

Need To Know Book

Year 10

2024/2025

Name: _____

Form Group: _____

Be Kind.

Work Hard.



Take
Responsibility.

My Aspirational Sentence.

Little Lever School

be kind | work hard | take responsibility

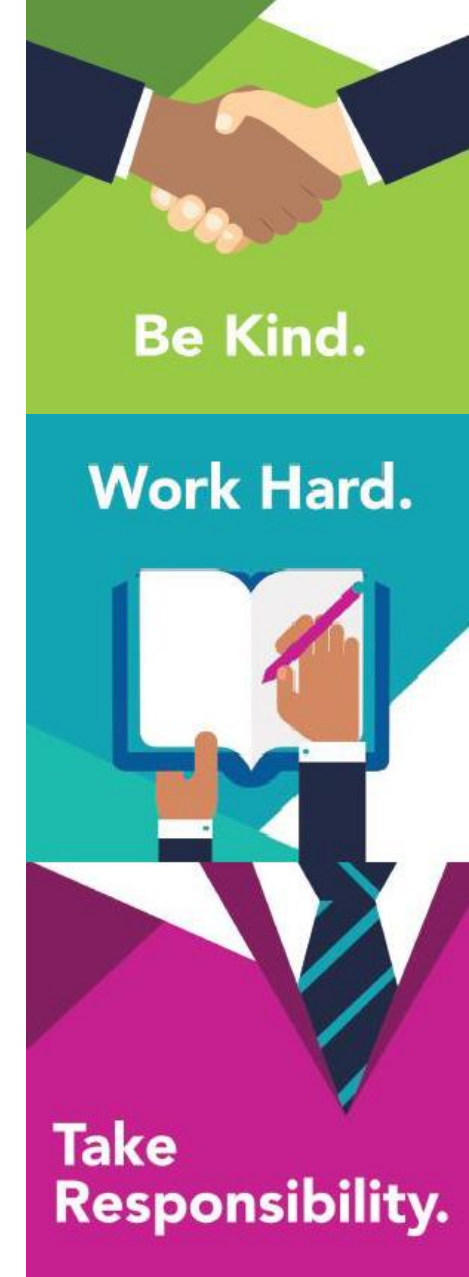


What does the top of my mountain look like?



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Knowledge Retrieval Sheet

What are knowledge retrieval sheets?

Here at Little Lever School, we think it is really important that you know what the essential knowledge is for each subject that you study. Learning takes place not only in the classroom, but in all areas of the school building, and at home. These [knowledge retrieval sheets](#) contain all the essential knowledge you will need to help revise and make progress towards achieving your best in all of your subjects.



By using your [knowledge retrieval sheets](#) each week you will be able to transfer your knowledge from your short-term memory, and make it stick. Within all your lessons, you will be asked to retrieve knowledge from your long-term memory. This might be in the form of quizzes or longer responses. These might require you to use lots of information you have already stored from previous lessons and from your own life experiences. These [Need to Know Books](#) will help you to check how much you can remember.

We have designed your [knowledge retrieval sheets](#) so that they are simple for you to use both in school and at home. You can even get others to help you. Below are some options for how you might use each sheet to make the knowledge stick in your brain so that you will be able to remember it.

Using Knowledge Retrieval Sheets- 5 Top Tips:



1

'Look, Cover, Say, Write, Check'- Look at a fact on your sheet, cover it up with your hand or a piece of paper. Say it out loud, write the fact down without checking and then uncover and check if you were correct.

2

'If this is the answer, what is the question?'- Quiz yourself by covering up facts on your sheet. For example, you could cover up the definition of key vocabulary and try to remember what the key vocabulary means.

3

Independent low-stakes quizzing- Use the questions on the back of each sheet to test yourself. You should write the answers on a separate sheet of paper so that you can use the question sheet again in future.

4

Paired low-stakes quizzing- Give your book or a sheet to someone else. (Could be a friend, teacher or family). They can ask you the questions on the back of any sheet and use the facts on the front to check if you are correct.

5

Flashcard Revision- Make flashcards using your knowledge sheets. Can you summarise the essential knowledge into your own words to put onto a pocket-sized revision card?

Art and Photography



Helping every person achieve things they never thought they could.

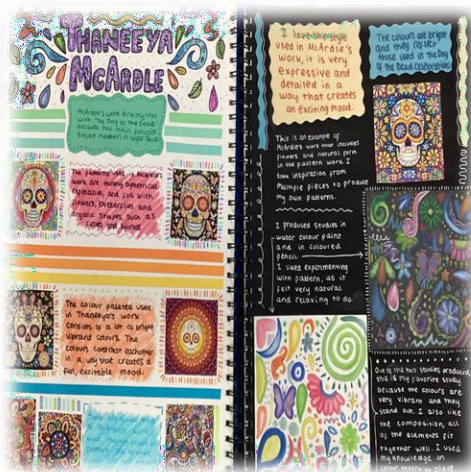
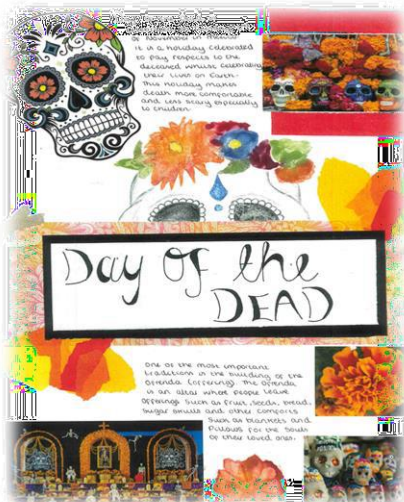
Year 10 Art: Assessment Objectives (AO1 + AO2)

A01 EXPLORE DEVELOP DEVELOP IDEAS INVESTIGATE & RESEARCH OTHER ARTISTS WORK ANALYSE ANNOTATE

AO1

These are the things that you should consider including in AO1:

- Artist research pages.
- Visits to exhibitions and galleries.
- Your own responses in the style of the artist.
- Interviews with artists/ photographers.
- Annotate and analyse what you have found out.



AO2

These are the things that you should consider including in AO2

- Experimenting in response to your chosen artists.
- Use relevant materials and techniques to experiment with
- Experiment with new materials, tools and techniques as well as familiar ones.
- Try out different combinations of media and techniques
- Practise and refine your use of your chosen media, tools and techniques

A02 REVIEW REFINE EXPERIMENT EXPLORE DIFFERENT IDEAS AND MEDIA A RANGE OF TECHNIQUES & PROCESSES SELECT IMPROVE

Year 10 Art: Assessment Objectives (AO1 + AO2)

A01

EXPLORE

DEVELOP

DEVELOP IDEAS

INVESTIGATE & RESEARCH

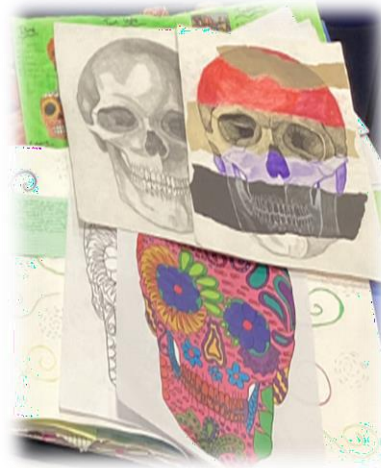
OTHER ARTISTS WORK

ANALYSE

ANNOTATE

What are the things you should consider including in AO1?

List at least 5 things that you would include.



What are the things you should consider including in AO2?

List at least 5 things that you would include.

A02

REVIEW

REFINE

EXPERIMENT

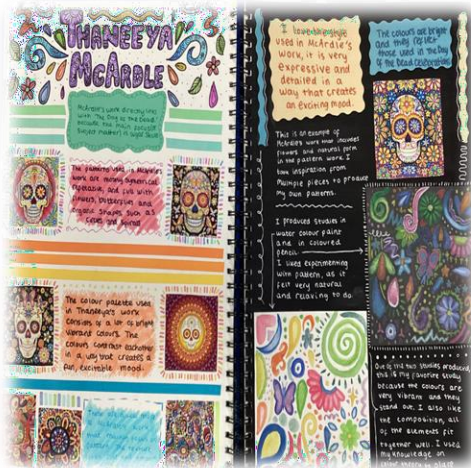
EXPLORE DIFFERENT IDEAS

AND MEDIA

A RANGE OF TECHNIQUES
& PROCESSES

SELECT

IMPROVE



Year 10 Art: Assessment Objectives (AO3 + AO4)

A03

EVIDENCE

RECORD

PRESENT IDEAS

PRIMARY OBSERVATION

DRAWING, PAINTING,
PRINTING, PHOTOGRAPHY,
WRITING, PHOTOGRAPHY...

ANNOTATE

DIFFERENT MEDIA

AO3

These are the things that you should consider including in AO3:

- Title page.
- Mind Map.
- Mood-boards.
- Bullet points
- Notes/Annotation
- Longer paragraphs
- Photographs.
- Observational drawings
- Sketches
- Designs
- Diagrams
- Drawing using Photoshop

SKULL
STUDIES



AO4

These are the things that you should consider including in AO2

- Plans and drawings of final piece ideas.
- Mini mock-ups and experiments for final piece.
- Creating an original final piece, that is clearly inspired by your research and creative journey.
- Evaluation of final piece (how does your piece link to the project theme?)

A04

OUTCOME

PRESENT FINAL IDEAS

DEVELOPED AS PLANNED

CLEARLY RESPONDS TO
ARTISTS EXPLORED

CONNECTION

CONCLUSION

Year 10 Art: Assessment Objectives (AO3 + AO4)

A03

EVIDENCE

RECORD

PRESENT IDEAS

PRIMARY OBSERVATION

DRAWING, PAINTING,
PRINTING, PHOTOGRAPHY,
WRITING, PHOTOGRAPHY...

ANNOTATE

DIFFERENT MEDIA

What are the things you should consider including in AO3?

List at least 5 things that you would include.



What are the things you should consider including in AO4?

List at least 4 things that you would include.

A04

OUTCOME

PRESENT FINAL IDEAS

DEVELOPED AS PLANNED

CLEARLY RESPONDS TO
ARTISTS EXPLORED

CONNECTION

CONCLUSION

Year 10 Fashion: (AO1 + AO2)

A01

EXPLORE

DEVELOP

DEVELOP IDEAS

INVESTIGATE & RESEARCH

OTHER ARTISTS WORK

ANALYSE

ANNOTATE

AO1 is about developing ideas from a starting point to a final piece.

You could start your development work by:

- Making observational studies
- Looking at the work of other artists or designers
- Experimenting with materials, processes or techniques.

A primary source is one that you study directly from a first hand experience. A secondary source is a material produced by others.



AO2 is about refining you ideas through selecting and experimenting.

Your choice of resources should be linked of the media and materials used by artists and designers.

When selecting and using appropriate resources and media have you?

- Considered how other artists and designers have used media and processes?
- Experimented and practiced with your chosen materials and techniques?
- Worked with familiar as well as new media and techniques.
- Used contextual references in your development work?



A02

REVIEW

REFINE

EXPERIMENT

EXPLORE DIFFERENT IDEAS

AND MEDIA

A RANGE OF TECHNIQUES & PROCESSES

SELECT

IMPROVE

Year 10 Fashion: (A01 + A02)

A01

EXPLORE

DEVELOP

DEVELOP IDEAS

INVESTIGATE & RESEARCH

OTHER ARTISTS WORK

ANALYSE

ANNOTATE

AO1 is about...

You could start your development work by:

A primary source is one that you study directly from a _____.
A secondary source is a material produced by _____.



AO2 is about....

Your choice of resources should be linked of the _____ and _____ used by artists and designers.

When selecting and using appropriate resources and media have you?



A02

REVIEW

REFINE

EXPERIMENT

EXPLORE DIFFERENT IDEAS
AND MEDIA

A RANGE OF TECHNIQUES
& PROCESSES

SELECT

IMPROVE

Year 10 Fashion: (A03 + A04)

A03

EVIDENCE

RECORD

PRESENT IDEAS

PRIMARY OBSERVATION

DRAWING, PAINTING, PRINTING, PHOTOGRAPHY, WRITING, PHOTOGRAPHY...

ANNOTATE

DIFFERENT MEDIA

A03 is about recording your ideas, observations, insights which can be visual, written or in other forms.

To reflect on your work you need to develop your critical ideas and understanding by-

- Studying other artists and designers and exploring aspects of their work
- Analytical sketches, diagrams or annotated illustrations
- Development studies that record variation

Don't just describe what you have done. Try to analyse or evaluate what you have done at each stage, demonstrating your critical understanding.



A04 is about presenting a personal, informed and meaningful response, from your initial research to your final piece.

In order to make a meaningful response it is important to demonstrate that you have selected a suitable source material and media.

When making a personal response you should:

- Consider different themes or approaches
- Carefully select and study your source materials
- Make a personal choice about materials
- Experiment with media, materials and techniques
- Record and develop your ideas in a personal way
- Presented your work carefully

A04

OUTCOME

PRESENT FINAL IDEAS

DEVELOPED AS PLANNED

CLEARLY RESPONDS TO
ARTISTS EXPLORED

CONNECTION

CONCLUSION



Year 10 Fashion: (A03 + A04)

A03

EVIDENCE

RECORD

PRESENT IDEAS

PRIMARY OBSERVATION

DRAWING, PAINTING,
PRINTING, PHOTOGRAPHY,
WRITING, PHOTOGRAPHY...

ANNOTATE

DIFFERENT MEDIA

A03 is about...

To reflect on your work you need to develop your critical ideas and understanding by-

Don't just describe what you have ____ . Try to ____ or ____ what you have done at each stage, demonstrating your critical understanding.



A04 is about....

In order to make a meaningful response it is important to ____ that you have selected a suitable source ____ and media.

When making a personal response you should:

A04

OUTCOME

PRESENT

FINAL IDEAS

DEVELOPED AS PLANNED

CLEARLY RESPONDS TO
ARTISTS EXPLORED

CONNECTION

CONCLUSION



Year 10 Photography:

Term	Terminology Definitions:
1. Shutter Speed	The amount of time the camera's shutter is open for. Longer shutter speeds (1/10s, 1s, 3s, etc) allow more light in but will cause blurring of anything moving. Shorter shutter speeds let less light in and can capture moving subjects as still or 'frozen'.
2. Exposure	This is the amount of light entering the camera's sensor. Too much light and the image is overexposed, not enough light and it's under exposed. Exposure is determined by a combination of shutter speed, aperture, and ISO.
3. Aperture	The opening (or 'pupil') of your lens is called aperture, which can be made smaller or bigger to change the amount of light being let in. A wide aperture (such as f/1.4) lets more light in, allowing for a faster shutter speed or lower ISO, and a shallow depth of field (How much of the image is in focus). A narrower aperture (such as f/8) lets less light through, requiring a slower shutter speed or higher ISO, but results in more of your image being in focus.
4. F-Stop	F-Stop or F-number is the aperture size or aperture stop in a number that controls the size of the lens opening. Therefore controlling the amount of light entering the camera. Smaller f-stops, like f/1.4 or f/2, indicate a wider aperture, while larger F stops, like f/11 or f/16, indicate a narrower aperture.
5. Bokeh	This is produced by blurring the background of an image and is popular in portraits as it forces you to focus on the subject. Most photographers look for smooth bokeh so as to not distract from the rest of the image. Using this technique, light sources can appear as smooth blobs of colour.



Year 10 Photography:

Term	Terminology Definitions:
1. Shutter Speed	
2. Exposure	
3. Aperture	
4. F-Stop	
5. Bokeh	



Year 10 Photography:



Term

Terminology Definitions:

6. Depth of Field

The **distance between the closest and furthest subjects** in a scene that looks sharp in an image. A wide aperture (f/1.4, f/2, etc.) produces a shallow depth of field, which can be used to isolate a subject.

And narrow aperture (f/11 or f/16), produces a wide depth of field which keeps everything in focus.

7. Focal Point

This is the way to describe the **main part of the image or a point of interest within the image**.

It is where the viewers eye is drawn to the most.

8. Rule of Thirds

A common compositional tool that states that one should **divide the image frame into equal vertical and horizontal thirds, then place points of interest at the intersections of the dividing lines**.

9. Macro

Photographing objects that are extremely small.

Macro lenses can **usually capture more detail than we can see with the naked eye**. Normally macro photographers would use a lens with a 1:1 ratio, which is the size of the subject on the sensor.

10. Raw

A raw file is the data **taken from the sensor without any sort of image processing applied**. As opposed to a JPEG produced by the camera.

Though bigger in file size, photographers prefer RAW files because they allow for more creative range in post processing and higher image quality before exporting the final image in a file format such as JPEG.

Year 10 Photography:



Term

Terminology Definitions:

6.

Depth of Field

7.

Focal Point

8.

Rule of Thirds

9.

Macro

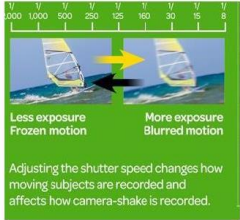
10.

Raw

Year 10 Photography:

Shutter Speed

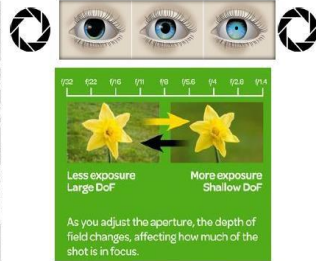
The amount of time the camera's shutter is open for.



Longer shutter speeds (1/10 s, 1 s, 3 s, etc.) allow more light in but will cause blurring of anything moving.
Shorter shutter speeds (1/200 s, 1/1,000 s, etc.) let less light in and can capture moving subjects as still or 'frozen'

Aperture

The opening (or 'pupil') of your lens is called aperture, which can be made smaller or bigger to change the amount of light being let in.

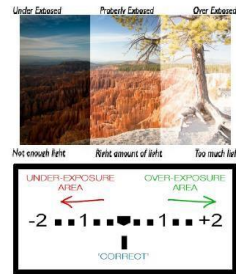


A wide aperture (such as f/1.4) lets more light in, allowing for a faster shutter speed or lower ISO, and a shallow depth of field (how much of the image is in focus).

A narrower aperture (such as f/8) lets less light through, requiring a slower shutter speed or higher ISO, but results in more of your image being in focus.

Exposure

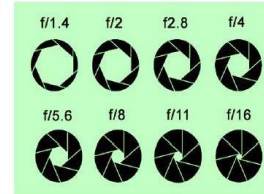
Is the amount of light entering the camera's sensor. Too much light and the image is overexposed and not enough light and it's underexposed.



Exposure is determined by a combination of shutter speed, aperture, and ISO.

F-Stop

Or f-number is the aperture size or aperture stop in a number that controls the size of the lens opening. Therefore controlling the amount of light entering the camera.



Smaller f-stops, like f/1.4 or f/2, indicate a wider aperture, while larger f-stops, like f/11 or f/16, indicate a narrower aperture.

Bokeh

Is produced by blurring the background of an image and is popular in portraits as it forces you to focus on the subject.



Most photographers look for smooth bokeh so as to not distract from the rest of the image. Using this technique, light sources can appear as smooth blobs of colour.

GCSE Photo Terminology

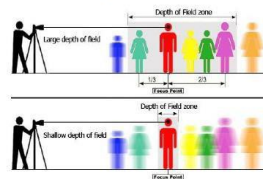
Focal Point



Is a way to describe the main part of the image or a point of interest within the image. It is where the viewer's eye is drawn to most.

Depth of Field

The distance between the closest and farthest subjects in a scene that look sharp in an image (abbreviated to DOF).



A wide aperture (f/1.4, f/2, etc.) produces a shallow depth of field, which can be used to isolate a subject.

A narrow aperture (f/11, f/16, etc.) produces a wide depth of field, which keeps everything in focus.

Rule of Thirds



A common compositional tool that states that one should divide the image frame into equal vertical and horizontal thirds, then place points of interest at the intersections of the dividing lines.

Macro

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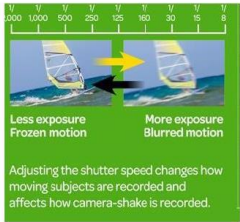
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Year 10 Photography:

The amount of time the camera's shutter is open for.

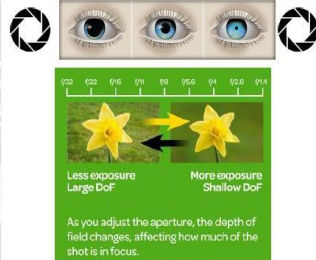


Adjusting the shutter speed changes how moving subjects are recorded and affects how camera-shake is recorded.

