What were the two types of plague?	
13	Why were towns dirty?	
14	Why were monasteries cleaner?	
15	What was the belief of Islamic medicine?	
16	What was the belief of Christian medicine?	
17	Give features of Islamic medicine.	
18	Give features of Christian medicine.	
19	Give features common to Islamic and Christian medicine.	
20	What types of medical treatment were there?	

# History Knowledge Organiser

## Britain: Health and the People 2. The beginnings of change.

### Key individuals



Andreas Vesalius



Ambroise Paré



William Harvey



John Hunter



Edward Jenner



Thomas Sydenham

#### Other key people

- William Clowes
- Nicholas Culpeper
- Lady Mary Wortley Montagu

### Impact of the Renaissance on Britain

Through careful observation and dissections **Vesalius** proved that some of Galen's findings were wrong. This encouraged people to question the knowledge used for 1400 years. His books inspired the work of people in England.

**Paré** was a surgeon who changed ideas about surgery and cauterisation. He ran out of cautery oil and used Vigo's oil of roses, egg yolk and turpentine mixture. He found they slept well and their wounds healed quickly. He also used ligatures and made false limbs.

**Harvey** investigated and proved that the heart acted as a pump, that blood circulated rather than being burned up and that veins had one way valves. It was 50 years before the University of Paris taught his ideas. His discovery was not immediately useful without further scientific discovery.

### Dealing with disease

King Charles was given 58 drugs some of which would have contributed to his death. Ordinary people still went to barber-surgeons, apothecaries, wise women and quacks. New medicines were being brought back on voyages of discovery. The Great Plague hit again in 1665 and there was still no cure. In the 18th century hospitals began to be built. John Hunter the scientific method and collected anatomical specimens for his collection.

### Prevention of disease

Inoculation - giving a weakened form of live germs to build up immunity. It could be fatal but had been the most popular method of dealing with smallpox. Jenner had noticed that milkmaids did not get smallpox but did get cowpox. From this developed a vaccination from the latin vacca - cow. He could not explain his findings scientifically so his ideas were not embedded until a £10,000 research grant from parliament in 1802. In 1853 vaccination was compulsory.

### Key dates

1400s	The Renaissance - a period of history when there was a 'rebirth' of ancient Greek and Roman ideas.
1525	Vigo published Of wounds in General
1543	Vesalius published The Fabric of the Human Body
1575	Paré published Works on Surgery
1588	William Clowes published Proved Practice
1628	Harvey published De Motu Cordis
1665	The Great Plague
1685	King Charles II died
1796	Edward Jenner's cowpox vaccination

### KEY VOCABULARY/TERMS

Renaissance, anatomy, blood, illustrations, Barber-Surgeons, Bec de Corbin, cauterisation, ligature, surgery, amputation, oil of roses, egg yolk, turpentine, circulation, arteries, veins, valves, quack, purgative, emetic, enema, Great Plague, watchmen, searchers, quarantined, epidemic, leeches, poisoned air, apothecary, hospitals, dispensary, specimens.



# History Knowledge Organiser

## Britain: Health and the People Medicine stands still.

### Questions \*based on your key people knowledge organiser

### Answers

1	Who was Andreas Vesalius?*	
2	Who was Ambroise Paré?*	
3	Who was William Harvey?*	
4	Who was John Hunter?*	
5	Who was Edward Jenner?*	
6	What does the word renaissance mean?	
7	How long had Galen's work been followed for?	
8	What was the name of Vesalius' book?	
9	What was Paré's new mixture made from?	
10	Who did he get the idea from?	
11	What was the name of Paré's book?	
12	What was the name of Harvey's book?	
13	How many different medications were given to King Charles I?	
14	When did the Great Plague hit Britain?	
15	What was inoculation?	
16	What does the Latin word 'vacca' mean?	
17	How much money was Jenner given as a research grant?	
18	When did Smallpox vaccination become compulsory?	
19	Where did ordinary people go for treatment?	
20	Where were new medicines discovered and brought back to Britain?	

# History Knowledge Organiser

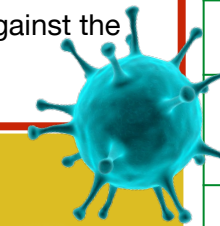
## Britain: Health and the People 3. A revolution in medicine.

### Key individuals

Louis Pasteur, Robert Koch, John Tyndall, William Cheyne, Paul Ehrlich, Humphry Davy, Horace Wells, William Clark, Dr Crawford Long, William Morton, Robert Liston, Queen Victoria, James Simpson, Joseph Lister, Edwin Chadwick, Dr John Snow, Joseph Bazalgette.

### Treatment of disease

1861 - Louis Pasteur discovered Germ Theory proving the theory of Spontaneous Generation wrong but it was not accepted immediately. Robert Koch applied Pasteur's theory to human diseases. He was the founder of bacteriology and proved that specific bacteria caused specific diseases. In 1876 he discovered the microbe responsible for anthrax, 1884 - cholera and 1882 - tuberculosis. He also discovered stains to dye microbes under a microscope. Pasteur and Koch were rivals and sponsored by their governments which motivated their work. Pasteur and his team created a vaccine for rabies and anthrax. This work was accepted in Britain due to John Tyndall and William Cheyne. Paul Ehrlich (Koch's assistant) found chemicals that would not only stain but kill specific types of bacteria. In 1909 he discovered a chemical cure for syphilis. These cures became known as 'magic bullets'. Prontosil worked against the germs that caused blood poisoning and 'sulpha drugs' were developed for meningitis, pneumonia and scarlet fever.



### Key dates

1832	Edwin Chadwick Public Health Report
1837	Cholera outbreak
1842	Ether used
1844	Nitrous oxide used
1846	Ether used in public demonstration
1848	First Public Health Act, Hannah Greener died
1853	Queen Victoria uses chloroform
1854	Dr Snow discovers cause of cholera
1858	Great stink and Bazalgette starts building sewers
1861	Germ theory
1866	Sanitary Act
1875	Second Public Health Act, Artisan's Dwelling Act, Sale of Food and drugs
1909	Chemical cure for syphilis

### Improvements in surgery

The key problems of surgery were pain, infection and blood loss. Anaesthetics - nitrous oxide was identified by Humphrey Davy and used by Horace Wells in 1844 to extract teeth. Ether was also used by the dentist William Clark in 1842 and Dr Crawford Long removed a neck growth with it. In 1846 William Morton gave a public demonstration and in December Robert Liston amputated a leg with it. It was difficult to inhale though and was also flammable. Chloroform was the alternative and discovered by James Simpson. Surgeons could now take more time over operations but this had initial problems such as dosage. Hannah Greener died of an overdose during a toenail operation in 1848. In 1853 Queen Victoria used chloroform in childbirth making it more acceptable. Antiseptics - Joseph Lister had read about Germ Theory and applied it to the problem of infection. He used carbolic acid to stop the spread of germ spraying it on hands, wounds, equipment and in the room. This dramatically reduced death from infection but they were still wearing outdoor clothing and it was not pleasant to use. The next step was aseptic surgery where germs were removed from the room. Facemasks, rubber gloves, gowns and sterilised instruments replaced public operating theatres and dramatically reduced infections.



### Public Health

The Industrial Revolution led to a population explosion and a movement of people into the rapidly expanding towns. The government attitude was laissez-faire meaning they did not believe it was their job to deal with domestic matters. The back to back houses and lack of sanitation led to cholera (a waterborne disease) epidemics in 1837, 1838, 1848, 1853-5 and 1865-6. In 1832 Edwin Chadwick collected information about the conditions on towns in the Report on the Sanitary Condition of the Labouring Population. This identified problems in the towns and cities leading to the 1848 Public Health Act. However this was voluntary and many councils did nothing. In 1854 Dr John Snow discovered the cause of Cholera adding more evidence that something needed to be done. This was followed by the Great Stink of 1858 where the sewage in the Thames led the government to leave the city. As a result Joseph Bazalgette was given the job of building the sewers under London. He was given £3 million. He used 318 million bricks and built 83 miles of sewers removing 420 million gallons of sewage a day. Once fully operational cholera never returned. Louis Pasteur discovered germs in 1861 adding more evidence that something must be done. After working class men gained the vote in 1867 the government brought in more laws to improve people's lives. 1866 - Sanitary Act. 1875 - Artisans Dwelling Act, Sale of Food and Drugs Act. The Second Public Health Act of 1875 was compulsory and made councils responsible for public health. They had to provide clean water, build sewers, keep the streets clean and light them. Laissez-faire was now at an end.



### KEY VOCABULARY/TERMS - tier 3

Spontaneous generation, germ theory, bacteria, bacteriology, microscope, government, vaccine, rabies, anthrax, cholera, syphilis, chemical, prontosil, magic bullets, blood poisoning, meningitis, pneumonia, scarlet fever, anaesthetics, antiseptics, ether, chloroform, nitrous oxide, aseptic, surgery, sterilised, operating theatre, pain, infection, blood loss, sanitation, laissez-faire, sanitation, sewers, artisan, dwelling, Public Health Act, water, voluntary, compulsory.

# History Knowledge Organiser

## Britain: Health and the People 3. A revolution in medicine.

### Quiz questions

1. When was Germ theory discovered?	
2. Who discovered Germ theory?	
3. What was the connection between the answer to qu 2 and Robert Koch?	
4. What microbes did Koch identify/discover?	
5. What are the 3 problems of surgery?	
6. What is an anaesthetic?	
7. What anaesthetics were used during the 1800s and who used each?	
8. What was the significance of Hannah Greener?	
9. What was the significance of Queen Victoria?	
10. What is an antiseptic and who used them?	
11. What is the next step of advancement after antiseptic surgery?	
12. What other additions were made to surgery?	
13. Which people were connected to public health?	
14. What did the government do to improve public health in the 1800s?	
15. What was laissez-faire?	
16. Who was the Sewer King and what did he do for London?	
17. What was a magic bullet?	
18. Which magic bullet treated blood poisoning?	

# History Knowledge Organiser

## Britain: Health and the People 4. Modern medicine.

### Key individuals

Alexander Fleming, Howard Florey, Ernst Chain, Karl Landsteiner, Wilhelm Rontgen, Albert Hustin, Harold Gillies, Archibald McIndoe, Dwight Harken, William Beveridge, Aneurin Bevan - Minister of Health who introduced the NHS. Christian Barnard, Francis Crick and James Watson - discovered DNA, Roy Calne - anti rejection drugs.

### Treatment of disease

In 1928 Alexander Fleming was working to find a way to kill the staphylococcus germ. He found penicillin by chance after leaving petri dishes out whilst on holiday. When he came back he noticed that a mould had grown which killed the bacteria. He published his findings about the first antibiotic but did nothing else with it. Ernst Florey and Howard Chain read the article and asked the British government for funding but got only £25. They tested it on policeman Albert Alexander who had an eye infection. It worked until they ran out of penicillin. When America joined WW2 the gave \$80 million to develop and mass produce penicillin. By the time of the D-Day landings there was enough to treat the casualties. Other antibiotics followed; streptomycin, tetracycline, mitomycin. In recent years however there are antibiotic resistant bacteria due to overuse including MRSA. Today there are also a variety of alternative treatments including acupuncture, homeopathy and aromatherapy. Vaccines for diphtheria, whooping cough, polio, rubella, MMR and HPV are now available for all.



### Key dates

1895	X-ray
1899	Boer War
1906	Liberal Reforms, Free School Meals
1907	School medical service
1908	Children and Young Persons Act, Old Age Pension
1909	First job centres
1911	National Insurance Act
1914 -18	WW1 Albert Hustin and storage of blood
1921	Over 5000 patients had plastic surgery
1928	Penicillin discovered
1942	Beveridge Report
1948	NHS introduced
1953	DNA discovered
1967	First heart transplant
1978	First IVF baby Louise Brown
1978	Smallpox eradicated
2006	Public smoking ban
2008	First full face transplant
2015	Smoking ban extended to cars



### Impact of war and technology on surgery

WW1 was on a scale previously unseen with new injuries caused by new weapons. X-rays had been discovered in 1895 by Wilhelm Rontgen but portable machines could help doctors find shrapnel and look for broken bones without cutting people open. The Army Leg Splint was designed to put broken bones in traction. Infections such as gangrene were common so surgeons cut away the infected flesh and soaked the wound in saline. Shell shock was identified during the war after the suffers originally being treated as cowards. Today it is known as PTSD. Karl Landsteiner had discovered blood groups which helped doctors complete blood transfusions. In 1914 Albert Hustin discovered that glucose and sodium could stop it clotting on contact with air meaning it could be bottled. In 1938 advances in storage mean the National Blood Transfusion Service opened. Harold Gillies developed plastic surgery to help men who suffered severe facial wounds during WW1 by 1921 he had treated over 5000 servicemen. In WW2 his cousin Archibald McIndoe did further work on faces and hands. Heart surgery progressed through Dwight Harken who operated on 134 hearts with no fatalities. Since the war there have been kidney, heart, lung, liver and facial transplants. These became more successful with cyclosporine to stop organ rejection. DNA and stem cells are being mapped and used to grow new organs.

### Public Health



By 1900 poverty was still an issue in Britain. This was highlighted by the Boer War of 1899-1902. 40% of the men who volunteered were not fit for military service mostly due to poor diet and poverty-related illnesses. This was supported by the work of Booth and Rowntree. Booth studied London and created a map showing the distribution of poverty across London. In his book 'Life and Labour of the People in London' he wrote that 30% of the population lived in poverty despite many working. In York Seebohm Rowntree discovered that 28% of the population were in poverty but also that this could change during their lifetime. This he displayed in his poverty line. These concerned the government as did rivalry from nations including Germany and the USA. The new political party Labour was aimed at working people so something had to be done to win working votes. The Liberal Party came to power in 1906. They introduced; 1906 - Free School Meals, 1907 - School medical service, 1908 - Children and Young Persons Act, The Old Age Pension, 1909 - first job centres, 1911 - the National Insurance Act. These provided a safety net for children, the old, the sick and the unemployed. WW1 and WW2 highlighted that there was still more to be done. In 1942 the Beveridge Report said that people had the right to be free of the 'five giants' that could ruin their lives. Disease, want (need), ignorance, idleness, squalor (very poor living conditions). After the war the Labour Party set up the Welfare State to care for people 'from the cradle to the grave'. The NHS began in 1948 initially with completely free health care. A weekly child care payment, benefits for the very poor and slum clearance were all part of this. The NHS budget in 2015-2016 was £116 billion. In the C21st the government continues to try and improve health - 2006 a smoking ban was passed in public places extended to cars in 2015.