Longer shutter speeds (1/10 s, 1 s, 3 s, etc.) allow more light in but will cause blurring of anything moving.

Shorter shutter speeds (1/200 s, 1/1,000 s, etc.) let less light in and can capture moving subjects as still or 'frozen'

The opening (or 'pupil') of your lens is called aperture, which can be made smaller or bigger to change the amount of light being let in.

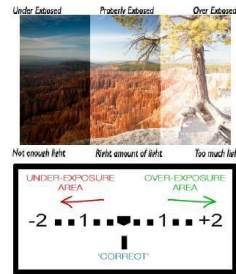


As you adjust the aperture, the depth of field changes, affecting how much of the shot is in focus.

A wide aperture (such as f/1.4) lets more light in, allowing for a faster shutter speed or lower ISO, and a shallow depth of field (how much of the image is in focus).

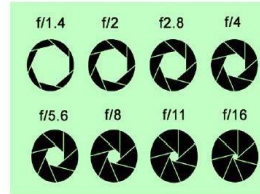
A narrower aperture (such as f/8) lets less light through, requiring a slower shutter speed or higher ISO, but results in more of your image being in focus.

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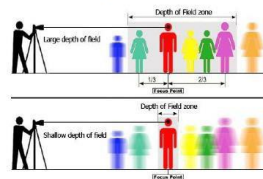
Most photographers look for smooth bokeh so as to not distract from the rest of the image. Using this technique, light sources can appear as smooth blobs of colour.

GCSE Photo Terminology- what are the key terms?



Is a way to describe the main part of the image or a point of interest within the image. It is where the viewer's eye is drawn to most.

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Computing, Business and Media



Helping every person achieve things they never thought they could.

Year 10: GCSE Business

The Dynamic Nature of Business

Why do new business ideas come about:

- Changes in technology
- Changes in what consumers want
- Products & services becoming obsolete

How do new business ideas come about?

- Original ideas
- Adapting existing products/services/ideas

Risk and Reward

Risk:

- Business failure
- Financial loss
- Lack of security

For example:

One risk is lack of security as an entrepreneur may have previously had a job and guaranteed income however income will depend on how well the enterprise performs.

Reward:

- Business success
- Profit
- Independence

For example:

One reward is independence as previously the entrepreneur would have had a manager telling them what to do. This independence may result in higher motivation because the entrepreneur is free to make their own decisions.

Revenues, Costs and Profits

Total costs

$TC \text{ (total cost)} = TFC \text{ (total fixed costs)} + TVC \text{ (total variable costs)}$

Revenue

$\text{Revenue} = \text{price} \times \text{quantity}$

Break even

$\text{Break even point in units} = \frac{\text{fixed cost}}{(\text{sales price} - \text{variable cost})}$

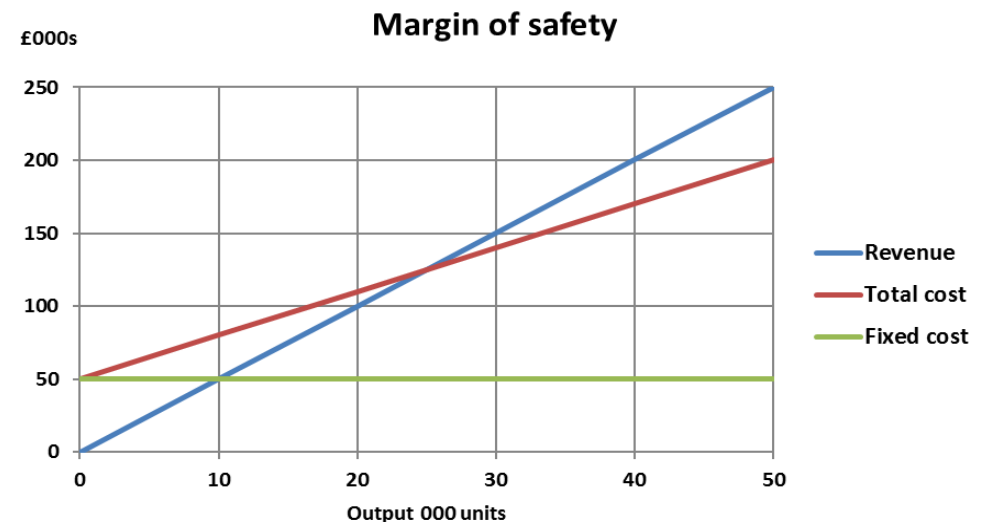
$\text{Break even point in costs / revenue} = \text{break even point in units} \times \text{sales price}$

Margin of safety

$\text{Margin of safety} = \text{actual or budgeted sales} - \text{break even sales}$

Interest (on loans)

$\text{Interest (on loans) in \%} = \frac{\text{total repayment} - \text{borrowed amount}}{\text{borrowed amount}} \times 100$



Year 10: GCSE Business

The Dynamic Nature of Business

Why do new business ideas come about:

- -
- -
- -

How do new business ideas come about?

- -
- -

Risk and Reward

What is risk?

- -
- -
- -

For example:

What is reward?

- -
- -
- -

For example:

Revenues, Costs and Profits

Total costs

$$TC \text{ (total cost)} = \text{ } + \text{ }$$

Revenue

$$\text{Revenue} = \text{ }$$

Break even

$$\text{Break even point in units} = \frac{\text{fixed cost}}{(\text{sales price} - \text{variable cost})}$$

$$\text{Break even point in costs / revenue} = \text{break even point in units} \times \text{sales price}$$

Margin of safety

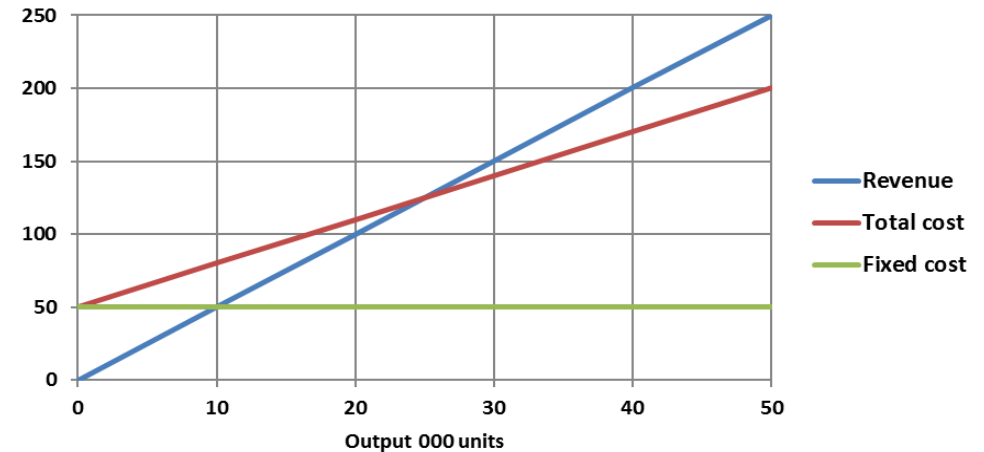
$$\text{Margin of safety} = \text{ } - \text{ }$$

Interest (on loans)

$$\text{Interest (on loans) in \%} = \frac{\text{ }}{\text{ }} \times 100$$

Margin of safety

£000s



Year 10: GCSE Business

Revenues, Costs and Profits

Break Even Level of output is where Total Costs = **Total Revenue**.

In this example, the break even level of output is 25

Margin of Safety is the difference between the break even level of output and the actual level of output. If the actual output in this example was 50, the margin for safety would be 25 (50 – 25).

Calculating the Break Even Level of Output

Examples: Sony's fixed costs for the PlayStation 3 are £2,400,000 and variable costs are £140 per console. Calculate the break-even point when the PlayStation 3 was priced at £300. Show your working out and the formula used.

$$\text{Break even point in units} = \frac{\text{fixed cost}}{(\text{sales price} - \text{variable cost})}$$

- The selling price of a PlayStation 3 is £300.
- The variable cost of production is £140.
- Every time a PlayStation is sold, Sony makes £160 above the variable cost of production (300 – 140).
- This £160 is called a **contribution**

How many £160s are needed to pay off the fixed cost of £2 400 000?

- £2,400,000 / 160 = 15 000
- The break-even level of output is 15 000.

Cash and Cash Flow

Net cash-flow

Net cash-flow = cash inflows – cash outflows in a given period

Opening and closing balances

Opening balance = closing balance of the previous period

Closing balance = opening balance + net cash-flow

Cash flow forecasts

- A forecast of all the cash flowing into and out of the business.
- Shows opening balance at start of each month and closing balance at end.
- Normally produced monthly but can be any time frame e.g. weekly.

Opening Balance

- Cash available at the start of the month.

Closing Balance

- Cash available at the end of the month.



Year 10: GCSE Business

Revenues, Costs and Profits

Break Even Level of output is where...

Margin of Safety is...

Calculating the Break Even Level of Output

Examples: Sony's fixed costs for the PlayStation 3 are £2,400,000 and variable costs are £140 per console. Calculate the break-even point when the PlayStation 3 was priced at £300. Show your working out and the formula used.

$$\text{Break even point in units} = \frac{\text{fixed cost}}{(\text{sales price} - \text{variable cost})}$$

- -
- -
- -

How many £160s are needed to pay off the fixed cost of £2 400 000?

- -
- -

Cash and Cash Flow

Net cash-flow

Net cash-flow =

 -

Opening and closing balances

Opening balance =

Closing balance =

What are cash flow forecasts?

- -
- -
- -

What is an opening balance?

- -

What is a closing balance?

- -



Year 10: GCSE Business

Stakeholders

What does a cash flow forecast look like?

Stakeholder

Impact on business activity

Shareholders
(Owners)

- Sets aims and objectives
- Provide funding and investment to start and expand the business

Employees

- Provide good service which results in repeat purchase
- Impacts on business reputation if they don't do their job well

Customers

- Buy products and services
- Make recommendations on how to improve (reviews, research)
- Recommend the business to friends and on social media

Managers

- Manage employees and monitor quality
- Communicate the business' needs to employees

Suppliers

- Provide the business with the materials it needs
- Affects the amount that can be sold (e.g. if the supplier cannot provide raw materials on time, production stops)
- Their prices impact on the business' costs

Local
Community

- Support the business by buying its goods and services
- Object to the business if it has a negative impact on the community / environment

Pressure
Groups

- Challenges the business' behaviour, such as the packaging it uses
- Improves employees' conditions, such as health and safety or fair wages
- Influences customers' opinions of the business

The
Government

- Can change the amount of tax the business has to pay which impacts on the business' costs
- Passes new laws that may affect how and what the business does (and impact on costs to make changes)

Remember: a number in brackets means it is a negative (-) number

Why is having cash important for a business?

- The importance of cash to a business:
- To pay suppliers, overheads and employees
- To prevent business failure (insolvency)
- The difference between cash and profit
- Cash can only be recorded when it has actually been received by the business.
- Profit is recorded as soon as the sale is agreed (even though no money may have changed hands)

Year 10: GCSE Business

Stakeholders

What does a cash flow forecast look like?

Stakeholder

Impact on business activity

Shareholders
(Owners)

Employees

Customers

Managers

Suppliers

Local
Community

Pressure
Groups

The
Government

Remember: a number in brackets means it is a negative (-) number

Why is having cash important for a business?

- -
- -
- -
- -
- -
- -

Year 10: GCSE Business

Discuss the impact of pressure groups on a business

Pressure groups highlight the negative activity of a business therefore this can damage the business' company image. This could mean that customers are less likely to buy from the business. Therefore revenue will decrease.

However, if the business changes its behaviour as a result of pressure group activity then their company image will be improved. This may lead to an increase in customers which would lead to higher market share.

Conflict (disagreement) between stakeholders

- Shareholders (Owners) want the highest profit possible
- Employees want the highest wages possible
- Customers want the lowest prices possible
- Managers want the highest bonus possible
- Suppliers want to sell at the highest prices possible
- Local Community want the smallest environmental impact possible
- Pressure Groups want the business to behave in an ethical way
- The Government want the business to follow laws and pay their taxes

Question 1: What are some factors that can lead to the emergence of new business ideas?

Answer: Changes in technology, changes in consumer preferences, and the obsolescence of products and services can all contribute to the emergence of new business ideas.

Question 2: How do new business ideas come about?

Answer: New business ideas can originate from original thinking or by adapting existing products, services, or ideas to meet the needs of the market.

Question 3: What are some risks associated with starting a business?

Answer: Some risks include the possibility of business failure, financial loss, and a lack of security, as entrepreneurs often rely on the performance of their venture for income.

Question 4: What are some rewards that can be obtained from starting a business?

Answer: Starting a business can lead to rewards such as business success, profitability, and independence. Entrepreneurs have the opportunity to make their own decisions and experience higher motivation compared to working under a manager's direction.

Question 5 Explain one possible conflict that may exist between stakeholders.

Answer: Shareholders will want the highest profit possible so that they receive high dividends (share of the profits). However, employees will want the highest wages possible. Paying higher wages would increase the business' costs and therefore (if revenue stays the same) profit would be lower meaning that the shareholders would be unhappy.

Question 6: What does a cash flow forecast typically show?

Answer: A cash flow forecast shows the projected cash inflows and outflows for a business, usually on a monthly basis. It includes the opening balance at the start of each month and the closing balance at the end.

Question 7: Why is having cash important for a business?

Answer: Cash is important for a business because it is necessary to pay suppliers, cover overhead expenses, and compensate employees. It helps prevent business failure or insolvency. It is important to understand that cash and profit are not the same, as cash is recorded only when it is actually received by the business, whereas profit is recorded when a sale is agreed, even if no money has changed hands yet.

Year 10: GCSE Business

Discuss the impact of pressure groups on a business

Conflict (disagreement) between stakeholders

- -
- -
- -
- -
- -
- -
- -

Question 1: What are some factors that can lead to the emergence of new business ideas?

Answer:

Question 2: How do new business ideas come about?

Answer:

Question 3: What are some risks associated with starting a business?

Answer:

Question 4: What are some rewards that can be obtained from starting a business?

Answer:

Question 5 Explain one possible conflict that may exist between stakeholders.

Answer:

Question 6: What does a cash flow forecast typically show?

Answer:

Question 7: Why is having cash important for a business?

Answer:

Year 10 GCSE Business:

Market Segmentation

Grouping the market into groups with shared characteristics.

A business can segment the market in the following ways:

Location

Demographics

Lifestyle

Income

Age

The competitive environment

Strengths and weaknesses of competitors can be based on:

Price

Quality

Location

Product range

Customer service

Impact of competition on business decision making:

New competitor products may make you update and improve your products to keep up.

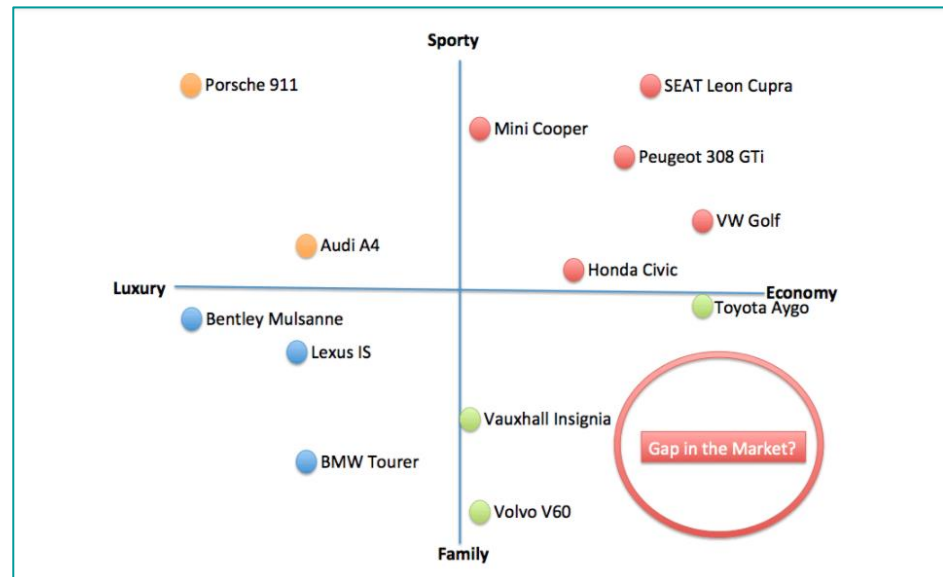
Identifying gaps in the market can provide you with ideas for new products/services.

Competitors' pricing may influence your pricing decisions.

Competitors' customer service may make you strive to provide superior customer service.

Market Map

Market mapping is a visual representation of the position of different products, brands, or businesses within a particular market. Market maps can be used to identify **a gap in the market** and understand the competition.



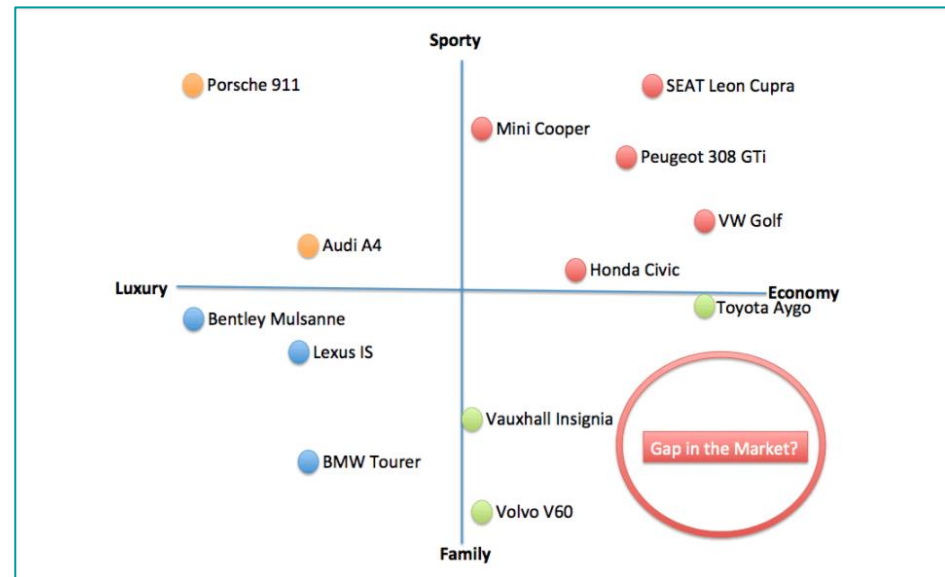
Year 10 GCSE Business:

Market Segmentation

Impact of competition on business decision making:

Market Map

The competitive environment



Year 10 GCSE Business:

Business Aims and Objectives

Financial Aims and Objectives:

Survival: Achieve break-even and positive cash flow.

Profit: Ensure revenue is more than total cost.

Sales: Achieve a target number of sales over a specific period.

Market Share: Capture a specific percentage of the market.

Financial Security: Build and maintain a reserve fund (money) in case it is needed in the future.

Non-Financial Aims:

Social Objectives: Implement socially responsible practices for example reducing use of plastic packaging, not testing on animals.

Personal Satisfaction: Set personal targets related to joy and satisfaction.

Challenge: Starting up a business is very challenging which some entrepreneurs will thrive on.

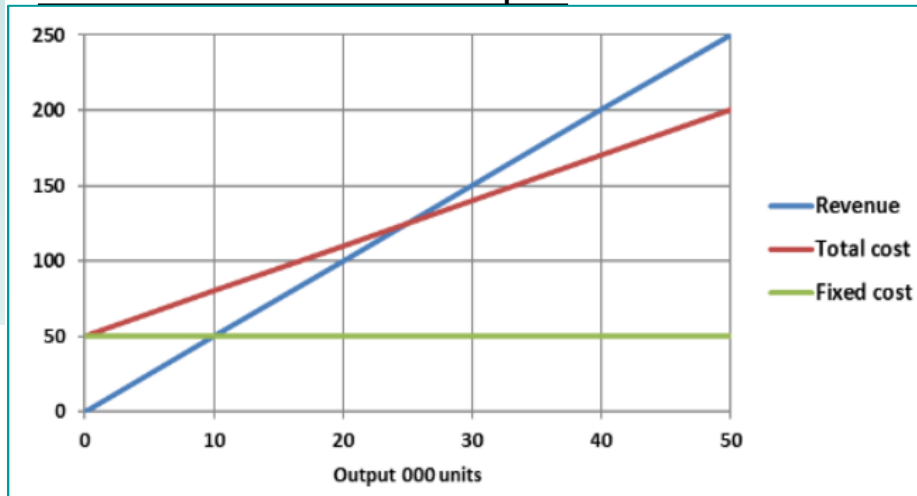
Independence and Control; being responsible for all the business decisions.