### KEY VOCABULARY/TERMS

staphylococcus, penicillin, bacteria, antibiotics, x-rays, shrapnel, splint, infection, gangrene, shell shock, PTSD, blood transfusion, plastic surgery, transplan, cyclosporine, organs, Boer War, poverty, Liberal Reforms, Free school meals, Labour party, Old Age Pension, National Insurance Act, unemployed, disease, want, ignorance, squalour, Welfare State, NHS, slum clearance, budget, smoking ban.

# History Knowledge Organiser

## Britain: Health and the People 4. Modern medicine.

### Quiz questions

1. Which war identified problems with the health of the British people?

2. Which two men collected evidence about poverty in London and York?

3. What acts did the Liberal government introduce to improve the health of the public?

4. Which invention of 1895 was used to find shrapnel in WW1 and who discovered it?

5. What advancement did Albert Hustins make during WW1?

6. Which two men developed plastic surgery in WW1 and WW2?

7. How did heart surgery advance during WW2?

8. Who found penicillin, when and how?

9. Who developed penicillin, when and how?

10. What is penicillin the first of?

11. Which report was written during WW2 and what was its significance?

12. When did the NHS begin?

13. When was the first heart transplant and was it successful?

14. What other types of transplant have been done since?

15. When was DNA discovered?

16. What is antibiotic resistance and why is it a challenge for modern medicine?

17. What examples of alternative medicines are there?

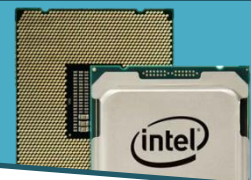
18. Which modern health policy was introduced in 2015?



# GCSE Computer Science

## Topic 1.1 Systems Architecture

*Von Neumann* designed the first 'stored program' computer, where data and instructions are stored **together** in memory.



The **Central Processing Unit** processes data and instructions following the FDE cycle.

A computer systems is a combination of **hardware** and **software** that work together to process data.

**Hardware:** physical components that make up a computer system.

**Software:** programs/applications that run on a computer.

An **embedded system:** a dedicated system built into a larger system to control it.



**Embedded systems are restricted by price and physical size. They are not programmable.**

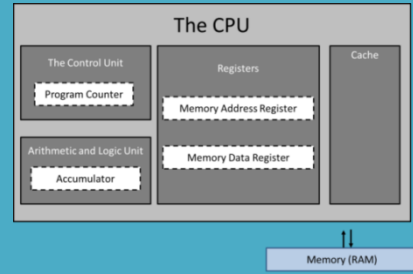
- Benefits of embedded systems:**
- ✓ Easier to design.
  - ✓ Cheaper to produce.
  - ✓ More **efficient** at doing their job.

**Registers** are the smallest & fastest type of memory in a computer system. **They hold data the CPU needs immediately.**



The **PC** holds the address of the next instruction to be fetched.

The **Accumulator** holds the results of any calculations done by the ALU.



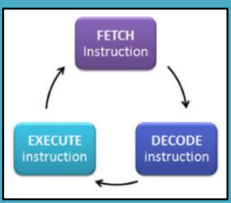
The **MAR** holds the address of the memory location to fetch the data from / write to for the current cycle.

The **MDR** holds the data fetched from memory.

The CU copies the memory address from the Program Counter to the MAR.

The CU requests the instruction or data stored in the address held in the MAR, to be brought to the MDR.

The CU updates the Program Counter with the address of the next instruction, ready for the next cycle.



**Clock Speed:** the number of instructions single processor can process per second. The **HIGHER** the clock speed, the faster the data can be processed.



- The **control Unit** is in overall control of the CPU.
- Its main job is to execute instructions by following the FDE cycle.
- It also controls the flow of data inside and outside the CPU.
- The control unit contains the decoder.

- The **Arithmetic Logic Unit** performs all the calculations.
- It completes arithmetic operations (+, -, \*, /).
- It also completes logic operations using logic gates.
- The ALU contains the accumulator register.

- **Cache** is very fast memory.
- It is slower than the registers but faster than RAM.
- It stores regularly used data so that the CPU can access it quickly next time it is needed.
- If the data is not in cache, it will be fetched from RAM.
- Caches have very low capacity and are expensive compared to RAM.

The instruction in the MDR is decoded by the Control Unit(decoder).

The CU carries out the instruction using the ALU for any calculations (and stores the results in the Accumulator).

**Number of cores:** each core in the CPU can process data independently. The **MORE** cores, the **FASTER** the data can be processed.



The **cache** is memory inside the CPU. The **MORE** cache, the faster data can be fetched to be processed.



## What I need to know:

### State the purpose of the CPU.

What does CPU stand for ?

### Describe the Von Neumann architecture.

Define register

What does MAR stand for? State what data the MAR holds.

What does MDR stand for? State what data the MDR holds.

What does PC stand for? State what data the PC holds.

State what data the Accumulator holds and which component the accumulator is within.

### Common CPU components and their function:

What does ALU stand for? Describe the function of the ALU.

What does CU stand for? Describe the function of the CU.

Define cache memory? Describe the function of cache memory.

### What does FDE stand for?

State what happens each stage of the FDE Cycle.

Explain what happens at each stage of the FDE Cycle.

### How common characteristics of CPUs affect their performance:

Define clock speed. Explain how clock speed affects the speed of processing.

Explain how the amount of cache affects the speed of fetching data.

Explain how the number of cores affect the speed of processing

### What is an computer system?

Define the terms hardware and software.

Define embedded system.

Explain the benefits of using embedded systems over general purpose systems.

Give 3 examples of embedded systems.

Fergus owns a desktop computer with a 2.2 GHz quad-core CPU. He uses it to play video games and edit photographs that he takes with his digital camera.

(a) State the purpose of the CPU in a computer system.

.....  
 ..... [1 mark]

State **one** characteristic of Von Neumann architecture.

.....  
 ..... [1 mark]

The CPU has a clock speed of 3.8GHz.

Describe what is meant by a clock speed of 3.8GHz.

.....  
 ..... [2]

Explain, with reference to memory and specific registers, the steps of the CPU fetch-execute cycle.

.....  
 .....  
 .....  
 .....  
 .....  
 ..... [4 marks]

# RE Knowledge Organiser

## Religious Diversity

### Hinduism

There are four main groups in Hinduism. They are; Vaishnavism, Shaivism, Shaktism and Smartism. All of these different groups worship different Gods. For example, a Vaishnavite worships the deity Vishnu, whilst a follower of Shaivism worships the deity Shiva. Although these groups fall under the one religion of Hinduism, there are vast differences between them in terms of worship and what they emphasise in terms of importance.



### Sikhism

Sikhism consists of three major denominations; these sects in the order of importance are: Khalsa, Namdhari, Nirankari. They take different positions on the nature of Guru or spiritual teacher. Khalsa sect - to which the majority of Sikhs adhere - itself consists of three groups, which become distinguished from each other by their certain kind of clothes, life style, and some religious principles. Many Sikhs decide to show greater commitment to their religion by becoming Amritdhari Sikhs. This means they are gone through the Amrit Sanskar ceremony, which remembers Guru Gobind Singh's first Khalsa.

### Islam

The two main groups within Islam are called Sunni and Shi'a Muslims. They worship the same one god - Allah, but have different religious practises. Sunnis are the largest group of Muslims and make up 85-90% of Muslims worldwide, which is followed by Shi'a Muslims which make up another 10-15%. Sufis are not really a different group of Muslims, both Sunni and Shi'a can also be Sufi. Sufism is a very spiritual form of Islam and a Sufi is someone who dedicates themselves to religious learning in order to be closer to Allah. One main difference between Sunni and Shi'a are the key beliefs. Sunni Muslims believe in the Six Articles of Faith, whereas Shi'a Muslims believe in the Five Roots of Usul ad-Din.

### Judaism

Being Jewish is a matter of belonging to the wider population of Jewish people sometimes called Jewry. Practising Judaism is a matter of embracing the Jewish religion and being a religious Jew. Historically, the Jewish people who have spread from the homeland of Israel has adapted their own customs and traditions to the local culture. Jewish people who settled in Spain, Portugal, North Africa and the Middle East are known as Sephardim. Jews from people from France, Germany and Eastern Europe are Ashkenazim. Differences between the groups relate to religious laws are followed and festival customs.

### Christianity

There is a great deal of Diversity within Christianity, as there are numerous denominations including Catholicism, Protestantism and Orthodox. Each one has their own views towards certain issues or aspects of the way Christians should live their lives. One example of this is marriage. Catholics believe that once a person is married, they cannot divorce, whereas Protestants believe that a person can choose to divorce another if they so wish. The spread of Christianity as a percentage of the population is varied too. Latin America is 85% Christian, with North American and Europe following on 77 and 76% respectively.



### Buddhism

During the Buddha's life, his teachings were not written down, but his faithful bhikkhus were able to remember them and recite them word for word. After his death his followers met as a council to agree an accurate version of his teachings. Due to disagreements over this two groups formed, the Theravada and the Mahayana. These two groups differ in many ways, they spread and settled in different areas and focused on different aspects on the Buddha's teachings. Some of the scriptures used by each group are written in different languages, with the Theravada scriptures written in Pali and some of the Mahayana scriptures written in Sanskrit.

## KEY VOCABULARY/TERMS

Denomination, Catholic, Protestant, Schism, Orthodox, Liberal, Masorti, Reform, Sephardim, Ashkenazim, Sunni, Shi'a, Sufi, Theravada, Mahayana, Shaivism, Vaishnavism, Shaktism, Smartism, Khalsa Sikh

### Quiz questions

What are the four main groups in Hinduism?

What does the Amrit Sanskar ceremony remember?

What percentage of Latin America is Christian?

Give 3 locations where Ashkenazim Jews have settled

What language are the Theravada scriptures written in?

Give three Christian denominations

Which is the most important Sikh sect?

Which denomination of Islam is the largest?

Which denomination of Islam believes in the Five Roots of Usul Ad-Din?

How many denomination are there in Sikhism?

Give 4 locations where Sephardim Jews have settled

Which Buddhist scriptures are written in Sanskrit?

When were the Buddhist teachings first written down?

Give one difference between Catholic and Protestant beliefs

Which group of Hindus worship Shiva?

Vaishnavite Hindus worship which deity?

Which country is the Jewish homeland?

Name two groups of Buddhists



## 1 – Key terms

### Tectonic hazard

A natural hazard caused by movement of tectonic plates.

### Tectonic plate

A rigid segment of the Earth's crust which can 'float' across the heavier, semi-molten rock beneath.

### Plate margin

The margin or boundary between two tectonic plates.

### Earthquake

A sudden or violent movement within the Earth's crust followed by a series of shocks.

### Primary effects

The initial impact of a natural event on people and property, caused directly by it.

### Secondary effects

The after-effects that occur as indirect impacts of a natural event, sometimes on a longer timescale.

### Immediate responses

The reaction of people as the disaster happens and in the immediate aftermath.

### Long-term responses

Later reactions that occur in the weeks, months and years after the event.

**HIC** = High Income Country

**LIC** = Low Income Country

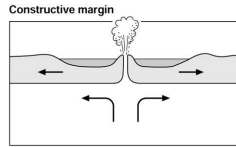
## 2 – Plate margins

### Constructive margin

**Process:** Two convection cells diverge. Friction between the molten rock and crust pulls the oceanic plates apart.

**Features:** Mild earthquakes, shield volcanoes, volcanic islands, ocean ridges.

**Example:** Mid atlantic ridge: North American Plate and Eurasian plate.

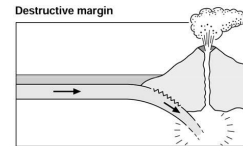


### Destructive margin

**Process:** Two convection cells meet and converge. This pulls an oceanic and a continental plate together. The oceanic plate is subducted.

**Features:** Ocean trench, composite volcanoes, violent earthquakes.

**Example:** Pacific plate subducts beneath the South American Plate.

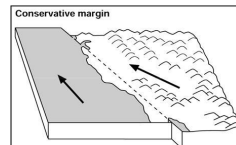


### Conservative margin

**Process:** Two convection cells pull plates in opposite directions or in the same direction at different speeds.

**Features:** Earthquakes

**Example:** San Andreas Fault: Pacific Plate and South American Plate.



## 3 – Examples of earthquakes

### Example in a LIC:

#### Haiti (Caribbean)

12th January 2010  
Magnitude 7.0  
Focus 12.87 km deep

#### Primary effects:

220 000 died  
300 000 injured  
Main port damaged  
8 hospitals collapsed

#### Secondary effects:

3 million homes damaged  
Frequent power cuts  
2 million – no food or water  
Cholera spread – 10 months

#### Immediate responses

10 000 US troops  
£20 million aid – UK  
10 000 tents from UNHCR  
40 pallets food and water

#### Long term responses

Tented cities created  
Water tankers deliver daily

### Example in a HIC:

#### Christchurch (New Zealand)

22nd Feb 2011  
Magnitude 6.3  
Focus 4.99 km deep

#### Primary effects:

181 died  
7 000 injured  
50% of buildings damaged  
Cathedral spire collapsed

#### Secondary effects:

10 000 homes damaged  
170 landslides  
Schools closed – two weeks  
Businesses shut – months

#### Immediate responses

Foreign rescue teams  
\$6.7 million global aid  
15 000 chemical toilets  
300 Australian police

#### Long term responses

10 000 new homes built  
Fully restored in 6 months

## 4 – Comparing effects and responses

**High income countries:** Suffer lesser effects and have better responses. Money has been available to spend on monitoring, prediction, protection and planning. Warnings can be given, built infrastructure is resilient and people are educated and equipped.

**Low income countries:** People are more likely to live in low quality buildings with poor access to utilities. There will be no warnings, severe damage to buildings and little money to fund a recovery.





## 1 – Key terms

What is a tectonic hazard?  
Name one tectonic hazard.  
What is a tectonic plate?  
What do tectonic plates float on?  
What is a plate margin?  
What is an earthquake?  
Where do earthquakes start?  
What are primary effects?  
What are secondary effects?  
Explain how secondary effects and primary effects differ.  
What are immediate responses?  
What are long term responses?  
What is a HIC?  
What is a LIC?  
Extension:  
Which do you think are most important in saving lives – immediate or long-term responses? Justify your opinion.

## 2 – Plate margins

Name the three types of plate margins.  
What is a constructive margin?  
What is a destructive margin?  
What is a conservative margin?  
What features are found at all margins?  
What margin has shield volcanoes and volcanic islands?  
What margins have composite volcanoes and ocean trenches?  
Give an example of a constructive margin.  
Give an example of a conservative margin.  
Give an example of a destructive margin.  
Draw an annotated diagram of a constructive margin.  
Draw an annotated diagram of a conservative margin.  
Draw an annotated diagram of a destructive margin.