Reasons why aims and objectives differ between businesses:

Size and scale of a business: large established businesses may have the aim to dominate the market. Whereas, smaller businesses may focus instead on survival.

Ownership: Businesses with many shareholders may focus on profit. Whereas, a small sole trader may focus on independence and control.

Break Even Level of Output



Break Even Level of output refers to the amount of units that need to be sold to cover all the costs. In this example above, the break even level of output is 25 units as that is the point when the revenue is the same as the total costs.

Break even

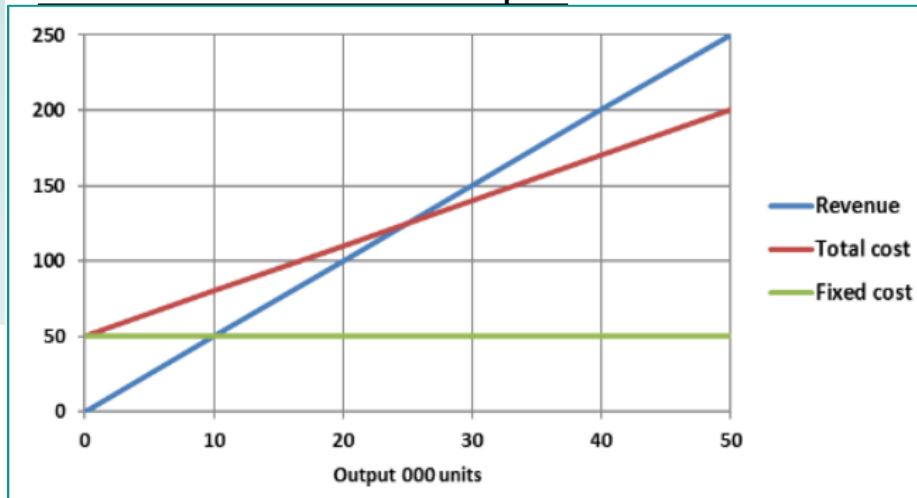
$$\text{Break even point in units} = \frac{\text{fixed cost}}{(\text{sales price} - \text{variable cost})}$$

$$\text{Break even point in costs / revenue} = \text{break even point in units} \times \text{sales price}$$

Business Aims and Objectives

Reasons why aims and objectives differ between businesses:

Break Even Level of Output



Break Even Level of output

Break even

$$\text{Break even point in units} = \frac{\text{fixed cost}}{(\text{sales price} - \text{variable cost})}$$

$$\text{Break even point in costs / revenue} = \text{break even point in units} \times \text{sales price}$$

Year 10 GCSE Business:

Margin of Safety is the difference between the break even level of output and the actual level of output. For example, if the actual output was 50 units sold and the break even point happened at 25 units sold, then the margin for safety would be $50 - 25 = 25$.

Margin of safety

Margin of safety = actual or budgeted sales - break even sales

Sources of Finance for Businesses:

Short-term Sources (need to be paid back relatively quickly):

	Description	Advantage	Disadvantage
Overdraft	Borrowing money from the bank beyond the account balance.	Provides flexibility to cover short-term cash flow gaps.	Interest rates can be high, making it an expensive option.
Trade Credit	Delaying payment to suppliers, extending the time to pay for goods or services.	Allows businesses to delay payments and manage cash flow.	May miss out on discounts that businesses who pay straight away may benefit from.

Interest paid on loans:

Interest (on loans)

Interest (on loans) in % = $\frac{\text{total repayment} - \text{borrowed amount}}{\text{borrowed amount}} \times 100$

The options available for a startup and small business

	What does it mean?	Advantages	Disadvantages
Limited Liability	Legal concept where the owners (shareholders or members) of a business entity are not personally responsible for the business's debts and liabilities.	Asset Protection: Owners' personal assets (homes, savings, etc.) are protected from business debts. This may mean they are more likely to take risks.	Complex Legal Requirements: Operating with limited liability often involves more complex legal processes.
Unlimited Liability	A situation where business owners (such as sole proprietors or general partners) are personally responsible for all of the business's debts and liabilities.	Simplicity: unlimited liability is simpler with less legal requirements to set up.	Personal Financial Risk: Owners risk personal assets, including savings and property, in the event of business debts or business failure.

Year 10 GCSE Business:

Margin of Safety

Margin of safety

Margin of safety = actual or budgeted sales – break even sales

Sources of Finance for Businesses:

Short-term Sources (need to be paid back relatively quickly):

	Description	Advantage	Disadvantage

Interest paid on loans:

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The options available for a startup and small business

	What does it mean?	Advantages	Disadvantages
Limited Liability			
Unlimited Liability			

Year 10 GCSE Business:

Long-term sources of finance (can be paid back over many years or never):

	Description	Advantage	Disadvantage
Personal Savings	Using personal funds to finance the business.	No interest or repayment requirements so fixed costs are not increased.	Limited by the individual's savings (you may not have any savings!)
Venture Capital	Investment from external investors in exchange for equity (shares in the business).	Don't need to pay it back.	Loss of some control and equity (shares) in the business.
Share Capital:	Raising funds by selling shares of the business.	Don't need to pay it back. No debt so keeps fixed costs low.	Loss of some control and equity (shares) in the business.
Loan Capital	Borrowing money from financial institutions (banks) and repaying with interest.	Access to large amounts of money quickly.	Interest payments increase fixed costs.
Retained Profit	Saving profits to be reinvested back into the business.	Uses profits for business growth without external borrowing.	Limited to the amount of profit available, this may delay business decisions.
Crowdfunding	Collecting small amounts of money from a large number of people online.	Nothing needs to be paid back meaning fixed costs are not increased.	Success depends on the ability to attract many investors.

Factors Influencing Business Location:

Choosing the right location is a critical decision for businesses. Several factors influence business location decisions:

- Proximity to Market - customers
- Proximity to labour - workers
- Proximity to materials and suppliers
- Proximity to competitors
- Nature of Business Activity

Marketing Mix:

The marketing mix, often referred to as the 4Ps, is a strategic framework that businesses use to plan and execute their marketing strategies effectively. It encompasses four key elements, each starting with the letter 'P':

Product

Price

Place

Promotion

Year 10 GCSE Business:

Long-term sources of finance (can be paid back over many years or never):

	Description	Advantage	Disadvantage
Personal Savings			
Venture Capital			
Share Capital:			
Loan Capital			
Retained Profit			
Crowdfunding			

Factors Influencing Business Location:

Marketing Mix:

Year 10 GCSE Business:

Types of business ownership	Advantages	Disadvantages
Sole Trader - A business owned and operated by a single individual.	The owner has complete control over business decisions, allowing for quick and flexible decision-making.	Unlimited Liability
Partnership - A business structure where two or more individuals share ownership and responsibilities.	Shared responsibility: Partners can share the workload and expertise, bringing diverse skills and resources to the business.	Unlimited Liability
Private Limited Company (LTD) - A business structure that is a separate legal entity from its owners (shareholders), offering limited liability.	Limited Liability – personal possessions of shareholders (owners) are not at risk to pay business debt.	Private limited companies face more complex legal and regulatory requirements, adding administrative burdens and costs.
Franchise - A business arrangement where one party (franchisor) grants another party (franchisee) the right to use its business model, brand, and support in exchange for fees and ongoing royalties.	Established brand so you have a ready-made customer base. Support from the franchisor.	Franchise fees are very expensive. Less independence as less autonomy to make decisions, e.g. what to sell.

Product Life Cycle Phase	What is happening in this phase?
Research and Development	Expensive phase whereby products are being designed. No revenue from sales. Lots of costs creating prototypes. Negative cash flow at this stage.
Introduction	The product is introduced to the market. Sales are typically low, and businesses focus on creating awareness through advertising (expensive). Competitors can now see your product.
Growth	The product sales begin to rise rapidly. Consumer acceptance increases. Businesses focus on expanding market share, enhancing product features, and building brand loyalty. Important that do not run out of stock at this stage.
Maturity	Stable sales and market saturation. Competition is intense, and businesses may differentiate their products through promotions, pricing strategies, or product variations.
Decline	Sales start to decline due to factors such as changing consumer preferences, technological advancements, or the introduction of newer products.

Product

Design Mix - The balance between three essential elements—Function, Aesthetics, and Cost—in the design and development of products or services. These elements play a crucial role in determining the success and appeal of a product in the market.

Function: focuses on how well a product or service fulfills its intended purpose.

Aesthetics: the product's appearance, style, and overall visual appeal.

Cost: the financial implications associated with the design and production of a product or service.

Product Life Cycle

The product life cycle is a concept that describes the stages a product goes through in the market, from its introduction to its eventual decline. Each stage has distinct characteristics and challenges

Year 10 GCSE Business:

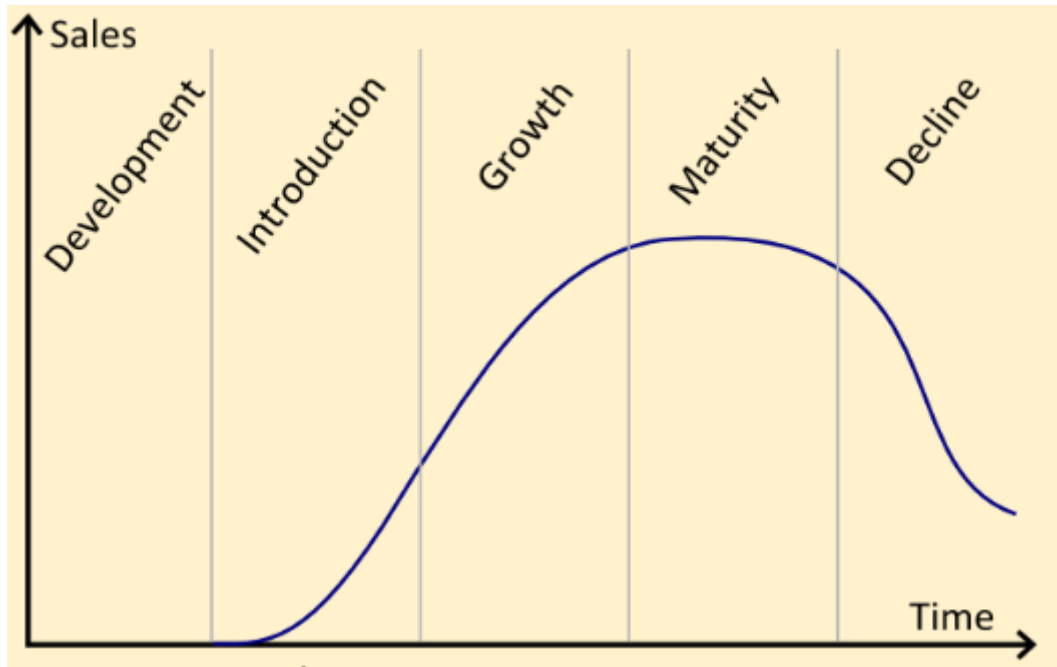
Types of business ownership	Advantages	Disadvantages

Product Life Cycle Phase	What is happening in this phase?
Research and Development	
Introduction	
Growth	
Maturity	
Decline	

Product

Product Life Cycle

Year 10 GCSE Business:



Extension

Used by a business to prolong the life of a product (prevent it from going into decline). Some common examples include:

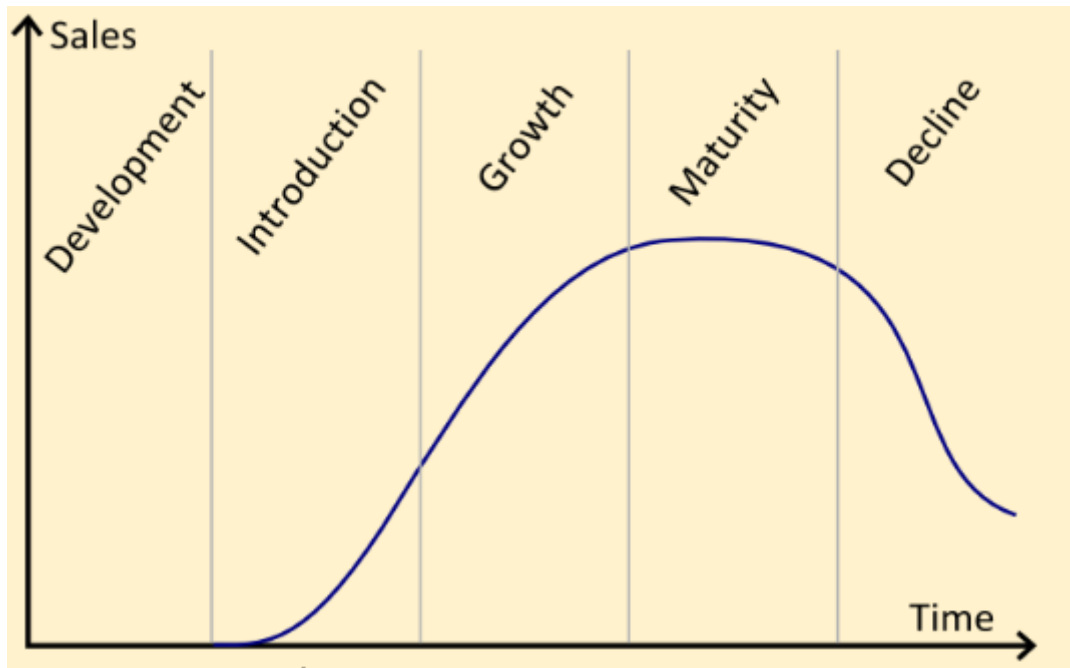
- Modifying the product (e.g. new flavours)
- Expanding the market (e.g. into neighbouring towns)
- Promotional Campaigns
- Price promotions
- Rebrand

Product differentiation - When a business tries to make their products or services stand out from those of their competitors.



Type of differentiation	Why it is important
Competitive advantage	Can lead to increased customer loyalty.
Brand identity	Contributes to the development of a strong brand identity.
Can charge a premium price to customers.	Can increase revenue.
Customer loyalty	If customers perceive a business as providing something special, they are more likely to remain loyal and make repeat purchases .

Extension



Product differentiation –



Type of differentiation	Why it is important

Year 10 GCSE Business:

Price

Pricing strategies are approaches businesses use to determine the price of their products or services. Some common pricing strategies:

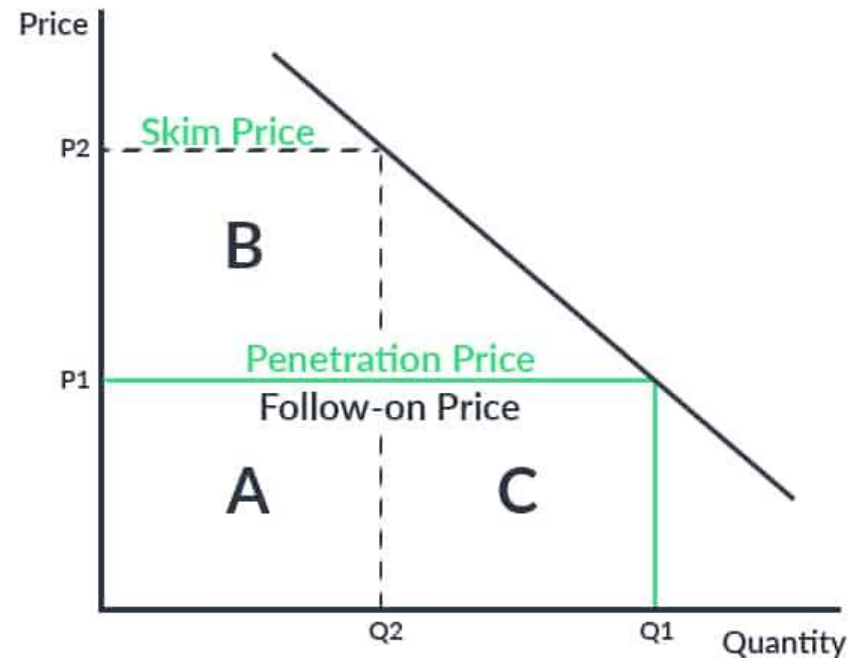


Type of pricing strategy	Description
Penetration pricing	A business sets a low initial price for a product to quickly gain market share. E.g. new brand of yoghurt.
Skimming pricing	Setting a high initial price for a product, targeting early adopters or customers willing to pay a premium. E.g iPhone.

Influences on Pricing Strategies:

Pricing decisions are influenced by various factors that shape a business's overall strategy. Here are key influences on pricing strategies:

Technology
Competition
Market segmentation
Product life cycle



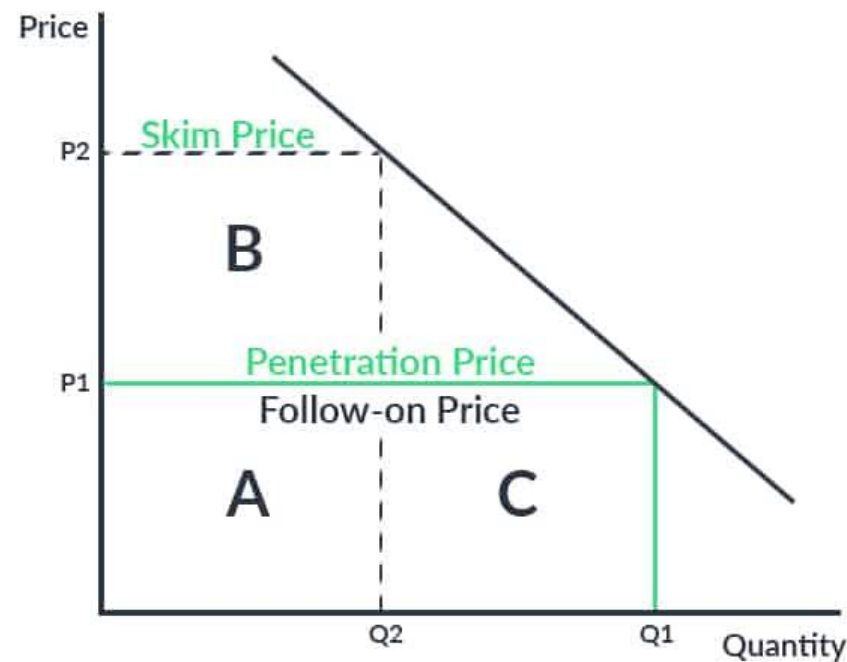
Year 10 GCSE Business:

Price



Influences on Pricing Strategies:

Type of pricing strategy	Description



Year 10: GCSE Computer Science

Python Programming Language Subset

Data Types

There are 4 data types used in the Python Programming Language:

- **Integer** – a whole number (e.g. 5, 71, -23)
- **Float / Real** – a number with a decimal place (e.g. 45.76, 3.1236, -56.1)
- **String** – a sequence of characters, that can contain text, symbols and numbers, that the computer is not expected to understand (e.g. "Fred", "The cat sat on the mat", "%£1234ABC")
- **Boolean** – a condition set to either True, or False.

Data type	PLS
integer	int
real	float
Boolean	bool
character	str

Structured data types

A structured data type is a sequence of items, which themselves are typed. Sequences start with an index of zero.

Data type	Explanation	PLS
string	A sequence of characters	str
array	A sequence of items with the same (homogeneous) data type	list
record	A sequence of items, usually of mixed (heterogenous) data types	list

Operators

Arithmetic operators

Arithmetic operator	Meaning
/	division
*	multiplication
**	exponentiation
+	addition
-	subtraction
//	integer division
%	modulus

Relational operators

Logical operator	Meaning
==	equal to
!=	not equal to
>	greater than
>=	greater than or equal to
<	less than
<=	less than or equal to

Logical/Boolean operators

Operator	Meaning
and	both sides of the test must be true to return true
or	either side of the test must be true to return true
not	inverts

Year 10: GCSE Computer Science

Python Programming Language Subset

Data Types

There are 4 data types used in the Python Programming Language:

- -
- -
- -
- -

Data type	PLS
integer	
real	
Boolean	
character	

Structured data types

A structured data type is a sequence of items, which themselves are typed. Sequences start with an index of zero.

Data type	Explanation	PLS
string		str
array		list
record		list

Operators

Arithmetic operators

Arithmetic operator	Meaning
/	
*	
**	
+	
-	
//	
%	

Relational operators

Logical operator	Meaning
==	
!=	
>	
>=	
<	
<=	

Logical/Boolean operators

Operator	Meaning
and	
or	
not	

Year 10: GCSE Computer Science

Programming Constructs

Assignment

Assignment is used to set or change the value of a variable.

```
<variable identifier> = <value>
```

```
<variable identifier> = <expression>
```

Variable Example:

```
1 name = "Fred"
```

Constants:

Constants are conventionally named in all uppercase characters .

```
1 ROOMS = 100
```

The value of a variable can change, if necessary, while a program is running, however the value of a constant will not change while a program is running.

Section

if <expression>: <command>	If <expression> is true, then command is executed.
if <expression>: <command> else: <command>	If <expression> is true, then first <command> is executed, otherwise second <command> is executed.
if <expression>: <command> elif <expression>: <command> else: <command>	If <expression> is true, then first <command> is executed, otherwise the second <expression> test is checked. If true, then second <command> is executed, otherwise third <command> is executed. Supports multiple instances of 'elif'. The 'else' is optional with the 'elif'.

```
1 age = int(input("How old are you? "))
2
3 if age < 4:
4     print("You don't need to go to school yet.")
5 elif age >= 4 and age < 11:
6     print("You are in primary school.")
7 elif age >= 11 and age < 16:
8     print("You need to go to high school.")
9 else:
10    print("You no longer need to go to school.")
```

Repetition

while <condition>: <command>	Pre-conditioned loop. This executes <command> while <condition> is true.
---------------------------------	--

Year 10: GCSE Computer Science

Programming Constructs

Assignment

Assignment is used to :

```
<variable identifier> = <value>
```

```
<variable identifier> = <expression>
```

Variable Example:

```
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```

Constants:

Constants are conventionally named in all

```
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Section

```
if <expression>:  
    <command>
```

If

```
if <expression>:  
    <command>  
else:  
    <command>
```

If

```
if <expression>:  
    <command>  
elif <expression>:  
    <command>  
else:  
    <command>
```

If

```
1 age = int(input("How old are you? "))  
2  
3 if age < 4:  
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7 elif age >= 11 and age < 16:  
8     print("You need to go to high school.")  
9 else:  
10    print("You no longer need to go to school.")
```

Repetition

```
while <condition>:  
    <command>
```


Year 10: GCSE Computer Science

Iteration

for <id> in <structure>: <command>	Executes <command> for each element of a data structure, in one dimension.
for <id> in range (<start>, <stop>): <command>	Count-controlled loop. Executes <command> a fixed number of times, based on the numbers generated by the range function. <stop> is required. <start> is optional.
for <id> in range (<start>, <stop>, <step>): <command>	Same as above, except that <step> influences the numbers generated by the range function. <stop> is required. <start> and <step> are optional.

Iteration Example 1:

The following example of iteration will store each item from the array in the 'name' variable in turn:

```
1 namesList = ["Tina", "Bob", "Jane", "Fred"]
2
3 for name in namesList:
4     print(name)
```

Iteration Example 2:

The following example of iteration will use the index variable as a counter, that will increase by +1 on each loop, starting at 0 and ending when the stop value is reached:

```
1 for index in range(0,11):
2     number = index * 4
3     print(index, "x 4 =", number)
```

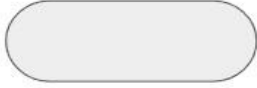
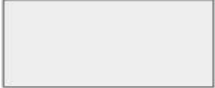
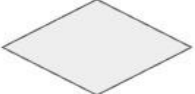
Inputs and Outputs

Screen and keyboard

print (<item>)	Displays <item> on the screen
input (<prompt>)	Displays <prompt> on the screen and returns the line typed in

```
1 school = input("What school do you go to? ")
2 print(school, "is a great school.")
```

Flowcharts

Symbol	Name	Function
	Start/Stop	Represents the beginning (start) and end (stop) of a program.
	Arrows	Connects the flowchart symbols together and defines the 'flow' of the program.
	Input/Output	Input of digital data or digital output such as on or off, or move forward or backward.
	Process	Pauses the processing of the flowchart for a given number of seconds.
	Decision	Creates a 'branch' in the program with two outcomes. True (yes) or False (no).

Year 10: GCSE Computer Science

Iteration

for <id> in <structure>: <command>	
for <id> in range (<start>, <stop>): <command>	
for <id> in range (<start>, <stop>, <step>): <command>	

Iteration Example 1:

The following example of iteration will store each item from the array in the 'name' variable in turn:

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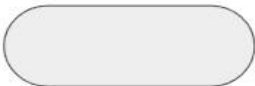
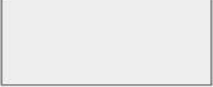
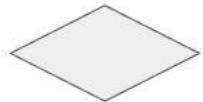
Inputs and Outputs

Screen and keyboard

print (<item>)	
input (<prompt>)	

```
1 school = input("What school do you go to? ")
2 print(school, "is a great school.")
```

Flowcharts

Symbol	Name	Function
	Start/Stop	
	Arrows	
	Input/Output	
	Process	
	Decision	



Flowchart Algorithm

Example:

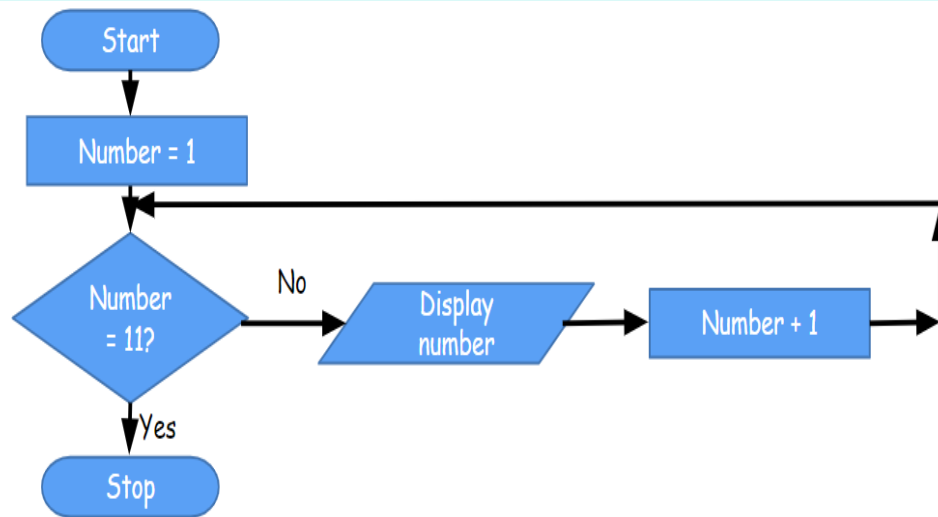
Written Description of the Problem:

Write an algorithm that will display the numbers 1 to 10 only.

Decomposed Problem:

- PROCESS: Set number to 1
- DECISION: Is number equal to 11?
- FALSE OUTPUT: Display number, number = number+1
- TRUE OUTPUT: Stop

Flowchart Algorithm:



1. State the names of the 4 data types used in the Python programming language and give examples. **Complete the table below.**

2. State the type of operator that the examples below belong to.

3. Write the code, in the box below, that would initialise a variable called 'num_1' and you should assign it any suitable **integer** value.

Year 10: GCSE Computer Science



Questions

4. Write the code, in the box below, that would initialise the **constant 'SIDES'** and assign it the integer value of 6.

5. Write the code, in the box below, using **selection** (an IF Statement), that will ask a user if it is raining, and if the response is yes, it will output the string "Take an umbrella.", and if the response is not yes, it should output the string "Enjoy the outdoors."

6. Write the code, in the box below, using **repetition** (a WHILE loop), that will output only the numbers from 10 down to 1 on separate lines.

7. Write the code, in the box below, using **iteration** (a FOR loop), that will output each of the strings in the array called animals below.

animals = ["Dog" , "Cat" , "Horse" , "Cow"]

8. Write the code, in the box below, using **iteration** (FOR loop), that will output the 8 times table from 1 x 8, up to 20 x 8.

Example output format:

1 x 8 = 8

2 x 8 = 16 etc...

9. Draw a flowchart that for the following **algorithm**

The user will be asked for two integers.

- If the numbers are the same, the algorithm should output "The numbers are equal."
- If the first number is greater than the second, the algorithm should output "The first number is greater than the second number"
- If the second number is greater, the algorithm should output "The second number is greater than the first number"

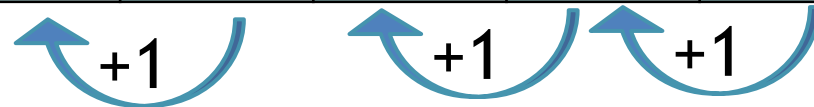
Year 10 GCSE Computer science:

Binary

128 64 32 16 8 4 2 1

Binary Addition

	128	64	32	16	8	4	2	1	
	1	0	1	0	1	1	0	0	= 172
+	0	0	1	0	1	1	1	1	= 47
Answer	1	1	0	1	1	0	1	1	= 219
Sub-Total			2		3	2			



Each binary column doubles in size as we move from right to left.

If the sub-total when adding units in a column is 2 you **leave a 0 behind** and **carry a 1** into the next column.

If the sub-total when adding units in a column is 3 you **leave a 1 behind** and **carry a 1** into the next column.

What range of numbers can be represented by 8 bits?

0 - 255

How many bits in a nibble?

4

How many different values can be represented with 8 bits?

256

Year 10 GCSE Computer science:

What range of numbers can be represented by 8 bits?	
---	--

How many bits in a nibble?	
How many different values can be represented with 8 bits?	

Binary

128 64 32 16 8 4 2 1

Binary Addition

Denary to Binary

	128	64	32	16	8	4	2	1
162 =	1	0	1	0	0	0	1	0
	162-128 = 34		34 - 32 = 2				2 - 2 = 0	
247 =	1	1	1	1	0	1	1	1
	247 - 128 = 119	119 - 64 = 55	55 - 32 = 23	23 - 16 = 7		7 - 4 = 3	3 - 2 = 1	1 - 1 = 0

Binary to Denary

128	64	32	16	8	4	2	1	
1	0	0	0	1	1	0	1	= 141
128				128+8 = 136	136+4 = 140		140+1 = 141	
0	1	1	1	0	0	0	1	= 113
	64	64+32 = 96	96+16 = 112				112+1 = 113	

Denary to Binary

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

--	--	--	--	--	--	--	--	--

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Binary to Denary

--	--	--	--	--	--	--	--

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--	--	--	--	--	--	--	--	--

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--	--	--	--	--	--	--	--	--

Year 10 GCSE Computer science:

Overflow Error:

An overflow error is where the result of a binary calculation is too big for the location it is to be stored in. In the example below there is only an 8-bit storage location however the result of the calculation requires 9 bits to contain it:

	1	1	1	0	0	1	1	1
	1	0	0	0	0	0	0	1
1	0	1	1	0	1	0	0	0

This means that any following calculations, which rely upon this result, will also be incorrect.

Hexadecimal Digits

Hexadecimal Conversion:

Decimal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hex	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

Hexadecimal is a Base 16 number system, which uses the same 0 – 9 digits as our usual decimal number system, however to represent 10 – 15 the letters A – F are used.

Hexadecimal is shorthand for binary and is much easier for programmers to use than 1s and 0s

Hexadecimal Digits

Two's Complement (Representing Negative Numbers)

Denary	Two's complement binary number
-20	(Positive) +20 = 0001 0100 (Negative) -20 = 1110 1100

With Two's Complement a **Negative** number is represented by finding the furthest **1** to the right of the **Positive** 8-bit binary value (*in the example above this is the 3rd digit from the right*) and reverse all the values to the left of this furthest **1** to the right (*See above example for +20 and -20*).

Logical Shift

When performing a Logical shift to the left (to multiply), or to the right (to divide), simply insert '0' into the new space/s.

Left-shift	0 0 0 1 0 1 1 1	(decimal 23)
=	0 0 1 0 1 1 1 0 ← 0	(decimal 46)
Right-shift	0 0 0 1 0 1 1 1	(decimal 23)
=	0 0 0 0 1 0 1 1	(decimal 11)

This has the effect of multiplying by 2.

A new 0 is shifted in.

This has the effect of dividing by 2.

In a logical shift a 0 is **always** inserted.

Two's Complement (Representing Negative Numbers)

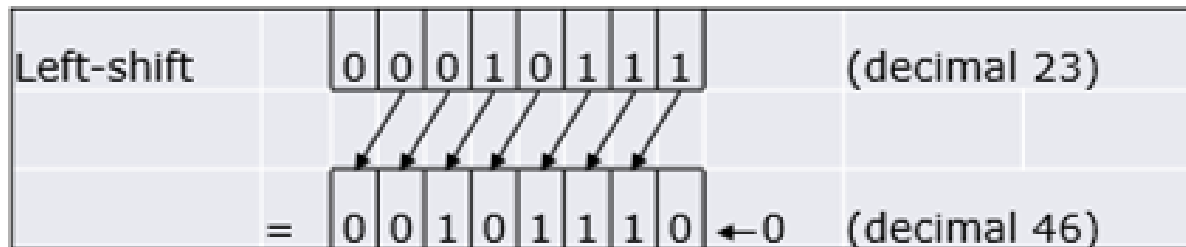
Denary	Two's complement binary number

Left-shift	<table><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td></tr></table>	0	0	0	1	0	1	1	1	(decimal 23)
0	0	0	1	0	1	1	1			
										
=	<table><tr><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr></table> ← 0	0	0	1	0	1	1	1	0	(decimal 46)
0	0	1	0	1	1	1	0			

Right-shift	<table><tr><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td></tr></table>	0	0	0	1	0	1	1	1	(decimal 23)
0	0	0	1	0	1	1	1			
										
=	<table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td></tr></table>	0	0	0	0	1	0	1	1	(decimal 11)
0	0	0	0	1	0	1	1			

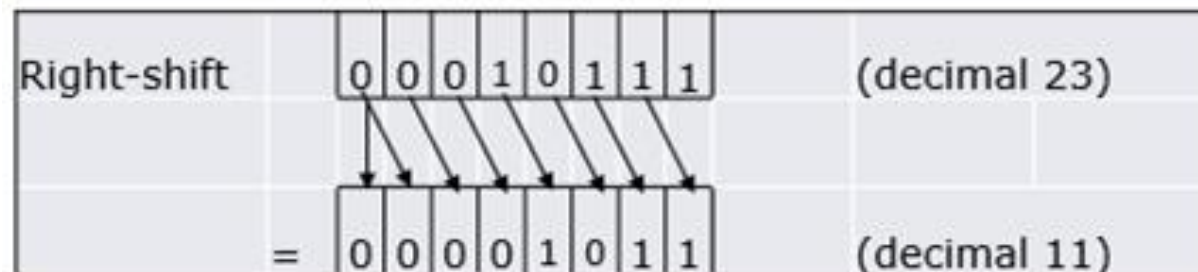
Arithmetic Shift

Arithmetic shifts are used for multiplying Two's Complement signed binary integers, therefore when performing a right shift (***to divide the binary value***), it is important that the value of the 8th bit (***furthest to the left***) is inserted into the new space/s because this will determine whether the number is a positive or negative integer



This has the effect of multiplying by 2.

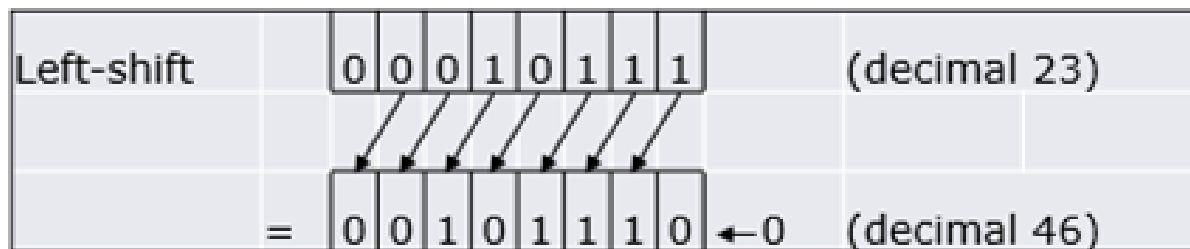
A new 0 is shifted in.



This has the effect of dividing by 2.

The MSB value is **always** maintained; in this example a 0 is inserted.

Arithmetic Shift



How Bitmap Images are Represented in Binary

Colour Depth indicates the number of bits used to represent the colour of a picture element. The higher the number of bits used, the greater the range of colours.

Each pixel will have location (x, y, coordinates) bits and colour bits.

With two colour bits per pixel you can have 4 colours, with 32 colour bits (256 Reds, 256 Blues and 256 Greens) you can have over 16M colours

ASCII	Unicode
The ASCII character set is the standard 7-bit binary encoding for the letters, numbers and symbols that computers use (<i>extended ASCII character set uses 8-bit binary</i>). ASCII allows for 256 unique characters (due to 8-bit codes) e.g. 0 - 255	Unicode is an alternate standard for encoding letters, numbers and symbols, which uses 16-bit binary encoding. Unicode allows for 65536 unique characters (due to 16-bit codes) Unicode allows for a great deal more characters and symbols than ASCII, due to the fact it uses twice the number of bits.

The **resolution** of an image is based on the number of elements used to represent the full image. The higher the number of elements for a given size, the better the quality of the image (PPI – pixels per square inch).

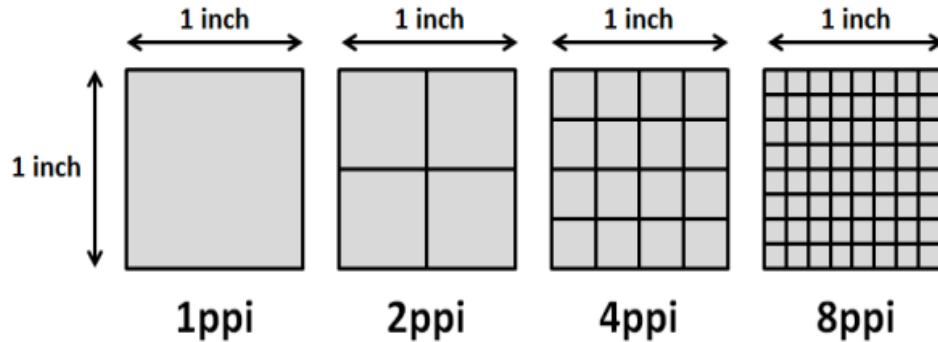
Bitmap images are made up of **Pixels**, which are the smallest elements of a bit-mapped image and the smallest element that can be displayed on a screen.