## 3 – Examples of earthquakes

What is the example of an earthquake in a LIC?  
When did the Haiti earthquake occur?  
How deep was the focus?  
How strong was it?  
Give two primary effects.  
Give two secondary effects.  
Describe the effects of an earthquake in a LIC.  
Give two immediate responses.  
Give two long term responses.  
Describe the responses to an earthquake in a LIC.  
Explain why the effects of this earthquake were so severe.  
What is the example of an earthquake in a HIC?  
When did the Christchurch earthquake occur?  
How deep was the focus?  
How strong was it?  
Give two primary effects.  
Give two secondary effects.  
Describe the effects of an earthquake in a HIC.  
Give two immediate responses.  
Give two long term responses.  
Describe the responses to an earthquake in a HIC.  
Explain why the effects of this earthquake were not severe.

## 4 – Comparing effects and responses

Which countries experience the most severe effects?  
Which countries will have the fastest responses?  
Why are warnings more likely to be given in HICs?  
Why are buildings in LICs more likely to collapse than buildings in HICs?  
Where is recovery likely to be fastest? Why?

### Prior Knowledge

	masculine	feminine	plural
'the'	le	la	les
'a' or 'some' (pl)	un	une	des

If a noun begins with a vowel or *h*, **le** or **la** shortens to **l'**, e.g. *l'église* (the church).



#### G How to say 'in'

*J'habite ...* (I live ...)  
**dans** une ville/un village (in a town/village)  
**au** centre-ville (in the town centre)  
**en** ville (in town)  
**à la** campagne/montagne (in the countryside/mountains)  
 NB: **au** bord de la mer (at the seaside).  
 Feminine countries (e.g. *Angleterre, Écosse, Irlande*): use **en**.  
 Masculine countries (e.g. *le pays de Galles*): use **au**.  
 Plural countries (e.g. *les États-Unis*): use **aux**.  
 Towns and cities (e.g. *Paris*): use **à**.  
 Points of the compass (e.g. *l'est*): use **dans**.

#### G On peut + infinitive

**On peut** means 'you can'. It comes from the verb *pouvoir* (to be able to, can). It is usually followed by the infinitive of another verb.  
**On peut aller à un match de foot.** **You can go** to a football match.  
**On peut visiter le château.** **You can visit** the castle.

★ **il y a ...** means 'there is ...' or 'there are ...'.  
**Il y a un stade.** There is a stadium.  
**Il y a des magasins.** There are some shops.

**Il n'y a pas de/d' ...** means 'there isn't a ...' or 'there aren't any ...'.  
**Il n'y a pas de gare.** There isn't a station.  
**Il n'y a pas d'hôtels.** There aren't any hotels.

Note: after the negative *il n'y a pas de ...*, you do not need *un, une* or *des*.



#### G Irregular adjectives

The following adjectives are irregular:

masc sg	fem sg	masc pl	fem pl
beau	belle	beaux	belles
vieux	vieille	vieux	vieilles

- Most adjectives go **after** the noun, e.g. *une ville intéressante*.
- But some go **before** the noun, e.g. *un grand château, un petit village, une belle plage, de vieux bâtiments, de jolies maisons*.
- NB *des* changes to *de* when the adjective comes before the noun.



### Ma ville/région

#### G The superlative

You use the **superlative** to say 'the biggest', 'the longest', 'the most popular', etc. To form the superlative, put **le/la/les + plus** before an adjective. The adjective must agree with the noun.  
**le plus long** fleuve the longest river  
**la plus haute** tour the highest tower  
**les plus belles** plages the most beautiful beaches  
 If the adjective goes after the noun, so does the superlative:  
 le musée **le plus populaire** the most popular museum  
 To say 'the best ...' use **le/la/les meilleur(e)(s) ...**

#### G Negatives

Most negative expressions are in two parts and go **around** the verb:  
*ne ... rien* (nothing)  
*ne ... jamais* (never)  
*ne ... personne* (nobody, not anyone)  
*ne ... plus* (no longer, not any more)  
*ne ... que* (only)  
*ne ... aucun(e)* (no, not any, not a single ...)  
 NB: **aucun** agrees with the noun.  
*ne ... ni ... ni ...* (neither ... nor ...) is in three parts: put a noun after each **ni**.

#### G The pronoun y

The pronoun **y** means 'there'. It replaces **à + a noun**.  
 • In the present tense, **y** goes in front of the verb:  
*On y va tous les ans.* We go **there** every year.  
 • If the verb is followed by an infinitive, **y** goes in front of the infinitive:  
*Tu peux y faire de la voile.* You can go sailing **there**.  
 • In the perfect tense, **y** goes in front of the part of avoir or être:  
*J'y suis allée l'année dernière.* I went **there** last year.

### Les renseignements

#### G Asking questions using quel

To ask 'which ...?' or 'what ...?', use the adjective **quel ...?**  
 It must agree with the subject of the sentence.

masc sg	quel
fem sg	quelle
masc pl	quels
fem pl	quelles

#### G Asking questions

- To ask for something (e.g. a map), use *Avez-vous ...?*
  - To ask whether there is something (e.g. a restaurant), use *Est-ce qu'il y a un/une ...?*
  - For other types of information, use question words like *comment?, à quelle heure?, où?*
  - Quel/quelle/quels/quelles ...?* ('which ...?' or 'what ...?') is an adjective and must agree with the noun.
- Quels sont les horaires d'ouverture?**  
 What are the opening hours?



### La météo

#### G The future tense

You use the **future tense** to say 'will' or 'shall' do something.  
 To form this tense, use the **future stem** plus the appropriate ending.  
 For **-er** and **-ir** verbs, the future stem is the infinitive.

<i>je resterai</i> (I will stay)	<i>nous resterons</i> (we will stay)
<i>tu resteras</i> (you will stay)	<i>vous resterez</i> (you will stay)
<i>il/elle/on restera</i> (he/she/we will stay)	<i>ils/elles resteront</i> (they will stay)

Some key verbs have irregular future stems, but use the same endings as above:

<i>aller - j'irai</i> (I will go)
<i>avoir - j'aurai</i> (I will have)
<i>être - je serai</i> (I will be)
<i>faire - je ferai</i> (I will do)
<i>venir - je viendrai</i> (I will come)

#### G Si clauses

*Si* ('s' before the vowel *i*) means 'if'. Use *si* + a weather phrase + the near future tense to describe future plans.  
*S'il pleut, on va aller au cinéma.*  
 If it rains, we're going to go to the cinema.





Translate these sentences into English, and note if they are true or false.

- 1 La France est plus grande que l'Irlande.
- 2 Les serpents sont plus dangereux que les chats.
- 3 Prince William est plus riche que moi.
- 4 Les carottes sont meilleures que les bonbons.
- 5 Londres est moins grand que Manchester.
- 6 Bart Simpson est aussi intelligent que Lisa.

Want more practice?  
CGP French workbook.  
Page 24.

Make these sentences negative by putting the negative expression in brackets in the correct place.

Then translate each sentence into English.