How Bitmap Images are Represented in Binary

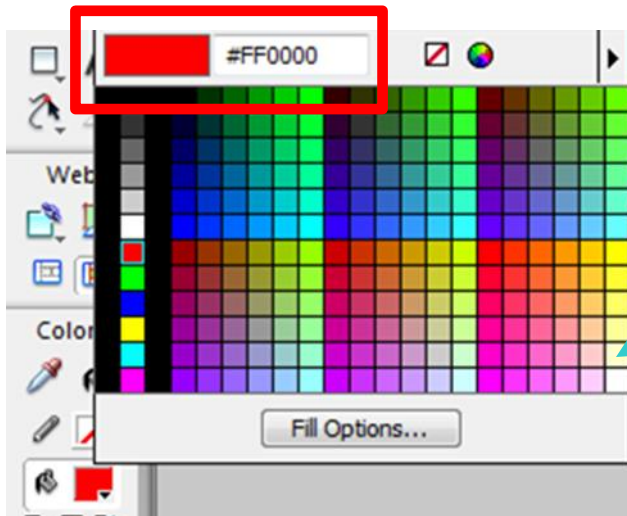
ASCII

Unicode

Pixels per inch



The more pixels there are, the sharper and clearer the image will be (but remember the more pixels there are, the bigger the file size too)



Colour Depth

With 1 bit colour depth we can represent 2 colours (Black and White)

The 3 Primary colours used in computer programs are Red Green and Blue

Highest Red = FF0000

Highest Green = 00FF00

Highest Blue = 0000FF

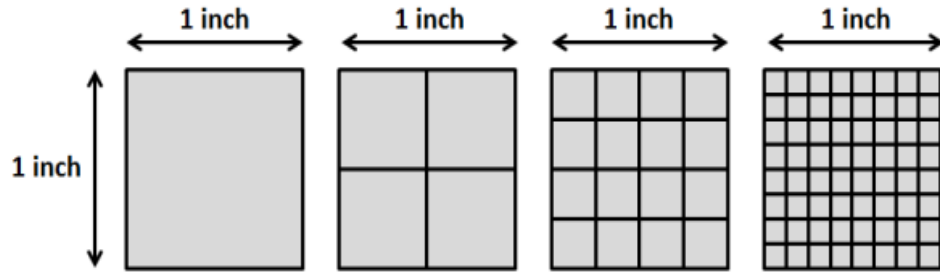
Many programs use 256 (0-255) different shades of Red, Green and Blue

By combining these colours other colours can be created

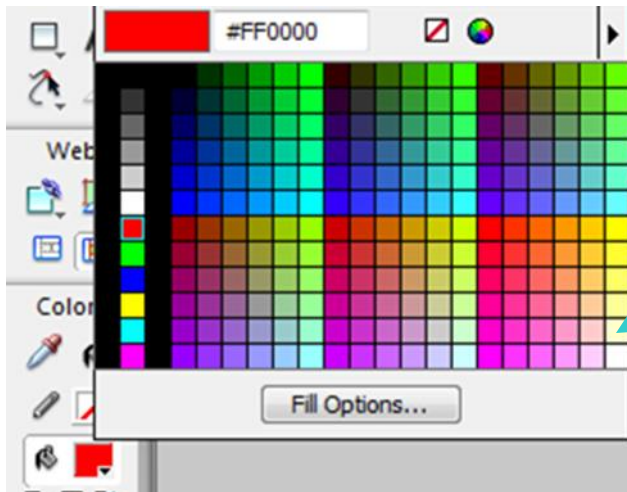
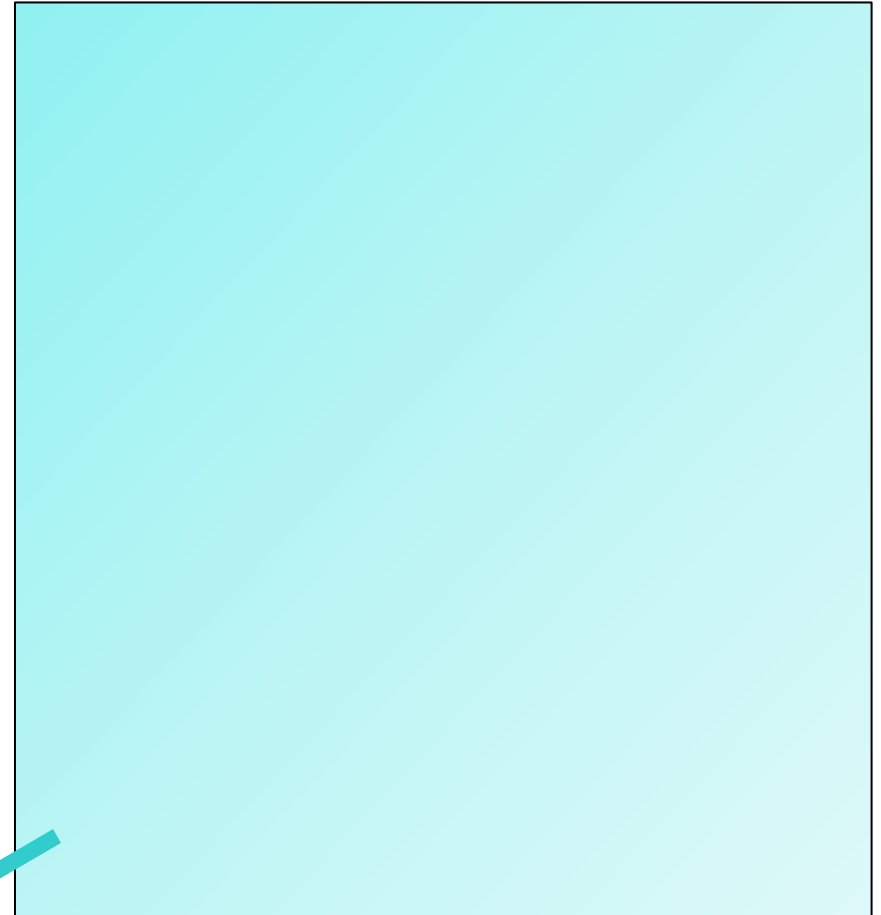
$256 \times 256 \times 256 = 16,777,216$ colours

This is why computer manufacturers say "Over 16 Million Colours"

Pixels per inch

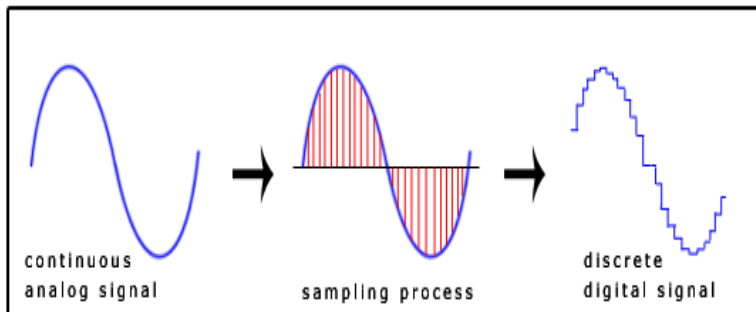
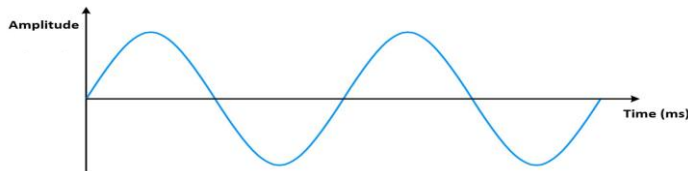


Colour Depth



Analogue to digital

Sound is analogue, a process of digitisation is needed to convert it to a series of binary numbers.



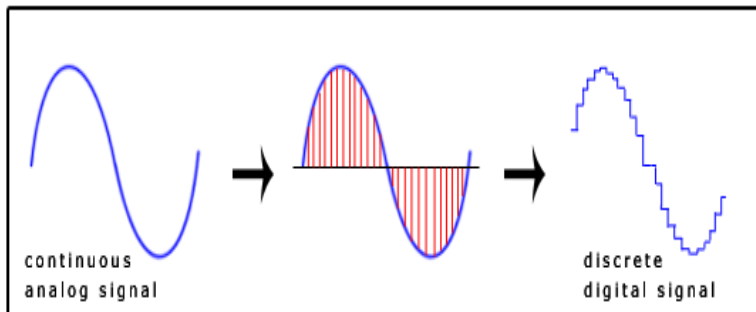
Samples taken at evenly spaced time intervals (fractions of a second) and represented as numerical values. The sampling rate is the number of samples taken per second and is measured in hertz (Hz). A CD-quality recording has a sampling rate of 44 KHz, which means that the sound is sampled 44,000 times a second.

The more bits (**bit depth**) dedicated to representing the sample the better the sound reproduction. 16 bits provide 65,536 possible levels of measurement, as compared to 8 bits, which provide only 256 levels of measurement.

Sample rate and bit depth determine the smoothness and accuracy of the reproduction. However, the higher the quality of the sound, the larger the file size. Sound files are often compressed to reduce the size.



Analogue to digital



Storage Measurement – Bits and Bytes

0 or 1	=	1 Bit(Binary Digit)
4 Bits	=	a 'nibble'
8 Bits	=	1 Byte
1024 Bytes	=	1 Kibibyte (KiB)
1024 Kibibytes =		1 Mebibyte (MiB)
1024 Mebibytes	=	1 Gibibyte (GiB)
1024 Gibibytes=		1 Tebibyte (TiB)

Units of measurement

Formula for the number of bytes

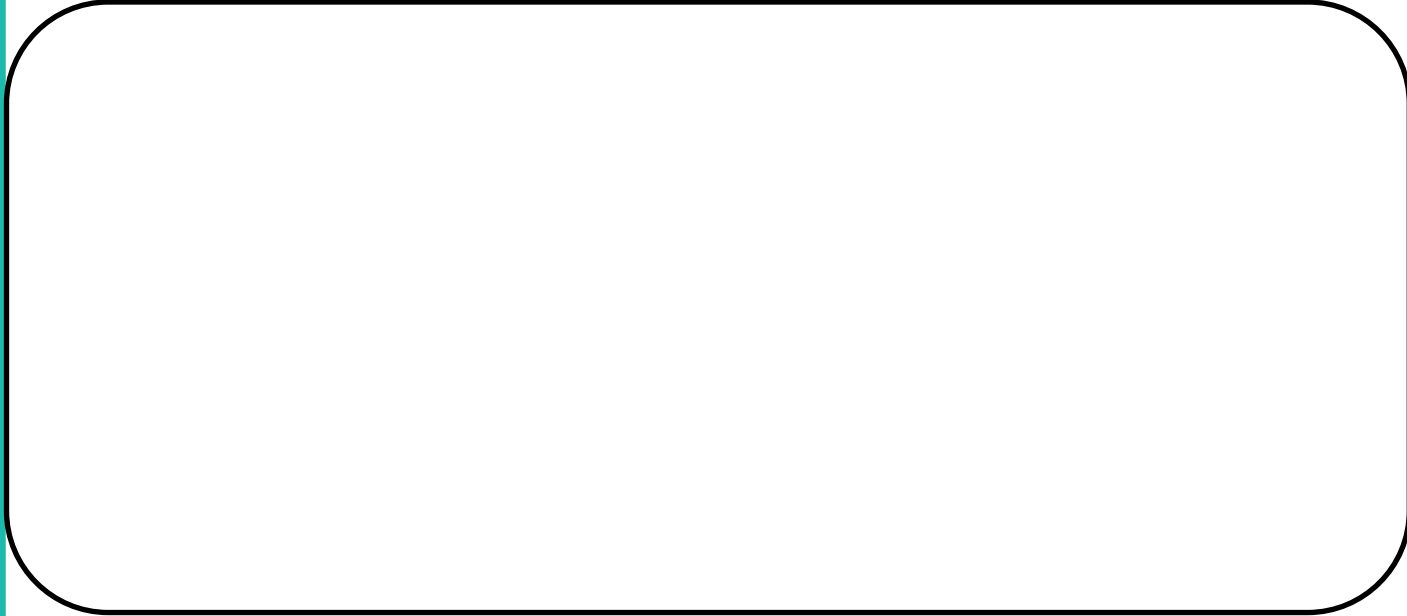
1 kibibyte (KB) = 1024 bytes 1024

1 mebibyte (MB) = 1024 kibibytes 1024 x 1024 or 1024^2

1 gibibyte (GB) = 1024 mebibytes 1024 x 1024 x 1024 or 1024^3

1 tebibyte(TB) = 1024 gibibytes 1024 x 1024 x 1024 x 1024 or 1024^4

Storage Measurement – Bits and Bytes



Units of measurement

Data Storage Measurement – Bits and Bytes

0 or 1	=	1 Bit(Binary Digit)
4 Bits	=	a 'nibble'
8 Bits	=	1 Byte
1024 Bytes	=	1 Kibibyte (KiB)
1024 Kibibytes	=	1 Mebibyte (MiB)
1024 Mebibytes	=	1 Gibibyte (GiB)
1024 Gibibytes	=	1 Tebibyte (TiB)

Units of storage measurements

Data compression

Bitmaps, audio and video files can be very large, compressing data reduces its file size.

Data Transfer - Compression makes data transfer across networks much faster (*less bandwidth required*) .

Data Storage – Compression reduces the amount of storage space needed for files (*saves local storage on digital devices*)

Units of measurement	
	Formula for the number of bytes
1 kibibyte (KB) = 1024 bytes	1024
1 mebibyte (MB) = 1024 kibibytes	1024 x 1024 or 1024 ²
1 gibibyte (GB) = 1024 mebibytes	1024 x 1024 x 1024 or 1024 ³
1 tebibyte(TB) = 1024 gibibytes	1024 x 1024 x 1024 x 1024 or 1024 ⁴

Data Storage Measurement – Bits and Bytes



Data compression

Units of storage measurements

Units of measurement	
	Formula for the number of bytes

Lossless and Lossy compression methods

There are two types of compression **Lossy** and **Lossless**:

Lossless compression techniques do not remove any of the original data from the image, audio, or video file being compressed, meaning it retains the original quality.

Lossy compression techniques permanently remove some of the data from the original image, audio or video file, meaning it may not retain the original quality. **JPEG and MP3 are examples of lossy compression.**

Lossy file compression types

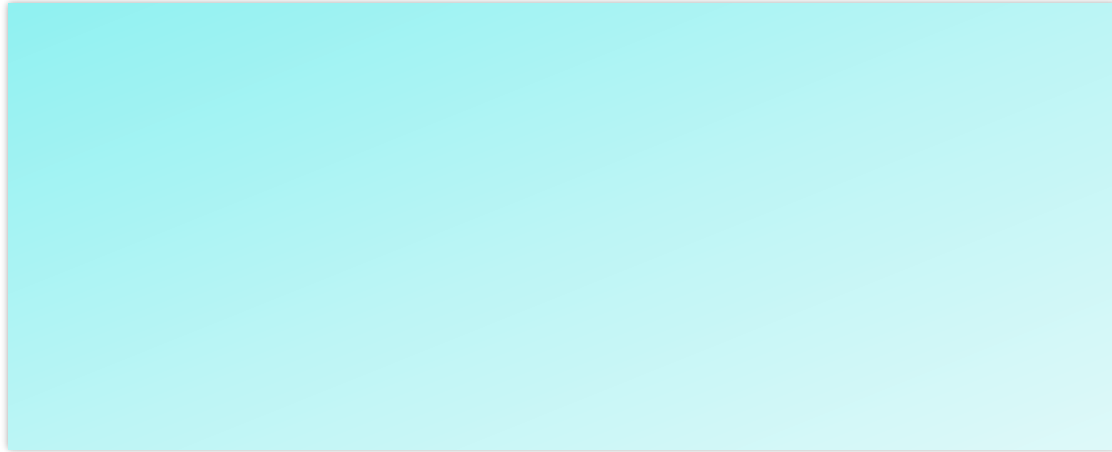
- **Lossy compression methods remove some of the data from an image to compress it even further and reduce the file size of the image.**
- **Lossy compressed files do not have the same detail as the original and can lose some of the quality.**
- **Standard JPEG (.jpg) images are a method of Lossy Compression.**
- **There is an obvious reduction in the image quality, of the chicken on the right, when the size is increased.**

Lossless file compression types

- **Lossless file compression does not remove any of the data from a file when it is compressed, these file types can have quite large file sizes.**
- **Run-Length Encoding (RLE) is a Lossless File Compression Method.**
- **GIF (.gif) images are also a method of Lossless Compression.**



Lossless and Lossy compression methods



Lossless file compression types



Lossy file compression types



Data storage and data transmission

- Data **storage** is measured in Bytes
- Data **transmission** is measured in bits per second (bps)
- **Transfer Time = Number of bits / BPS**
- e.g. a data file of 2MiB will take 16 seconds to download on an 8Mbps network connection (because there are 8 bits in a byte)
- **Number of bits** = $1024 \times 1024 \times 8 \times 2$
- **Bits per second** = $8 \times 1000,000$



Data storage and data transmission



Media Research Methods

Quantitative data: data collected in the form of numbers, statistics. Large amounts can be easily analysed.

Qualitative data: data collected in the form of people’s thoughts and opinions. Gain deeper insights into reasons for choices but much harder to analyse.

Research Methods

Primary Research Methods:

- 1. **Observations:** Actively observing media products and audience behaviours. Example: , monitoring viewers' reactions to a film or watching how people interact with a website interface.
- 2. **Discussions:** Engaging in conversations with peers to gather a range of different perspectives and insights on media-related topics. Example: discussion on the impact of social media on youth culture.
- 3. **Interviews:** Conducting one-on-one or group interviews with target audience members to gain in-depth information about their views and perspectives. Example: asking viewers about their media consumption habits.
- 4. **Surveys:** Using questionnaires or online surveys to collect quantitative data from a large number of respondents. Example: surveying viewers about their favourite TV shows and reasons for watching.
- 5. **Focus groups:** Bringing together a small group of individuals to participate in a guided discussion. Example: gather feedback from the audience about their specific thoughts and feelings about a new TV show.

Secondary Research Methods:

- 1. **Television:** You can watch TV shows or interviews about the media product to understand its production process and the intentions of the creators.
- 2. **Magazines:** You can read magazine articles or interviews with the creators or critics to gain insights and opinions about the media product.
- 3. **Films:** You can watch documentaries or behind-the-scenes features about the making of the media product to learn about its impact and techniques used.
- 4. **Internet:** You can search for online reviews, analysis, or fan discussions to gather different perspectives and opinions on the media product.
- 5. **Books:** You can read books written by experts or scholars that analyse similar media products or explore relevant theories and concepts to gain a deeper understanding and context for your analysis.

Year 10: BTEC Media

Research Methods

Media Research Methods

Type of research	What are the advantages?	What are the disadvantages?
Primary New information, collected first-hand.	• - • - • - • -	• - • -
Secondary Information that already exists as it has been collected by someone else.	• - • -	• - • - • -

What is quantitative data?

What is qualitative data?

Primary Research Methods:

1. What are observations?
2. What are discussions?
3. What are interviews?
4. What are surveys?
5. What are focus groups?

Secondary Research Methods:

1. How can television be used as a method?
2. How can magazines be used?:
3. How are films used?
4. How can the Internet be used as research?
5. How can books be used?

Year 10: BTEC Media



Decoding meaning in media products

Semiotics	The study of signs and symbols and what they mean.
Denotation	The basic or literal meaning of a sign or symbol, what it directly represents. The denotation of a rose is a type of flower with petals, thorns, and a pleasant fragrance.
Connotation	all the extra feelings and ideas (hidden meanings) we connect to a sign or symbol. Example: The connotation of a dove often represents peace and purity due to its association with those concepts in various cultures.
Signs	Used to communicate ideas, concepts, or messages.
Symbols	Special signs with extra meanings.
Signifiers	Things we see or hear that carry the meaning of signs or symbols.
Encoding	When someone creates meaning and attaches messages to signs, like a filmmaker making a movie with a message. Example: Imagine you and your friends are making a funny video together. Each of you decides on the jokes, actions, and expressions to use, which is like encoding your own unique funny message into the video.
Decoding	When people interpret or understand the messages and meanings in signs or media. Example: when you watch a film or TV show you may pick up on the characters emotions or actions which helps you understand what is happening in the story more easily.
Anchorage	Using words or other visuals to guide how we interpret an image or media, like a caption giving more information. Example: A caption accompanying a photograph clarifying the context or providing additional information about the image.
Polysemy	Signs or symbols can have many different meanings or interpretations. Example: The word "bank" can have multiple meanings, such as a financial institution or the edge of a river.
Intertextuality	When texts (like stories or movies) are connected to each other and have references or ideas from other texts, making the meaning more interesting and complex. Example: the movie "Shrek" containing references and parodies of classic fairy tales like Cinderella, Snow White, and Pinocchio to add depth and humour to the story.

Year 10: BTEC Media



Decoding meaning in media products

What is semiotics ?	
Define denotation	
Define connotation	
What do signs do?	
What are symbols ?	
What are signifiers ?	
What is encoding ?	
What is decoding ?	
What does anchorage mean?	
What does polysemy mean?	
What is intertextuality ?	

Year 10: BTEC Media

Purpose of Media Products

Media products, such as movies, TV shows, advertisements, and articles will have different purposes. The purpose is simply **'the point'** of the media product. The reason why it was created.



Call to Action	Encouraging the audience to take specific actions or make a change. Examples: Campaigns urging people to recycle, volunteer, or support a cause	To Recount	Sharing personal experiences or stories. Examples: Autobiographies, personal blogs, or vlogs.
To Shock	Provoking strong emotional reactions, often to draw attention or create a memorable impact. Examples: News stories highlighting shocking events or horror movies aiming to scare viewers.	To Describe	Providing detailed information about a person, place, or object. Examples: Travel guides, product reviews, or descriptive articles.
To persuade	Convincing the audience to adopt a particular viewpoint or belief. Examples: Political speeches, advertisements promoting a product or service, or opinion articles.	To Inform	Presenting facts, news, or updates to keep the audience knowledgeable. Examples: News articles, weather reports, or educational websites.
To Argue	Presenting different perspectives on a topic and providing evidence to support a particular viewpoint. Examples: Debates, documentaries exploring controversial issues, or opinion pieces.	To Encourage	Motivating the audience to pursue goals, self-improvement, or positive actions. Examples: Inspirational speeches, self-help books, or motivational videos.
To Explain	Clarifying complex concepts or providing step-by-step instructions. Examples: Educational videos, science documentaries, or instructional articles.	To Raise Awareness	Drawing attention to social, environmental, or health issues. Examples: Public service announcements, documentaries on climate change, or charity campaigns.
To Advertise	Promoting a product, service, or event to encourage the audience to purchase or participate. Examples: TV commercials, online banners, or social media posts promoting a new movie release.	To Intrigue	Engaging the audience's curiosity and keeping them interested. Examples: Mystery novels, movie trailers, or cliff-hanger TV series.
To Document	Capturing real events, people, or places for historical or informational purposes. Examples: News reports, historical documentaries, or photojournalism.	To Entertain	Providing enjoyment, relaxation, or amusement. Examples: Movies, TV shows, music, or online games.
		To Instruct	Teaching or imparting knowledge and skills. Examples: How-to videos, DIY articles, or cooking recipes.

Year 10: BTEC Media

Purpose of Media Products- Complete below:

Media products, such as movies, TV shows, advertisements, and articles will have different purposes. The purpose is simply **'the point'** of the media product. The reason why it was created.



Call to Action		To Recount	
To Shock		To Describe	
To persuade		To Inform	
To Argue		To Encourage	
To Explain		To Raise Awareness	
To Advertise		To Intrigue	
To Document		To Entertain	
		To Instruct	

Year 10: BTEC Media

Codes and Conventions

- **Codes:** Systems of signs and symbols used in media to convey meaning.
- **Conventions:** Established practices or techniques that are commonly used and expected by the audience. Example: A horror film has spooky music and scary characters. A magazine always has a big cover image and a masthead at the top.

Understanding the codes and conventions in media helps us interpret and understand messages effectively. These can include visual cues, storytelling techniques, camera angles, sound effects, and more. Example: you can often tell you are watching a certain genre of film within the first few minutes simply by observing visual clues, music and the types of characters.

1. What is the purpose of media products that aim to "raise awareness"? Provide an example.

The purpose of media products that aim to raise awareness is to draw attention to social, environmental, or health issues. They seek to inform and educate the audience about important topics. An example could be a documentary on the impact of plastic pollution on marine life, urging viewers to take action to protect the oceans.

2. Explain the meaning of "codes and conventions" in the context of media.

Codes are systems of signs and symbols used in media to convey meaning, while conventions are established practices or techniques that are commonly used and expected by the audience. Codes and conventions help shape the way messages are communicated in media, including visual cues, storytelling techniques, camera angles, sound effects, and more.

Media Producers

Types of media producers:

- **Media conglomerates:** Large corporations that own multiple media outlets and have control over various aspects of the industry. Examples: Comcast Corporation, News Corp
- **Public service broadcasters:** Organisations funded by public resources, with a mandate to provide educational, informative, and culturally enriching content. Examples: BBC, Channel 4
- **Independent media producers:** Small-scale or individual creators who produce media outside of major corporate structures. Example: A24 is an American independent entertainment company that specialises in film and television production, as well as film distribution, based in Manhattan, New York City.
- **Community media organisations:** Non-profit or volunteer-based initiatives that focus on serving local communities and promoting community participation. Example: Radio Regan has been on the air in the Manchester area since 1999. The organisation operates 3 full time community radio stations and provides training opportunities for the areas young people and people from disadvantaged areas.



Year 10: BTEC Media

Codes and Conventions

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1. What is the purpose of media products that aim to "raise awareness"? Provide an example.

2. Explain the meaning of "codes and conventions" in the context of media.

Media Producers

Types of media producers (describe below):

- **Media conglomerates:**
- **Public service broadcasters:**
- **Independent media producers:**
- **Community media organisations:**



Year 10: BTEC Media

Ethos/aims of the media producer:

The ethos/aims of a media producer refers to their guiding principles and values that shape their approach to content creation.
This can include a commitment to:

Quality	Media producers who prioritise quality aim to create content that is well-made, engaging, and of high standards, like a filmmaker who focuses on making movies that look and sound amazing.
Diversity	Media producers committed to diversity make sure that their content represents different cultures, backgrounds, and perspectives, like a TV show that includes characters from various ethnicities and tells stories about people from different walks of life.
Inclusivity	Inclusive media producers strive to make their content accessible and relatable to a wide range of people, like a website that provides closed captions or subtitles for people who are deaf or hard of hearing.
Impartiality	Media producers aiming for impartiality present information or stories without taking sides or being biased, like a news outlet that provides different viewpoints on a topic and lets viewers form their own opinions.
Accessibility	Media producers focused on accessibility make sure their content can be easily accessed by everyone, including people with disabilities, like a website that is designed to be easy to navigate and provides options for larger text or audio descriptions.
Innovation	Innovative media producers come up with new and creative ideas to make their content exciting and fresh, like a video game that uses virtual reality technology or a movie with ground-breaking special effects.

How media products fulfil their purpose:

- **Production values:** The use of technologies, costs of production, and style/design contribute to the overall quality and visual/audio experience of a media product.
- **Participants:** Actors, presenters, hosts, directors, and contributors play vital roles in bringing the content to life.
- **Content:** Storylines, characters, featured people, articles, artwork, or gameplay are elements that engage the audience and convey the intended message or experience.
- **Synergy and marketing:** Cross-media links, connections with other media products, and promotional campaigns help reach a wider audience and create buzz.
- **Distribution:** Media products are delivered through various platforms, such as television, cinema, radio, streaming services, or websites.



Year 10: BTEC Media

Ethos/aims of the media producer:	
The ethos/aims of a media producer refers to their guiding principles and values that shape their approach to content creation. Define the principles/values below:	
Quality	
Diversity	
Inclusivity	
Impartiality	
Accessibility	
Innovation	

Explain how these media products fulfil their purpose:

- Production values:
- Participants:
- Content:
- Synergy and marketing:
- Distribution:



Year 10: BTEC Media

Audience Participation

Audience interpretation refers to the process by which individuals understand and make sense of media messages or content. It involves how individuals perceive, analyse, and assign meaning to the information they receive from various media sources such as television, films, newspapers, social media, etc. Audience interpretation is influenced by several factors:

- **Demographics:** involve characteristics that define audience segments, including age, gender, family status, ethnicity, and socio-economic scale (A, B, C1, C2, D, E). These factors provide insights into the composition and diversity of audiences.
- **Psychometric Audience Profile:** considers how individuals think and examines their values, attitudes, and lifestyles (VALs). The Young and Rubicam 4Cs model categorises audiences into different segments:

The Aspirer	Are driven by the desire for success, status, and recognition. They strive to achieve their goals and often seek products and media that align with their aspirations.
The Explorer	Are curious, adventurous, and open to new experiences. They actively seek out unique and innovative content, enjoying variety and novelty in their media consumption
The Mainstreamer	Value tradition, conformity, and maintaining social norms. They are likely to engage with popular, widely accepted media products that align with mainstream cultural values.
The Reformer	Are socially and environmentally conscious. They prioritise social change, justice, and equality. They are drawn to media that reflects their values and supports causes they believe in.
The Resigned	Individuals often feel disempowered or marginalised. They may have a negative outlook and may engage with media products that reflect their frustrations or provide an escape from their realities.
The Struggler	Face financial and personal challenges, often living in economically deprived conditions. They may seek media products that offer practical solutions, inspiration, or a sense of hope.
The Succeeder	Have achieved success and are financially secure. They may engage with media that reinforces their achievements, offers luxury and high-quality experiences, or appeals to their refined tastes.

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Audience Participation- Define the types below:

Audience interpretation refers to the process by which individuals understand and make sense of media messages or content. It involves how individuals perceive, analyse, and assign meaning to the information they receive from various media sources such as television, films, newspapers, social media, etc. Audience interpretation is influenced by several factors:

- **Demographics:** involve characteristics that define audience segments, including age, gender, family status, ethnicity, and socio-economic scale (A, B, C1, C2, D, E). These factors provide insights into the composition and diversity of audiences.
- **Psychometric Audience Profile:** considers how individuals think and examines their values, attitudes, and lifestyles (VALs). The Young and Rubicam 4Cs model categorises audiences into different segments:

The Aspirer	
The Explorer	
The Mainstreamer	
The Reformer	
The Resigned	
The Struggler	
The Succeeder	

Year 10: BTEC Media

Audience Types

Mass Audience	A large and diverse audience consuming media products without specific targeting.
Specialised Audience	A smaller, niche audience with specific interests or characteristics
Target/Main Audience	The primary intended audience for a media product.
Secondary Audience	Audiences beyond the primary target, who may also engage with the product.
Tertiary Audience	Audiences further removed from the primary target, but still potentially exposed to the product.

Audience Theories:

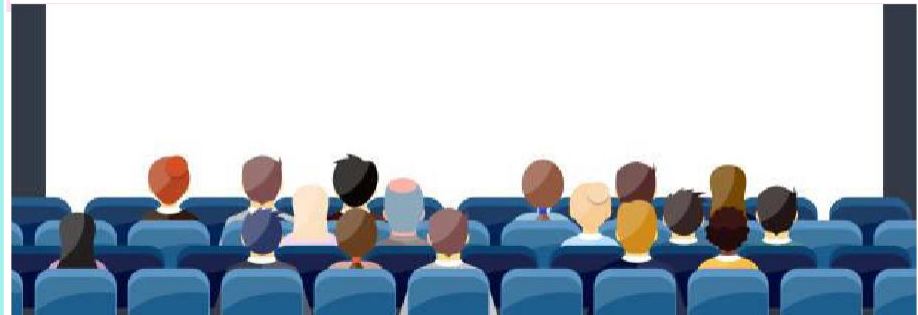
Passive Audience Theory: The hypodermic needle model and media effects theory suggest that audiences can be directly influenced by the media, absorbing messages without critical thought.

Stuart Hall's Reception Theory: Recognizes that media producers encode preferred readings into products, but audiences respond differently. Reception theory identifies three different modes of audience response:

- **Dominant/Preferred Reading:** Some audiences interpret media products in line with the intended message of the producer. They accept and reinforce the dominant or preferred meaning encoded in the media text.
- **Negotiated Reading:** Other audiences negotiate their interpretation of media products, combining elements of agreement and resistance. They acknowledge some aspects of the intended message but also bring their own perspectives and values into the interpretation.
- **Oppositional Reading:** Certain audiences interpret media products in direct opposition to the intended message of the producer. They reject or challenge the dominant meaning encoded in the media text, bringing their own alternative interpretations and viewpoints.

Audience Engagement Theory:

Recognizes that audiences can consume media products passively or actively, depending on factors such as the situation, social context, and level of audience involvement. This includes primary, secondary, and tertiary levels of engagement.



Year 10: BTEC Media

Audience Types- describe below:

Mass
Audience

Specialised
Audience

Target/Main
Audience

Secondary
Audience

Tertiary
Audience

- Define **Dominant/Preferred Reading**:

- Define **Negotiated Reading**:

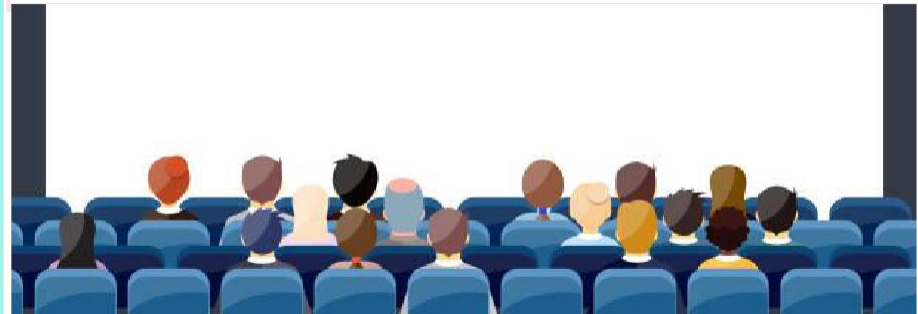
- Define **Oppositional Reading**:

What is the **Audience Engagement Theory**:

Audience Theories:

What is **Passive Audience Theory**?

What is **Stuart Hall's Reception Theory**?



Year 10: BTEC Media

Blumler and Katz Uses and Gratification Theory

This theory suggests that audiences actively choose and engage with media products based on their personal needs and desires. This includes:

Information

People seek media to acquire knowledge, stay informed about current events, and satisfy their curiosity. They use media to gather information on various topics of interest, such as news, weather updates, educational content, or advice.

Personal Identity

Individuals use media to shape their self-perception and reinforce their personal values and beliefs. They seek content that reflects and reinforces their identities, such as television shows, movies, or social media platforms that align with their interests, cultural background, or personal ideologies.

Entertainment

Media serves as a source of relaxation, escapism, and amusement. People use media to entertain themselves, enjoy fictional narratives, engage in leisure activities, or simply have a good time. Examples include watching movies, playing video games, or listening to music.

Social interaction

Media enables social connection and facilitates communication between individuals. People use media to interact with others, maintain relationships, and engage in social communities. This includes social media platforms, online forums, video conferencing tools, or even traditional forms of media like newspapers or television programs that promote social discussion.

Genre

Genre is a way to categorise different types of stories or media based on similar themes, settings, or styles, like adventure, mystery, or fantasy. It is often easy to spot products from different genres because they generally have similar characteristics. Example: Some generic characteristics of fantasy stories include magical or imaginary elements, such as wizards, mythical creatures, and enchanted worlds. The top 5 movie genres are:

Drama: These are movies that tell serious and emotional stories about people's lives. They make you feel different emotions and show how characters deal with their problems. *Some examples are "The Shawshank Redemption," "Schindler's List," and "The Godfather."*

Action: These movies are all about excitement! They have lots of fast-paced scenes, cool stunts, and big fights. You'll see brave heroes doing daring things and going on adventures. *Some examples are James Bond movies, "Mission: Impossible," and "Mad Max: Fury Road."*

Comedy: These movies are meant to make you laugh and have a good time. They tell funny stories and have silly jokes and funny characters. You'll find yourself giggling and smiling while watching them. *Some examples are "Anchorman: The Legend of Ron Burgundy," "Bridesmaids," and "Superbad."*

Science Fiction: These movies take you to different worlds and show amazing futuristic things. They often have cool technology, space travel, or robots. They make you think about what could happen in the future and explore interesting ideas. *Some examples are "Star Wars," "Blade Runner," and "The Matrix."*

Thriller/Suspense: These movies keep you on the edge of your seat! They have thrilling and suspenseful stories with lots of twists and surprises. You'll feel excited and curious to know what happens next. *Some examples are "Psycho," "The Silence of the Lambs," and "Inception."*

Year 10: BTEC Media

Blumler and Katz Uses and Gratification Theory		Genre
This theory suggests that audiences actively choose and engage with media products based on their personal needs and desires. This includes:		Describe the characteristics of the top 5 movie genres below:
Information		Drama:
Personal Identity		Action:
Entertainment		Comedy:
Social interaction		Science Fiction:
		Thriller/Suspense:

Year 10: BTEC Media

Understanding Narrative Elements in Media

Storytelling devices: Storytelling devices are tools that storytellers use to make their stories interesting and exciting. These tools help them tell the story in a way that captures the audience's attention and keeps them engaged.

Various techniques enhance storytelling, such as;

Foreshadowing	Hinting at future events
Red Herrings	Misleading clues
Subplots	Secondary story lines
Flashbacks/forwards	Narrative jumps in time
Parallel action	Intercutting between multiple storylines
Enigmas	Mysterious elements
Cliffhangers	Suspenseful endings



Storytelling in Non-Fiction:

- **Inverted pyramid structure:** Non-fiction storytelling often follows a structure where the most important information is presented first (who? what? where? when? why? how?) in the lead, followed by supporting details and quotations in the body, and additional related information in the tail.
- **Storytelling devices:** Non-fiction storytelling may involve interviews/quotations with people involved, experts, or members of the public, facts and figures to support the narrative, and the use of language to engage and inform the audience.

Narrative Structures

Narrative structures refer to the organisation and arrangement of elements within a story or narrative. It encompasses how the story is constructed, how events unfold, and how the plot is organised to create a coherent and engaging experience for the audience or readers.

Linear: A straightforward narrative progression from beginning to end, following a chronological order.

Non-linear: The narrative is presented out of chronological order, using techniques like flashbacks or parallel storylines.

Open/Closed: Open narratives leave room for interpretation or unresolved elements, while closed narratives provide a clear resolution.

Single/Multi-strand: Single-strand narratives focus on a single main storyline, while multi-strand narratives involve multiple interconnected storylines.

Todorov: Had a theory for structuring engaging narratives. He said that all stories go through this cycle: equilibrium, disruption, recognition, repair and new equilibrium.

Year 10: BTEC Media

Understanding Narrative Elements in Media

Storytelling devices: Storytelling devices are tools that storytellers use to make their stories interesting and exciting. These tools help them tell the story in a way that captures the audience's attention and keeps them engaged.

Various techniques enhance storytelling, such as;

Foreshadowing

Red Herrings

Subplots

Flashbacks/forwards

Parallel action

Enigmas

Cliffhangers



Storytelling in Non-Fiction:

- What is the inverted pyramid structure?
- What are storytelling devices?

Narrative Structures- define below:

Narrative structures refer to the organisation and arrangement of elements within a story or narrative. It encompasses how the story is constructed, how events unfold, and how the plot is organised to create a coherent and engaging experience for the audience or readers.

Linear:

Non-linear:

Open/Closed:

Single/Multi-strand:

Todorov:

Year 10: BTEC Media

Point of View (POV)

POV refers to the perspective or vantage point from which the story is presented or narrated. It represents the lens through which the events, characters, and emotions of the story are conveyed to the audience or readers.

Subjective	The subjective camera angle renders the audience an active participant of the event. Either by seeing the event through the character's eyes. Or by trading places with another person in the picture (e.g., first-person) This reflects their thoughts, emotions, and biases.
Objective	Objective camera angle provides a side-line view of the action. Through the objective viewpoint, the audience looks on, perhaps from the eyes of an unseen observer. Example: In a film, positioned within a passing character e.g. a random person within a crowd looking at the action.
Privilege Spectator	An external perspective that provides insight into the thoughts and actions of multiple characters. Example: In a film you could be positioned high up (like a fly on the wall) and you get to witness something that none of the other characters can see.

Characterisation

Character development: Characters grow and change. Complex characters have strengths, weaknesses, and flaws. They face challenges, learn, and transform. Character arc shows the journey, growth, and evolving relationships.

Hero/Protagonist	The main character who sets out on a journey or quest.
Villain/Antagonist	The character who opposes or creates conflicts for the hero.
Donor/Provider	The character who gives the hero a magical object, information, or assistance to aid their quest.
Helper	A character who assists the hero throughout their journey.
Princess/Damsel	The character in need of rescue or with whom the hero seeks a relationship.
False Hero	A character initially believed to be the hero but later revealed as deceptive or unworthy

Year 10: BTEC Media

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Subjective

Objective

Privilege Spectator

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Hero/Protagonist

Villain/Antagonist

Donor/Provider

Helper

Princess/Damsel

False Hero

Year 10: BTEC Media

Media Representation and Perspectives

Representation in the media is how people, places, issues, and events are shown. Here are some important points to remember:

1. Audience Positioning and Perspective:

- Media can shape how we see and think about things.
- Different perspectives can influence our understanding of a story.
- For example, a news report might focus on different angles depending on the intended audience.

2. Audience Identification:

- Media tries to make us relate to characters or situations.
- We may see ourselves in the heroes or villains of a story.
- For example, a movie might have a young hero we can look up to and connect with.

3. Use of Stereotyping:

- Stereotyping is when groups of people are shown in simplified or exaggerated ways.
- It can create biases and unfair judgments.
- For example, a TV show might show a certain group always behaving in a certain way, which isn't true for everyone.

4. Positive and Negative Representations:

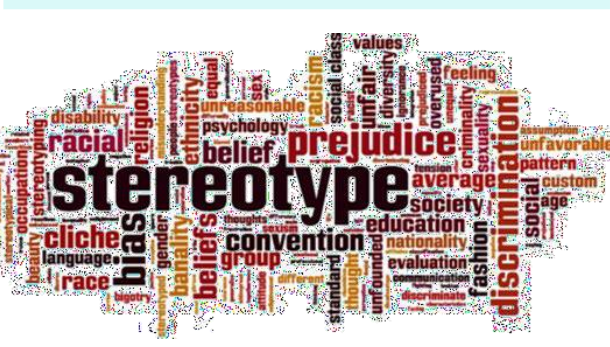
- Media can show people, places, and events in positive or negative ways.
- Positive representations can inspire and uplift us.
- Negative representations can reinforce stereotypes and hurtful ideas.
- For example, a magazine might portray a diverse group of friends having fun together, promoting inclusivity.

How can media products position the audience and influence their beliefs and attitudes?

Media products can position the audience through storytelling techniques, camera angles, music choices, and persuasive messaging. By appealing to emotions, presenting certain viewpoints, and shaping narratives, media can shape the audience's beliefs, values, and attitudes.

What are the consequences of stereotyping in media representations?

Stereotyping in media can lead to unfair judgments, perpetuate harmful biases, and create misunderstandings about certain groups of people. It can contribute to discrimination, marginalisation, and the reinforcement of negative stereotypes, affecting individuals and communities negatively.