- 1 Je vais souvent à Lyon. (*ne ... pas*)
- 2 J'ai visité la France. (*ne ... pas*)
- 3 Je suis très fatigué. (*ne ... pas*)
- 4 Hier soir, je suis allée au club de basket. (*ne ... pas*)
- 5 Je resterai à la maison. (*ne ... pas*)
- 6 Je fume. (*ne ... plus*)
- 7 J'ai fumé. (*ne ... jamais*)
- 8 J'ai 10 euros. (*ne ... que*)
- 9 J'aimais les films et la musique. (*ne ... ni ... ni ...*)
- 10 Je mange à midi. (*ne ... rien*)

Want more practice?  
CGP French workbook.  
Page 34 & 35.

NEGATIVE  
 POSITIVE

Use each prompt to write a question in French.

Ask a friend if he/she:

- 1 likes fast food
- 2 is going to the beach
- 3 lives in a big house
- 4 has visited Paris
- 5 went to the cinema last night

Ask:

- 6 where the cinema is
- 7 at what time the film starts
- 8 when the cinema is open
- 9 how you can travel to the cinema
- 10 who is in the film

What will things be like for Sofia in 10 years' time?

- 1 J'aurai trois enfants.
- 2 Je serai agent de police.
- 3 J'habiterai à Londres.
- 4 Je ferai beaucoup de sport.
- 5 J'irai à la salle de sport régulièrement.
- 6 On sera riche.
- 7 On aura une grande maison.
- 8 Mon compagnon travaillera pour Renault.

Want more practice?  
CGP French workbook.  
Page 46 & 47.

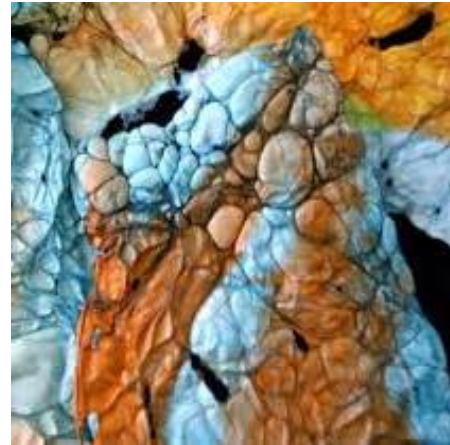
Translate this article about the future into English.

Dans le futur, il y aura beaucoup de robots. Ces robots parleront et penseront comme nous, les humains. Un robot type sera très pratique: il aidera à faire le ménage, préparera nos repas et s'occupera de nos enfants. Le robot fera les devoirs et rangera la chambre des enfants. Mais il ne nous aimera pas!





**INNOVATION**



### 3D Puff Binder

**Puff binder** is a paste that gives a 3D effect to fabric. It can be screen printed on or hand painted on. Once it has been applied to fabric it needs to be heated up to create the "**puff**" effect.

### Honeycomb smocking

This is a technique to create surface pattern and texture. Fabric is stitched in a grid pattern and then gathered to create a pleats in a honeycomb pattern.

### Crashing technique

Water soluble fabric is stitched onto lightweight fabric. It is usually then stitched in a circle pattern using free machine embroidery. The iron is then used to steam the fabric, the steam causes the fabric to shrivel up and create texture on the surface.

### Stitch and slashing

Involves stitching together two or more layers of fabric one on top of the other in parallel diagonal lines (bias) and then cutting through the top layers leaving the base layer intact. This is then stitched into to create pleats

Complete the following tasks in your reflection log.

Describe what 3D puff binder is.  
What is needed to activate the 'puff' effect?

Describe honeycomb smocking.

Which technique uses water soluble fabric?

Which technique uses layers of fabrics that have been cut into?

Why is it important to show a range of techniques in your work?

**Extension task: use the internet to research additional decorative techniques that can be used to create texture on fabric.**



# R185 | PERFORMANCE AND LEADERSHIP IN SPORTS ACTIVITIES

## TOPIC AREA 2

### Applying practice methods to support improvement in a sporting activity

#### Strength and weaknesses

##### Basic skills needed in netball



##### Basic tactical skills needed



##### Strengths

One of my strengths is my footwork as I am able to land both one and two footed while maintaining balance with the ball.



##### Weakness

One of my weaknesses is my defending as I get too close to attacking players (>0.9m), giving away a penalty to the other team.



#### Different types of practices and progressive drills

##### Whole

The whole skill is performed at once (e.g. full sprint start).



##### Part

The skill is broken down into parts which are practised separately (e.g. just the 'set' phase in the sprint start)



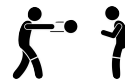
##### Variable

The skill is practised in the range of different situations that could be experienced in a performance e.g. adding defenders and goal keepers in a shooting drill.



##### Fixed

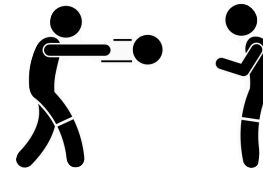
A specific skill or technique is repeatedly practised in the same way e.g. A chest pass drill with a partner.



##### Progressive practices/drills

Drills/practices that show a clear increase in difficulty, dependent on the ability of the performer. For example a progressive practice/drill in basketball could be:

###### 1. A basic chest passing drill



###### 2. Passing while on the move



###### 3. Passing with a defender



#### Alternating the context

##### Alternating the context of performance

Changing the circumstances in which a performer is training e.g. Training with more experienced players to increase skill or knowledge. The context can also be changed by adding defenders into practices.

#### Measuring improvement

##### Video analysis

To identify weaknesses and how performance can be improved.

##### Other assistive technology

To improve performance, such as quantitative activity trackers.

##### Monitoring competition results

Over a period of time.

*Tools selected will be dependent on the chosen activity and the ability level of the performer.*

## Key Terms

■ **Skill** - the ability to do something well

■ **Progressive drill** - a person looked to by others as an example to be imitated.

■ **Variable practice** - knowledge or perception of a situation or fact.

■ **Trends** - a general direction in which something is developing or changing.

■ **Tactical** - an action or strategy carefully planned to achieve a specific end.

■ **Part practice** - the action of providing or supplying something for use.

■ **Fixed practice** - the publicising of a something to raise public awareness.

■ **Emerging/New sport** - Refers to non-tradition sports.

# 10 KEY QUESTIONS

Applying practice methods to support improvement in a sporting activity

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- 1 What are the basic skills in netball?
- 2 What are the basic tactical skills needed in netball?
- 3 Name 5 key skills in a sport of your choice.
- 4 Name 3 tactical skills needed in a sport of your choice.
- 5 Identify and describe a strength in a sport of your choice.
- 6 Identify and describe a weakness in a sport of your choice.
- 7 Give an example of each type of practice in sport of your choice.
- 8 Give an example of an progressive drill or practice in sport of your choice.
- 9 Give 2 ways in which you can alter the context of performance.
- 10 Identify and example now to measure improvement in sports performance.