Year 10: BTEC Media

Media Representation and Perspectives

Representation in the media is how people, places, issues, and events are shown.

What are the important things to remember?

1. Audience Positioning and Perspective:

- -
- -
- -

- ## 2. Audience Identification:
- -
 - -
 - -

3. Use of Stereotyping:

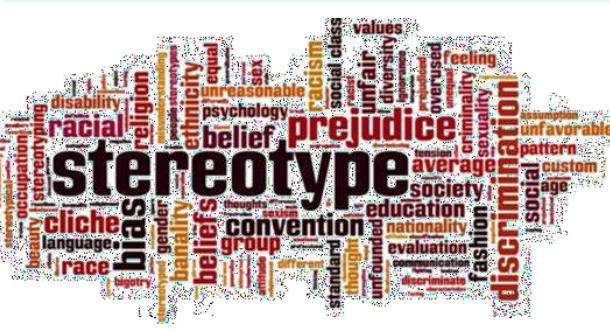
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- #### 4. Positive and Negative Representations:
- -
 - -

- _____

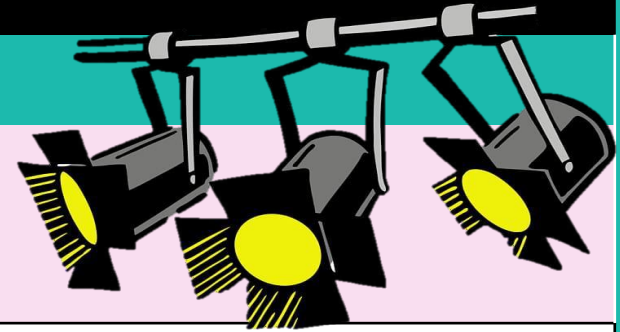
How can media products position the audience and influence their beliefs and attitudes?

What are the consequences of stereotyping in media representations?



Year 10: BTEC Media

Media Production Techniques



Mise en Scène: refers to the arrangement of visual elements within a scene in media production. It includes various components that contribute to the overall look and feel of a scene.

Top 5 components of Mise en Scène:

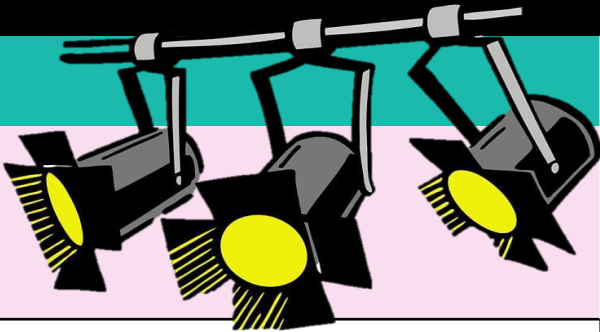
Setting	This is where the scene happens, like a place or environment. It includes things like buildings, landscapes, or inside spaces. The setting helps create the look and feel of the scene.
Costume and Makeup	This is about the clothes, accessories, and makeup that the characters wear. It shows what they look like and helps us understand their personality and role in the story.
Lighting	This is how the scene is lit up. Different types of lighting can make things look different and create different moods. For example, bright lighting can make things feel happy, while dark lighting can make things feel mysterious or scary.
Props and Objects	These are the things that the characters use or have around them in the scene. Props can give us important clues, show what time period the story is in, or help tell the story in other ways.
Acting and Performance	This is about how the actors act out their characters. They use their faces, bodies, and emotions to bring the characters to life. The way they talk, move, and express themselves helps make the scene more interesting and believable.

Lighting

Low key	This kind of lighting makes the scene look dramatic and mysterious. It uses strong contrasts between light and dark.
High key	This lighting makes the scene bright and evenly lit. It's often used in happy or funny scenes.
Back	When the light comes from behind the subject, it creates a special effect. It makes the subject look like they have a glowing halo around them and emphasises their shape.
Side	This is when the light comes from the side. It adds depth to the scene and makes things look more textured.
Soft	Soft lighting makes the scene look gentle and diffused. It reduces harsh shadows and makes people look nicer.
Hard	Hard lighting makes the scene look strong and direct. It creates clear, sharp shadows and a more intense feeling.
Realistic	This lighting tries to look like natural light sources, making the scene feel real and authentic.
Ambient	This is the general light that fills up the whole scene. It helps set the mood or show where the scene is taking place.
Expressive	This lighting is used to create specific feelings or emotions in the scene. It adds to the story and makes it more exciting.

Year 10: BTEC Media

Media Production Techniques



Mise en Scène: refers to the arrangement of visual elements within a scene in media production. It includes various components that contribute to the overall look and feel of a scene.
Describe below the top 5 components of Mise en Scène?

Lighting

Setting		Low key	
		High key	
Costume and Makeup		Back	
		Side	
Lighting		Soft	
		Hard	
Props and Objects		Realistic	
		Ambient	
Acting and Performance		Expressive	

Year 10: BTEC Media

Media Production Techniques

Camerawork		Use of Sound	
Low-angled shot	When the camera is below the subject, it makes them look really powerful, strong, or scary.	Diegetic	This is the sound that comes from the world of the story. It includes things like the characters talking or making sounds in the movie or show.
Extreme close up	This is when the camera zooms in really close to show a small detail of something. It makes that detail seem really important or intense.	Non-diegetic	This is sound that doesn't come from the story world. It includes background music or a voice that talks to us but the characters can't hear.
Long shot	When the camera is far away, it captures the whole scene or subject. It helps us understand where everything is happening and how big things are.	Sound effects	These are special sounds that are added to make the scene more exciting or to create certain feelings. They are not real sounds that were recorded during filming.
Medium shot	This shot shows the subject from the waist up. It's a good balance between being close enough to see details and far enough to understand the surroundings.	Sound mixing	This is when different sounds are combined and adjusted so that they sound good together. It's like making sure all the sounds are at the right volume and can be heard clearly.
Eye level shot	This is when the camera is at the same height as the subject's eyes. It helps us see things from a neutral and relatable perspective.	Sound bridge	This is when the sound from one scene continues into the next scene. It helps the scenes flow smoothly together.
High angle shot	The camera is positioned above the subject, making them look small, weak, or in a vulnerable position.	Ambient	These are the sounds that you would hear in the background of a scene. They help create the feeling of being in that place.
Point of view shot	This shot shows the scene from the character's perspective. It makes us feel like we're seeing what the character sees and experiencing the scene through their eyes.	Synchronised	This is when the sound matches what you see on the screen. For example, if a character is walking, you will hear their footsteps. It makes everything feel more real.
		Voice over	This is when a voice speaks over the movie or show but you don't see who is talking. It's like someone is telling you extra information or giving their thoughts.

Year 10: BTEC Media

Media Production Techniques

Camerawork

Use of Sound

Low-angled
shot

Diegetic

Extreme
close up

Non-diegetic

Long shot

Sound effects

Medium
shot

Sound mixing

Eye level
shot

Sound bridge

High angle
shot

Ambient

Point of view
shot

Synchronised

Voice over

Editing Techniques



Cut: This is when one shot is quickly replaced by another shot. It's like changing from one picture to another really fast.

Fade In: This is when a scene gradually appears on the screen. It starts from a black screen and gets brighter until you can see the scene clearly.

Fade Out: This is the opposite of fade in. It's when a scene slowly disappears from the screen. It goes from bright to dark until it's all black.

Dissolve: This is when one shot fades away while another shot gradually appears. It's like the two shots blend together smoothly.

Wipe: In this editing technique, the next shot moves across the screen and "wipes away" the previous shot, revealing the new scene.

Flashback: This is when the story pauses and shows a scene from the past. It helps us understand something that happened before the current time in the story.

Shot-Reverse-Shot: This is when the camera goes back and forth between two characters who are talking to each other. It shows their reactions and interactions during the conversation.

Cross Cutting: This is when the movie or show cuts between two or more different scenes happening at the same time. It can create suspense or show how the scenes are connected to each other.

Eyeline Match: This editing technique connects what a character is looking at with the next shot showing what they are seeing. It helps us understand their point of view and what they are paying attention to.

Editing Techniques



Cut:

Fade In:

Fade Out:

Dissolve:

Wipe:

Flashback:

Shot-Reverse-Shot:

Cross Cutting:

Eyeline Match:

Year 10 GCSE Media:

Media Sectors

Sector	Examples
Audio/Moving image	TV, radio, films
Publishing	Magazines, billboards, posters, flyers, newspapers
Interactive	Apps, social media, games, websites

Media Institutions

Type of institution	Description
Media conglomerate	Large corporations that own multiple media outlets.
Public service broadcaster	Organisations funded by public resources.
Independent media producers	Small-scale or individual creators who produce media.
Community Media Organisations	Non-profit or volunteer-based initiatives that focus on serving local communities and promoting community participation.

Audiences Types

Type of audience	Description
Mass audience	A big group of people who like or enjoy the same things.
Target/main audience	A group of people that a media product is made for or meant to appeal to the most.
Secondary audience	Includes people who aren't the main target but still have some interest or connection to the media product.

Purpose

Purpose examples

To entertain	To raise awareness
To advertise	To shock
To inform	To instruct
To explain	To document

Definition: Call to Action: Encouraging the audience to take specific actions or make a change.

Audience

Demographics refer to specific characteristics of a population or target audience.

Demographic characteristics:

- Age
- Gender
- Family status
- Ethnicity
- socio-economic scale
- Interests
- Nationality

Year 10 GCSE Media:

Media Sectors

Sector	Examples

Media Institutions

Type of institution	Description
Media conglomerate	
Public service broadcaster	
Independent media producers	
Community Media Organisations	

Definition: ____ to Action: Encouraging the audience to take specific actions or make a ____.

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Mass audience	
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Secondary audience	

Audience

Demographics refer to specific characteristics of a population or target audience.

Demographic characteristics:

Purpose

Purpose examples

To entertain	
To advertise	
To inform	
To explain	

Audience Socio Economic Scale

Socio Economic Group	Description
A (Upper Class)	High income, top-level professionals, executives, business owners. Advanced education.
B (Upper Middle Class)	White-collar professionals, managers, successful entrepreneurs. Above-average income and education.
C1 (Lower Middle Class)	Office workers, lower-level managers, small business owners. Moderate income and education.
C2 (Skilled Working Class)	Skilled workers, tradespeople, supervisors. Average income and education.
D (Working Class)	Manual workers, laborers, routine jobs. Limited education, moderate income.
E (Lower Class)	Unskilled workers, unemployed, low-income households. Limited education and financial resources.

Audience Psychometrics

Psychometric	Description
The Aspirer	Are driven by the desire for success, status, and recognition.
The Explorer	Are curious, adventurous, and open to new experiences.
The Mainstreamer	Value tradition, conformity, and maintaining social norms.
The Reformer	Are socially and environmentally conscious.
The Resigned	Individuals often feel disempowered or marginalised.
The Struggler	Face financial and personal challenges, often living in economically deprived conditions.
The Succeeder	Have achieved success and are financially secure.

Audience Socio Economic Scale

Socio Economic Group	Description
A (Upper Class)	
B (Upper Middle Class)	
C1 (Lower Middle Class)	
C2 (Skilled Working Class)	
D (Working Class)	
E (Lower Class)	

Audience Psychometrics

Psychometric	Description
The Aspirer	
The Explorer	
The Mainstreamer	
The Reformer	
The Resigned	
The Struggler	
The Succeeder	

Audience Uses and Gratifications

This theory suggests that audiences actively choose and engage with media products based on their personal needs and desires.

This includes:

Information	People use media to learn stuff, like what's happening in the world, or to find out about things they're interested in.
Personal Identity	Media helps people show who they are and what they believe in.
Entertainment	Media is a way for people to relax and have a good time.
Social Interaction	Media also helps people talk to each other and stay connected.

Reception theory identifies three different audience response:

Dominant/Pref erred Reading	The audience interpret the meaning of the product exactly like the media producer intended.
Negotiated Reading:	An audience that acknowledges some aspects of the intended message but also bring their own perspectives and values into the interpretation.
Oppositional Reading:	The audience interpret media products in direct opposition to the intended message of the producer. They reject or challenge the dominant meaning encoded in the media text.

Key Terms	Description
Semiotics	The study of signs and symbols and what they mean
Denotation	Is like the basic or literal meaning of a sign or symbol, what it directly represents
Connotation	Is all the extra feelings and ideas (hidden meanings) we connect to a sign or symbol.
Encoding	Is when someone creates meaning and attaches messages to signs, like a filmmaker making a movie with a message.
Decoding	Is when the audience interprets or understands the messages and meanings in signs or media

Audience Uses and Gratifications

This theory suggests that audiences actively choose and engage with media products based on their personal needs and desires.

This includes:

Information	
Personal Identity	
Entertainment	
Social Interaction	

Reception theory identifies three different audience response:

Dominant/Preferred Reading	
Negotiated Reading:	
Oppositional Reading:	

Key Terms	Description
Semiotics	
Denotation	
Connotation	
Encoding	
Decoding	

Genre

Genre is a way to categorise different types of stories or media based on similar themes, settings, or styles. It is often easy to spot products from different genres because they generally have similar characteristics.

Genre examples

Drama

Action

Comedy

Science Fiction

Thriller/
Suspense

Genre Key term	Description
Sub-Genres	Within most genres we can find sub genres, for example within Horror we could find 'Slasher'.
Hybrids	A hybrid genre is a genre which blends themes and elements from two or more different genres, for example action/romance.
Subverting Generic Conventions (subversion)	When media producers don't do what is expected of that genre. For example, a romantic film where the couple actually don't stay together and split up at the end.
Genre Iconography	Consists of recurring symbolic images that carry meaning from film to film. What do you expect to see/hear?
Repetition	TV programs, magazines, or websites often conform to established generic codes and conventions to cater to audience expectations and familiarise them with the content.
Difference	Introducing elements of originality is crucial to avoid becoming repetitive and boring.

Genre

Genre is a way to _____ different types of stories or media based on similar themes, settings, or _____. It is often easy to ____ products from different _____ because they generally have similar characteristics.

Genre examples

Genre Key term	Description
Sub-Genres	
Hybrids	
Subverting Generic Conventions (subversion)	
Genre Iconography	
Repetition	
Difference	

Year 10 GCSE Media:

Narrative: Themes

Themes are the central concepts or topics that the media creator seeks to convey. Examples include:

- **Alienation** – The effects of, the loneliness of, to cure it.
- **Betrayal** – the pain of, in love and friendship.
- **Coming of age** – loss of innocence.
- **Escape** – from life, routine, prison, family pressures.
- **Death** – how to escape, facing, what happens after, consequences of.
- **Fear** – driven by, dealing with, conquering.
- **Freedom** – loss of, gaining, handling, fight for.

Narrative: Setting

Visual Design	Media producers create a special look for the scene such as what people wear, and the things around them.
Sound design	Media producers add sounds and music to make us feel like we're really in that place and of that time.
Set dressing	Media producers carefully find objects and furniture etc that make us believe it is from that time or place.
Lighting	Media producers use different lights to create a certain mood or feeling in the place.

Narrative: Todorov's Theory

Todorov discovered that narratives moved forward in a chronological order with one action following after another.

What happens

A state of equilibrium (all is as it should be)

An action or character disrupts that equilibrium.

A quest to restore the equilibrium begins. There is recognition that the disorder has occurred.

An attempt to repair the damage of the disruption.

Resolution occurs and equilibrium is restored.

Narrative: Characterisation

Character Type	Description
Hero	Undertakes a journey or a quest
Villain	Attempts to thwart or kill the hero
Donor	Gives the hero advice or a useful object
Helper	A friend who helps the hero in their quest
Princess	Motivation and reward for the quest
Dispatcher	Sends the hero on their quest

Year 10 GCSE Media:

Narrative: Themes

Themes are the central concepts or topics that the media creator seeks to convey. Examples include:

Narrative: Setting

Visual Design	
Sound design	
Set dressing	
Lighting	

Narrative: Todorov's Theory

Todorov discovered that narratives moved forward in a chronological order with one action following after another.

What happens

Narrative: Characterisation

Character Type	Description
Hero	
Villain	
Donor	
Helper	
Princess	
Dispatcher	

Narrative: Storytelling Devices

Foreshadowing	Hinting at future events
Red Herrings	Misleading clues
Subplots	Secondary storylines
Flashbacks/Forwards	Narrative jumps in time
Cliffhangers	Suspenseful endings
Chekhov's Gun	Something insignificant becomes very important later on.

Representation

Audience positioning and perspective:	Media can shape how we see and think about things. Different perspectives can influence our understanding of a story.
Audience identification:	Media tries to make us relate to characters or situations. We may see ourselves in the heroes or villains of a story.
Use of Stereotyping:	Stereotyping is when groups of people are shown in simplified or exaggerated ways. It can create biases and unfair judgments.
Positive and Negative Representations:	Media can show people, places, and events in positive or negative ways. Positive representations can inspire and uplift us. Negative representations can reinforce stereotypes and hurtful ideas.

Narrative Structures

Narrative structures refer to the organisation and arrangement of elements within a story or narrative.

Structure	Description
linear	where the story is told in order and a new equilibrium arrived on at the end
non-linear	where events are told out of sequence
circular	where the story ends where it began – ie there has been no change to the equilibrium
open	narratives, where there is no resolution by the end
closed	narratives, where the story is resolved
single-strand	where the narrative follows just one storyline
multi-strand	where there are different interwoven stories

Narrative: Storytelling Devices

Foreshadowing	Hinting at future events
Red Herrings	
Subplots	
Flashbacks/Forwards	
Cliffhangers	
Chekhov's Gun	

Representation

Audience positioning and perspective:	
Audience identification:	
Use of Stereotyping:	
Positive and Negative Representations:	

Narrative Structures

Narrative structures refer to the organisation and arrangement of elements within a story or narrative.

Structure	Description
linear	
non-linear	
circular	
open	
closed	
single-strand	
multi-strand	

Year 10 GCSE Media:

Media production techniques: camerawork

Shot Type	Description
Low Angled Shot	Camera positioned below the subject, portraying them as powerful, strong, or scary.
Extreme Close-up	Camera zooms in very close to emphasize a small detail, making it appear significant or intense.
Long Shot	Camera placed far away to capture the entire scene or subject, providing context and showcasing the overall setting and scale.
Medium Shot	Shot displaying the subject from the waist up, striking a balance between showing details and offering a broader view of the surroundings.
High Angle Shot	Camera positioned above the subject, depicting them as small, weak, or in a vulnerable position.



Media production techniques: sound

Term	Description
Diegetic Sound	Sound originating from the world of the story, including characters talking or making sounds in the movie or show.
Non-Diegetic Sound	Sound that doesn't come from the story world, such as background music or a voice that talks to the audience but isn't heard by the characters.
Sound Effects	Special sounds added to enhance scenes, creating excitement or specific emotions. These sounds are not recorded during filming.
Music	Important in conveying emotions and enhancing storytelling in movies and shows, acting like another character in the narrative.

Media Production Techniques: Mise en Scene

Mise en Scene means 'what is in the scene'. It refers to the arrangement of visual elements within a scene in media production and includes:

- Setting
- Costume and makeup
- Lighting
- Props and objects

Year 10 GCSE Media:

Media production techniques: camerawork

Shot Type	Description
Low Angled Shot	
Extreme Close-up	
Long Shot	
Medium Shot	
High Angle Shot	



Media production techniques: sound

Term	Description
Diegetic Sound	
Non-Diegetic Sound	
Sound Effects	
Music	

Media Production Techniques: Mise en Scene

Mise en Scene means ‘what is in the scene’. It refers to the arrangement of visual elements within a scene in media production and includes:

Media production techniques: Editing

Editing Technique	Description
Cut	Rapid replacement of one shot by another, creating a quick transition between images.
Fade In/out	Gradual appearance or disappearance of a scene on the screen, starting from black and becoming brighter until the scene is fully visible.
Dissolve	Transition in which one shot fades away while another gradually appears, resulting in a smooth blend between the two shots.
Wipe	Editing technique where the next shot moves across the screen, "wiping away" the previous shot and revealing the new scene.



Lighting Type	Description
Low Key Lighting	Creates a dramatic and mysterious atmosphere by using strong contrasts between light and dark.
High Key Lighting	Produces bright and evenly lit scenes, commonly used in happy or funny situations.
Soft Lighting	Provides a gentle and diffused look, reducing harsh shadows and enhancing the appearance of people.
Hard Lighting	Creates a strong and direct scene with clear, sharp shadows, evoking a more intense feeling.
Realistic Lighting	Mimics natural light sources, aiming for a real and authentic feel in the scene.
Ambient Lighting	The overall light that fills the entire scene, setting the mood and indicating the scene's location.