Extension  
Task(s):



Research all the different types of skills and drills in a sport of your choice on the sports plan we



### STILL LIFE ARTISTS

	<p style="text-align: center;"><b>Vincent Van Gogh</b></p> <p>Vincent van Gogh is generally considered as one of the greatest painters. He was a member of the Post-Impressionist group of artists and his images were a big influence on many modern day artists. He suffered from a serious mental illness and it was said that this illness heavily influenced his use of bold striking colours and heavy textured brushstrokes.</p>	<p style="text-align: center;"><b>Sarah Graham</b></p> <p>Sarah Graham is a Realist painter who creates lively, colourful and bold images. Striking realism combined with vivid colours allows her to display the subject matter of toys and sweets to be conveyed in such an accurate way.</p>	<p style="text-align: center;"><b>Gerald Murphy</b></p> <p>Murphy's style of work reflects the bright, clear style of poster design in the late twenties, which were based on clean, bright colours and sharp edged images. Murphy decided to reject the portrayal of natural images and concentrate on the beauty of modern machine made objects. In some instances it could take him a year to complete two pictures.</p>
	<p>He did not restrict his paintings to one particular theme and showed an ability to develop various images such as portraits, still life and landscapes. His strong brushstroke style was evident in all of his work, where he would use the paint to emphasise shapes and give a sense of tension to his work. The majority of his most well known paintings were produced in a short time period of only ten years.</p>	<p>Working from photographs, Sarah will arrange a composition in her studio and take up to 200 hundred photos before getting the right one. From this image she will sketch the outline in yellow paint on the canvas. This creates the basis for the painting and the adding of colour can begin. Sarah works in oil as they lend themselves well to her style of painting. They allow her to "blur" the paint recreating the blurred effect seen in a photograph.</p>	<p>When developing his images, he broke down the form of the objects into a few colours, simple shapes and machine-like patterns. He forgot about space, depth and tone and became more interested in the abstract qualities of the objects, the shape of the letters and the graphic patterns that they made. During his career, he actually only completed a few images.</p>
	1853 - 1890	Born – 1977	1888 - 1964

### KEY VOCABULARY

**Still Life** – A drawing or painting of items such as fruit, flowers and household objects which are usually arranged on a table top.

**Photo Realism** – An art technique in which the artwork appears incredibly realistic

**Proportion** – The size and shape of one object compared to others.

### ASSESSMENT CRITERIA

- ASSESSMENT OBJECTIVE 1 - Develop ideas through investigations, demonstrating critical understanding of sources.
- ASSESSMENT OBJECTIVE 2 - Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.
- ASSESSMENT OBJECTIVE 3 - Record ideas, observations and insights relevant to intentions as work progresses.
- ASSESSMENT OBJECTIVE 4 - Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.

**Write 3 relevant facts about each artist**

Van Gogh:

Graham:

Murphy:

**Write the definitions for these words**

Still Life –  
Photo Realism –  
Proportion -

**Write about your likes/dislikes of the different artist's work**

Van Gogh:

Graham:

Murphy:



## Shutter Speed KO



**FAST** shutter speed



**SLOW** shutter speed

The **TV setting** on the DSLR camera allows you to alter the shutter speed.

Using a **fast shutter** speed will allow you to capture movement as if **frozen in time**.

Using a **slow shutter** speed will create a **blur** of moving objects - this can be artistic.



**TV**  
setting

**TV mode** stands for Time Value but is better known as **Shutter Priority Mode**.

The **faster the shutter speed**, the **less light** you will allow in to the lens so you might need a brighter setting or to use additional light otherwise your photo will be very dark.  
The **slower shutter speed**, the **more light** you will allow in so you can work in very dark settings.

Try drawing with light!



### Shutter Speed



More Light Needed

Less Light Needed

Darker Images

Brighter Images

Less Motion Blur

More Motion Blur



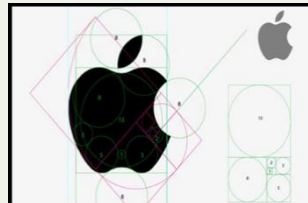
## Components of Graphic design

### What is Typography?

When looking at almost any magazine it is obvious that there are a wide and varied number of letter **styles / fonts** available for everyday use. There is a style of writing for almost every occasion from celebrations to formal events. More modern styles of writing are often named after the designer whereas many can be dated back hundreds of years. The different styles of writing are called **fonts** and they fall into four different categories .

### Using a Logo Grid

A **logo grid** or construction guide is a popular starting point for many designers looking to create a logo. The use of a grid system, especially for a design that might often have to be adapted to **different sizes**– very large or small – can help you create something that has **visual harmony**, an **organized aesthetic** and **professional presentation**.



## KEY VOCABULARY

**Font, Grid, Serif, Script, Decorative, Kerning**

### Four main font styles

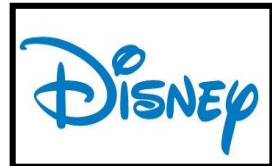
**Serif** – Serifs are the small lines tailing from the edges of letters and symbols. Serifs are easier to read in printed works like books and magazines and are often used in the logos of old, established and successful companies.



**Sans-serif** – is a typeface that does not have the small projecting features called 'serifs' at the end of the letters or symbols. Sans-serif is easier to read on a screen and are often used in the logos of modern and popular companies.



**Script (Script)** – is a typeface that represents hand written words and letters. It is difficult to read on paper and on screen however it is often used in invitations and is used in the logos of companies that product hand crafted traditional products.



**Decorative (Decorative)** – this typeface uses serif and sans-serif fonts and adapts them to make them look more interesting and original. Decorative is a very artistic style, it is often very popular with younger people because it is modern and creative.



### ASSESSMENT CRITERIA

**Competence** - How you complete and improve your work using the project activities.

**Technical ability** – experiment with all of the different components of graphic designing explaining every aspect in detail.

## Components of graphic design

**Why is typography important in graphic design?**

.....  
.....  
.....

**How does a logo grid help create a successful logo?**

.....  
.....  
.....

**What font style is the easiest to read in print form?**

•

**What font style is used to reflect tradition and is difficult to read?**

•

**Why is kerning important in typography?**

.....  
.....

**What does the 'sans' in sans serif mean?**

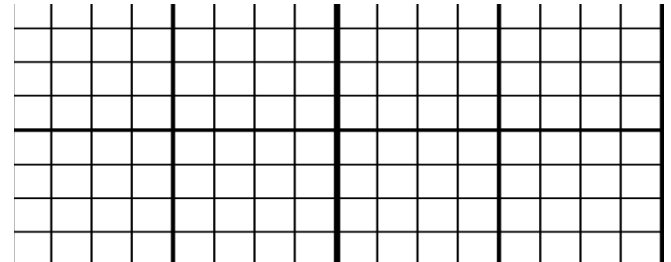
•

**Give three examples of logos that use decorative text.**

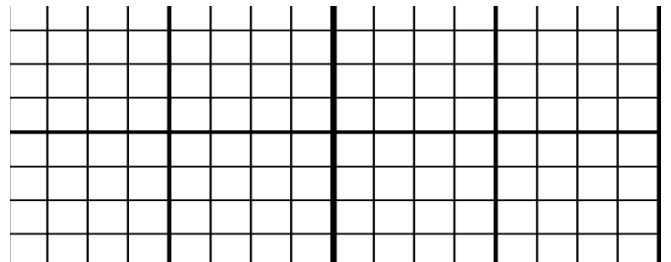
- 
- 
- 

Using the logo grids below use three of the font styles to experiment with the FCAT logo.

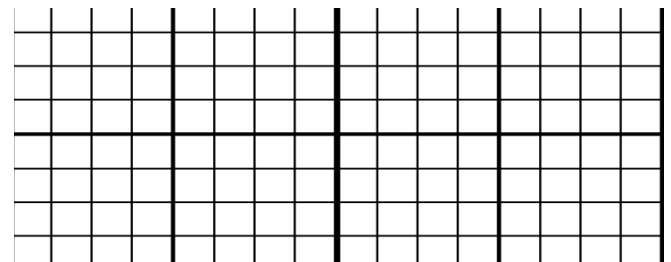
**Serif**



**Sans serif**



**Decorative**





### There are 7 travel and tourism organisations

- Tour operators
- Travel agents
- Accommodation providers
- Visitor attractions
- Tourism promotion
- Transport operators
- Ancillary services

### Tour operators

Tour operators have contracts with different travel and tourism organisations, such as hotels, airlines and transport operators. They are able to contract large numbers of hotel rooms and flights at discounted prices and then assemble a single package containing the transport, accommodation, transfers and excursions. These can then be sold to customers either through independent travel agents, or directly by the tour operator themselves, for example, online or through a call centre.

### Travel agents

Travel agents have several specific roles, including:

- booking flights for business or leisure purposes
- booking accommodation
- booking different types of holidays
- arranging and booking trips and excursions
- booking ancillary services, such as car hire and travel insurance and airport parking
- providing foreign exchange

### Accommodation providers

There are lots of different types of accommodation providers, from small guest houses to large hotels. Some venues provide catered accommodation, where travellers receive some or all of their meals, for example, breakfast, lunch and evening meal. Other types of accommodation are offered on a room only or a self-catering basis. Accommodation providers are often private sector organisations but some may be part of the voluntary or charity sector, for example, some youth hostels.

### Visitor attractions

Attractions can also provide educational resources as well as other products and services for tourists, such as wheelchair hire, cafes and shops. Attractions are often much busier in the summer months and during school holidays, providing seasonal work for many local people. Types of attractions include:

- Natural attractions
- Purpose-built attractions
- Heritage attractions

### Tourism promotion

A range of different organisations promote tourism to raise awareness and to encourage more people to travel and visit different destinations. Tourism promotion organisations can also support visitors, providing advice and guidance. Examples include:

- Visitor Information Centres (VIC)
- Regional tourism agencies
- National tourist boards

## Key terms

**Tourism** is the movement of people to countries or places outside their usual place of residence for personal or business/professional purposes.

**Package holidays** are holidays where the price includes at least two components, for example, air, rail or coach transport to get you to your destination,

**Specialist tour** operators appeal to a specific market, for example, walking holidays or adventure travel.



### **Transport operators**

One of the most important aspects of the travel and tourism sector is, of course, transport. Tourists and travellers need safe transport from one destination to another, as well as access to a range of facilities and services to make their journeys comfortable. Tourists can use a number of different **road, rail, sea** and **air** transport providers to help them complete their journeys safely, for either inbound, outbound or domestic tourism reasons.

### **Ancillary services**

As well as the main industries that make up the travel and tourism sector, a wide range of ancillary service providers offer additional extras to help ensure that tourists' needs are fully met. Examples:

- Attraction tickets
- Event tickets
- Travel insurance
- Car hire
- Lounge access
- Airport/hotel parking
- Passport/visa services
- Foreign exchange

### **Private sector organisations**

Travel and tourism organisations in the private sector are owned or controlled by private individuals, or by shareholders for limited companies. Ownership of a limited company is divided into shares. An owner of one or more of these shares is called a shareholder. Example - Merlin Entertainment

### **Public Sector**

Travel and tourism organisations in the public sector are funded and owned by central, regional and local governments. Often the main aim and objective of public sector organisations is to provide a valuable service to customers and users. Example - The East Lancashire Railway

Most travel and tourism organisations aim to harness the power of technology and the latest innovations to give consumers a more efficient and effective service or experience. Organisations may develop their For example, the transport company Stagecoach has developed a free mobile app that helps travellers to plan their journey, buy mobile tickets and track the live progress of their bus. The app can even identify how busy a particular service is so customers can find quieter times to travel.

### **Disadvantages:**

- Unreliable devices
- System failure
- Loss of personal interaction
- Slow internet speeds
- Risk of hackers
- Alienate key markets

## Key terms

**Market share** is the proportion of sales that a business has in a particular market.

**Visas** are official documents, stamps or endorsements that allow a traveller to enter or leave a particular country as long as they meet specific conditions

**Screen tourism** is a type of tourism where people visit destinations and locations made popular in films and television series



Whether an interrelationship, partnership or interdependency, travel and tourism organisations can work together in a broad range of different ways. Some of the main ways of working together:

- Joint marketing, advertising and promotional activities
- Products and services
- Joint incentives and competitions
- Consultation and expert advice
- Sharing resources
- Bulk buying
- Centralised departments

Example:

Hotel and visitor attraction – A hotel could offer its guests reduced admission to a local visitor attraction. This would encourage guests to visit the attraction and stay longer at the hotel, as well as improve customer satisfaction as guests would save money on admission. For example, THORPE PARK Resort works with a number of official partner hotels to offer guests a one-day park entry pass with their stay

In this component, you will be assessed by completing an assignment set by Pearson covering Learning outcomes A and B. You will be required to complete a number of different tasks. Your teacher will provide you with the Pearson-set assignment brief that outlines what you will need to do, as well as a date by which the assignment should be completed and submitted. The teacher will mark the assignment. For Learning outcome A, you will be expected to show that you can apply your knowledge and understanding of the UK travel and tourism industry.

This will include:

- the ownership, aims, products and services of a selected travel and tourism organisation
- how and why travel and tourism organisations may work together
- different types of consumer technologies offered by a selected travel and tourism organisation

### Key terms

**Bulk buying** is when organisations buy a product in large quantities at one time, often in order to secure a discount

**Artificial intelligence** is the ability of a computer, or computer-controlled device, to complete a task that would usually require human decision making or problem-solving.

**The cloud** describes an online network of interconnected servers and databases hosted on the internet

## Demonstrate an understanding of the UK travel and tourism industry



What is your understanding of the different types of travel agents.

Ask a member of your family about a time when they used the services of a travel agent. Why did they choose to use the agent and not book directly themselves? What was the most useful part of the process? Which type of travel agent did they use?

Research one local accommodation provider and produce a description of all the different products and services it provides to meet the needs of guests with a disability.

Think about how you would promote your local area to encourage more tourists to visit. Make a list of all the appealing factors that your local area has to offer. Think about different types of visitor and what would attract them. Now, create a brief presentation to promote your local area to possible visitors looking for a new destination to visit.

Describe to your partner what ancillary services are.

Identify at least four ancillary services used in the travel and tourism sector

What are the advantages and disadvantages of being a travel and tourism organisation operating in the private sector.

Explain the difference between private, public and voluntary sector organisations.

Try to identify a range of different publicly funded organisations for each of the following categories:

- museum
- tourist board
- visitor information centre
- tourist attraction.

Discuss, compare and check your understanding of the following financial terms: market share, break even, sales revenue, profit.

Choose one large local travel and tourism organisation and carry out some research on the different consumer technologies it uses. Think about the main advantages and disadvantages of the technologies from the perspective of the customer and the organisation.

Choose three travel and tourism organisations from different industries and carry out some research online to find an example of the latest technologies they are using. Explain one reason why each organisation has invested in these technologies.

Choose two travel and tourism organisations that work together. Explain the different ways they work together and the reasons why they do this. What are the benefits of this partnership for each organisation?

Think about all the different reasons that travel and tourism organisations might work together. Make a list of as many as you can remember.

Choose a specific travel and tourism organisation and investigate the range of consumer technologies they use. Now explain why the selected organisation offers these technologies to their consumers

Make a list of benefits of using consumer technologies for both travel and tourism organisations and for customers. Try to get at least three benefits for organisations and three benefits for customers.