Media production techniques: Editing

Editing Technique	Description
Cut	
Fade In/out	
Dissolve	
Wipe	



Lighting Type	Description
Low Key Lighting	
High Key Lighting	
Soft Lighting	
Hard Lighting	
Realistic Lighting	
Ambient Lighting	

H&C
DT



Helping every person achieve things they never thought they could.

Year 10 Hospitality and Catering- Providers

- The **Hospitality and Catering** sector includes: pubs, bars and nightclubs; restaurants; self-catering accommodation, holiday centres travel and tourist services; visitor attractions and hotels. Hospitals, prisons, schools armed forces and social care .
- It has grown over the last 20 years and, despite recession, is predicted to continue to grow .The sector as a whole currently employs almost 2 million people.

Residential establishments

Hotels
Guest houses
Bed and breakfasts
Farmhouses
Motels
Holiday parks
Some public houses

Services and food provided varies by price charged



Bed & breakfasts, Guesthouses, Farmhouses

Often showcase local themes or produce.
May be breakfast, Half board or full board, family run



Motels & Holiday parks



Lower standard than hotels, food is usually buffet style breakfast. Corporate or independent

Non residential establishments

Restaurants
Fast food outlets
Public houses
Bars
Delicatessens
Take away outlets
School meals
Burger vans

Services and food provided varies by the situation and price charged



Public houses

Can serve "basket" meals sandwiches or full table service. Some chain pubs have a fixed menu eg Wetherspoons.



Bars

more cosmopolitan menu than pubs , often themed to the type of establishment. Table service or eat at the bar



Non commercial establishments

Hospitals
Prisons
Meals on wheels
Residential care homes
Armed services

Services and food provided varies by the situation and the needs of the clients. Not required to make a profit

Hotels

The style of food provided will depend on the standard of the hotel
Hotel may provide

- No food provision
- Room service
- Hotel owned restaurants
- Franchise restaurants
- Breakfast provision only



Variety of styles and food types, may be specialist eg italian, or gourmet or fine dining
Styles of service vary with types of food and cost
See styles of service section for more...

Restaurants



Cafes



Can vary from independent "greasy" spoon, Tea rooms or coffee shops. Serve snacks and full meals.

Fast food

Chains eg KFC, Dominos or independent businesses
Limited menu, low cost, eat in or take away
Disposable packaging



Take aways

Dedicated take away or restaurant attached or may be just take away, most food is cooked to order.



Year 10 Hospitality and Catering- Providers

What does the hospitality and catering sector include? Provide examples.

Which **residential** establishments does the hospitality and catering sector include?

What are the different types of food provision that might be found in hotels?

Bed & breakfasts, Guesthouses, Farmhouses

Often showcase local themes or produce.
May be breakfast, Half board or full board, family run



Motels & Holiday parks



Lower standard than hotels, food is usually buffet style breakfast. Corporate or independent

Which **non-residential** establishments does the hospitality and catering sector include?

Public houses

Can serve "basket" meals sandwiches or full table service. Some chain pubs have a fixed menu eg Wetherspoons.



Bars

more cosmopolitan menu than pubs, often themed to the type of establishment. Table service or eat at the bar



Which **non-commercial** establishments does the hospitality and catering sector include?

Variety of styles and food types, may be specialist eg Italian, or gourmet or fine dining

Styles of service vary with types of food and cost
See styles of service section for more...

Restaurants



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Can vary from independent "greasy" spoon, Tea rooms or coffee shops. Serve snacks and full meals.

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Dedicated take away or restaurant attached or may be just take away, most food is cooked to order.



Year 10 Hospitality and Catering- Providers

Hospitals

Patients may need reduced fat, sugar, protein diets depending on health
Soft meals, Vegetarian, vegan, religious, childrens meals
Budget for food controlled by NHS



School meals

School employed or outside company .Strict guidelines on what can be served to U16, oily fish 1x week, chips max 2x week



Meals on wheels

Social meal service provided by volunteers, to people unable to prepare their own food.



Care home meals



food served may depend on the needs of the clients, some may have conditions which need special meals. Some residents may need help eating and drinking

Armed services meals

Mass catering, Camps on active service, Canteens at bases.High energy, balanced nutritionally



Prisons

Food is prepared in by prison inmates to ensure that tight budgets for food are met



Marriott Niagara

- 4 star Hotel
- 3 different themed restaurants
- Breakfast restaurant
- Room service
- Starbucks attached to ground floor!



Bristol hotel Gibraltar



- No food or restaurant on site
- Shared breakfast room across street with another hotel

Styles of food service

- Depends on
- Type of establishment
- Type of food being served
- Cost of the meal or food
- Time available for the meal
- Type of customer
- Number of customers
- Availability of serving staff

Cafeteria / self service



Fast food / take away



Cafeteria /self service

- A single long counter displaying the food available
- Could be multiple counters (like at a motorway service area)
- Queueing is often required
- It can be fast so produces a high turnover
- Simple, basic experience for customers
- Displays lead to impulse buying
- Low skilled serving staff

Counter service

Cafeteria
Self service
Fast food
Take away
Buffet
Carvery

Table service

Plate service
Family service
Silver service
Gueridon service

Personal service

Travel service
Tray service
Vending service

Year 10 Hospitality and Catering- Providers

Describe hospital food provision below:

Meals on wheels

Social meal service provided by volunteers, to people unable to prepare their own food.



Describe school meal provision below:

Care home meals



food served may depend on the needs of the clients, some may have conditions which need special meals. Some residents may need help eating and drinking

Armed services meals

Mass catering, Camps on active service, Canteens at bases. High energy, balanced nutritionally



How do prisons ensure food budgets are met?



Marriott Niagara

- 4 star Hotel
- 3 different themed restaurants
- Breakfast restaurant
- Room service
- Starbucks attached to ground floor!



Bristol hotel Gibraltar



- No food or restaurant on site
- Shared breakfast room across street with another hotel

List the different styles of food service below:

List the examples of each service below:

Counter service

Table service

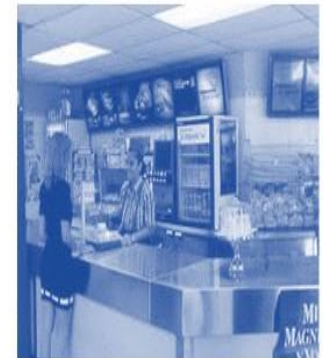
Personal service

Outline the elements of cafeteria/self-service provision below:

Cafeteria / self service



Fast food / take away



Year 10 Hospitality and Catering- Providers

Silver service

- Food is served by staff using spoon and fork,
- Full silver service= all food served this way
- Demi silver service= meat pre plated, veg silver served
- More personal customer experience
- Slower speed of service
- Variation in portion control
- Needs skilled staff

Plate service

- Pre plated meals served from the kitchen
- Could be basic food or decorated cuisine
- From cafes to luxury restaurants
- Good portion control
- Consistent presentation
- Relys on skill of kitchen staff
- Time consuming for kitchen staff

Fast food / take away

- Single or multiple counters where customer orders food from limited menu
- Food is collected from the counter
- A quick, simple type of service
- Can be a very high turnover of food
- Often a limited choice of menu
- Use disposable, cutlery, and packaging

Family service

- Dishes are put on the table where serving spoons are provided and customers serve themselves
- More sociable
- Less portion control
- Easy and quick to serve
- Suits groups of people
- Needs a large table because of all the dishes!



Buffet / carvery

- Usually single counter
- Staff may serve some items eg meats from a joint
- Informal style of service
- Fast and simple service
- Reasonably low cost depending on the type of food served
- Poor portion control
- Needs efficient clearing away and arranging

Gueridon service

- Food is served from a side table using a spoon and fork
- Dishes can be cooked, finished or assembled in front of the customer
- Eg crepe suzette
- Specialist, skilled service,
- Individual attention to customer
- High staff costs
- Time consuming service

Transported meal service

- An assembled meal provided or a choice from a menu
- Planes, trains



Tray service

- An assembled meal provided or a choice from a menu
- Tray service used in hospitals, room service



Buffet / carvery



Plate service



Silver service



Gueridon service



Year 10 Hospitality and Catering- Providers

Describe the components of **silver** service. Provide at least one advantage and one disadvantage

Describe the components of **plate** service. Provide at least one advantage and one disadvantage

Describe the components of **fast food/take away**. Provide at least one advantage and one disadvantage

Describe the components of **family** service. Provide at least one advantage and one disadvantage

Describe the components of a **buffet/ carvery**. Provide at least one advantage and one disadvantage

Describe the components of **Gueridon** service. Provide at least one advantage and one disadvantage

Silver service



Gueridon service



Transported meal service

- An assembled meal provided or a choice from a menu
- Planes, trains



Tray service

- An assembled meal provided or a choice from a menu
- Tray service used in hospitals, room service



Buffet / carvery



Plate service



Year 10 Hospitality and Catering- Providers

Vending service

- Food and drinks served from a machine
- 24hour food service
- Drinks, snacks and meals can be offered
- Can include hot meals



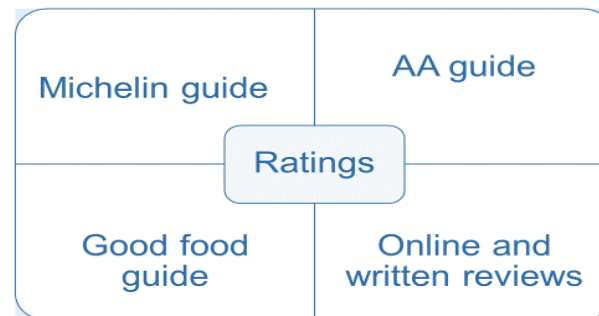
Benefits of ratings?

- A good establishment could see an increase in business from people wanting to try the food.
- It generates publicity for the establishment.
- Customers might come from further away to dine.
- Customers can identify less good establishments.



Food hygiene ratings is a different topic altogether.

Types of ratings



Online review sites

- There are a number of online review sites where anyone can post their reviews of an establishment.
- with a large number of reviews, a restaurant's average score is likely to be reasonably accurate.
- There are guidelines to clamp down on establishments that give away freebies for a good review or give themselves good reviews!



AA Rosettes & Stars

Inspectors visit restaurants or hotels and write a review of the establishment -award rosettes for restaurants, stars for hotels.

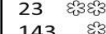
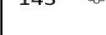
Restaurants
 12
 38
 173



Michelin stars

Anonymous inspectors visit establishments and have a meal and write a review of the establishment can award stars for excellence.

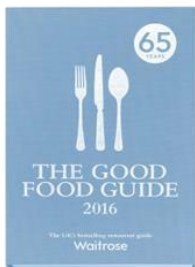
Out of 3,600 establishments inspected in Great Britain and Ireland they awarded:

3 
 23 
 143 



Good Food Guide

Members of the general public who have visited the establishment fill in a review which is compiled into a guide. Award points for excellence.



Score 10 – 2
 Score 9 – 4
 Score 8 – 13
 Score 7 – 23



* one star

- minimum of five bedrooms.
- All bedrooms with en suite or private facilities.
- guests have access to the hotel at all times.
- Proprietor and/or staff on site all day and on call at night.
- A dining room, restaurant serving a cooked or continental breakfast seven days a week.
- A dining room, restaurant serving evening meals at least five days a week
- A bar or sitting area with a Liquor (alcohol) Licence.
- Hotel open seven days a week during its operating season
- Proprietor and or staff available during the day and evening to receive guests and provide information
- A clearly designated reception facility

*** Three star

- All areas meet the Three Star level of quality for cleanliness, maintenance and hospitality
- Residents have access at all times during the day and evening Dinner served a minimum of six evenings a week with bar snack or equivalent available on seventh
- Room service as a minimum of hot and cold drinks and light snacks (e.g. sandwiches) during daytime and evening.
- All bedrooms with en suite bathrooms.
- Internal or direct dial telephone system required
- Wi-Fi available in public areas.

The Good Food Guide scores explained

Score	Explanation
1	Capable cooking, with simple food combinations and clear flavours, but some inconsistencies.
2	Decent cooking, displaying good basic technical skills and interesting combinations and flavours. Occasional inconsistencies.
3	Good cooking, showing sound technical skills and using quality ingredients.
4	Dedicated, focused approach to cooking, good classical skills and high-quality ingredients.
5	Exact cooking techniques and a degree of ambition, showing balance and depth of flavour in dishes.
6	Exemplary cooking skills, innovative ideas, impeccable ingredients and an element of excitement.
7	High level of ambition and individuality, attention to the smallest detail, accurate and vibrant dishes.
8	A kitchen cooking close to or at the top of its game – highly individual with impressive artistry. There is little room for disappointment here.
9	Cooking that has reached a pinnacle of achievement, making it a hugely memorable experience for the diner.
10	Just perfect dishes, showing business technique at every service, extremely rare, and the highest accolade the Guide can give.

Year 10 Hospitality and Catering- Providers

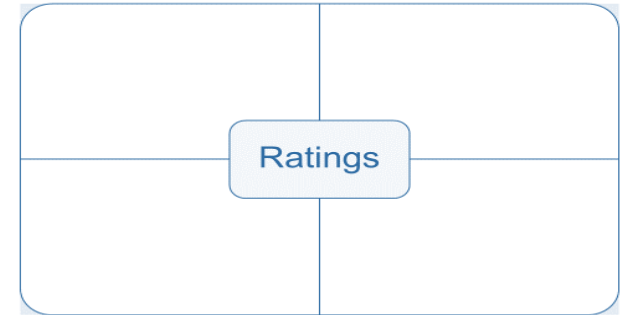
Vending service

- Food and drinks served from a machine
- 24hour food service
- Drinks, snacks and meals can be offered
- Can include hot meals



What are the benefits of ratings?

What are the different types of ratings?



Online review sites

- There are a number of online review sites where anyone can post their reviews of an establishment.
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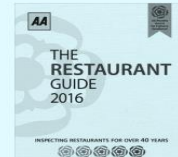


AA Rosettes & Stars

Inspectors visit restaurants or hotels and write a review of the establishment -award rosettes for restaurants, stars for hotels.

Restaurants

	12
	38
	173



How are Michelin stars awarded?
How many establishments have Michelin stars in Great Britain?

What is the Good Food Guide?

What are the components of **one star** establishments?

What are the components of **three star** establishments?

Year 10 Hospitality and Catering- Understanding the importance of nutrition

Macro-nutrients

Carbohydrates - Carbohydrates are mainly used in the body for energy. There are two types of carbohydrates which are:

- **Starch** - Examples include bread, pasta, rice, potatoes and cereals.
- **Sugar** - Examples include sweets, cakes, biscuits & fizzy drinks.

Fat - This is needed to insulate the body, for energy, to protect bones and arteries from physical damage and provides fat soluble vitamins. There are two main types of fat which are:

- **Saturated fat** - Examples include butter, lard, meat and cheese.
- **Unsaturated fat** - Examples include avocados, plant oils such as sunflower oil, seeds and oily fish.

Protein - Protein is mainly used for growth and repair in the body and cell maintenance. There are two types of protein which are:

- **High biological value (HBV) protein** - Includes meat, fish, poultry, eggs, milk, cheese, yogurt, soya and quinoa.
- **Low biological value (LBV) protein** - Includes cereals, nuts, seeds and pulses.

Micro-nutrients

Vitamins

Fat soluble vitamin A - Main functions include keeping the skin healthy, helps vision in weak light and helps children grow. Examples include leafy vegetables, eggs, oily fish and orange/yellow fruits.

Fat soluble vitamin D - The main function of this micro-nutrient is to help the body absorb calcium during digestion. Examples include eggs, oily fish, fortified cereals and margarine.

Water soluble vitamin B group - Helps absorb minerals in the body, release energy from nutrients and helps to create red blood cells. Examples include wholegrain foods, milk and eggs.

Water soluble vitamin C - Helps absorb iron in the body during digestion, supports the immune system and helps support connective tissue in the body which bind cells in the body together. Examples include citrus fruits, kiwi fruit, cabbage, broccoli, potatoes and liver.

Micro-nutrients

Minerals

Calcium - Needed for strengthening teeth and bones. Examples include dairy products, soya and green leafy vegetables.

Iron - To make haemoglobin in red blood cells to carry oxygen around the body. Examples include nuts, beans, red meat and green leafy vegetables.

Sodium - Controls how much water is in the body and helps with the function of nerves and muscles. Examples include salt, processed foods and cured meats.

Potassium - Helps the heart muscle to work correctly and regulates the balance of fluid in the body. Examples include bananas, broccoli, parsnips, beans, nuts and fish.

Magnesium - Helps convert food into energy. Examples include wholemeal bread, nuts and spinach.

Dietary fibre (NSP) - Helps digestion and prevents constipation. Examples include wholegrain foods (wholemeal pasta, bread and cereals), brown rice, lentils, beans and pulses.

Water - Helps control temperature of the body, helps get rid of waste products from the body and prevents dehydration. Foods that contain water naturally include fruits and vegetables, milk and eggs

Year 10 Hospitality and Catering- Understanding the importance of nutrition

Name the 3 macro-nutrients and provide examples:

Micro-nutrients

What do each of these vitamins do? (Provide examples)

Fat soluble vitamin A –

Fat soluble vitamin D –

Water soluble vitamin B group –

Water soluble vitamin C -

Micro-nutrients

Describe what each mineral below does. Provide examples:

Calcium -

Iron –

Sodium -

Potassium -

Magnesium -

Dietary fibre (NSP) -

Water -

Year 10 Hospitality and Catering- Understanding the importance of nutrition

Nutrition at different life-stages

Adults:

Early – Growth in regard to height of the body continues to develop until 21 years of age. Therefore, all micro-nutrients and macro-nutrients especially carbohydrates, protein, fats, vitamins, calcium and iron are needed for strength, to avoid diseases and to maintain being healthy.

Middle – The metabolic rate starts to slow down at this stage, and it is very easy to gain weight if the energy intake is unbalanced and there isn't enough physical activity.

Elderly – The body's systems start to slow down with age and a risk of blood pressure can increase as well as decrease in appetite, vision and long-term memory. Because of this, it is essential to keep the body strong and free from

Children:

Babies – All nutrients are essential and important in babies, especially protein as growth and development of the body is very quick at this stage. Vitamins and minerals are also important. You should try to limit the amount of salt and free sugars in the diet.

Toddlers – All nutrients remain very important in the diet at this stage as growth remains. A variety of foods are needed for toddlers to have all the micro-nutrients and macro-nutrients the body needs to develop.

Teenagers – The body grows at a fast pace at different times at this stage as the body develops from a child to an adult, therefore all nutrients are essential within proportions. Girls start their menstruation which can

Special Dietary Needs

Different energy requirements based on:

Lifestyles / Occupation / Age / Activity level

The amount of energy the body needs is determined with each of the above factors e.g. active lifestyle or physical activity level would need more energy compared to a person being sedentary.

Dietary requirements:

Religious beliefs – Different religions have different dietary requirements.

Vegetarian – Avoids eating meats and fish but does eat dairy products and protein alternatives such as Quorn and tofu.

Vegan – Avoids all animal foods and products but can eat all plant-based foods and protein alternatives such as tofu and tempeh.

Pescatarian – Follows a vegetarian diet but does eat fish products and seafood.

Medical conditions:

Allergens – Examples of food allergies include milk, eggs, nuts and seafood.

Lactose intolerance – Unable to digest lactose which is mainly found in milk and dairy products.

Gluten intolerance – Follows a gluten free diet and eats alternatives to food containing wheat, barley and rye.

Diabetes (Type 2) – High level of glucose in the blood, therefore changes include reducing the amount of fat, salt and sugar in the diet.

Cardiovascular disorder – Needing a balanced, healthy diet with low levels of salt, sugar and fat.

Iron deficiency – Needing to eat more dark green leafy vegetables, fortified cereals and dried fruit.

Year 10 Hospitality and Catering- Understanding the importance of nutrition

Describe nutrition at each different life-stage:

Adults:

Early –

Middle –

Elderly –

Children:

Babies –

Toddlers –

Teenagers –

Define the different special dietary needs below:

Different energy requirements based on:

Lifestyles / Occupation / Age / Activity level

The amount of energy the body needs is determined with each of the above factors e.g. active lifestyle or physical activity level would need more energy compared to a person being sedentary.

Dietary requirements:

Religious beliefs –

Vegetarian –

Vegan –

Pescatarian –

Medical conditions:

Allergens –

Lactose intolerance –

Gluten intolerance –

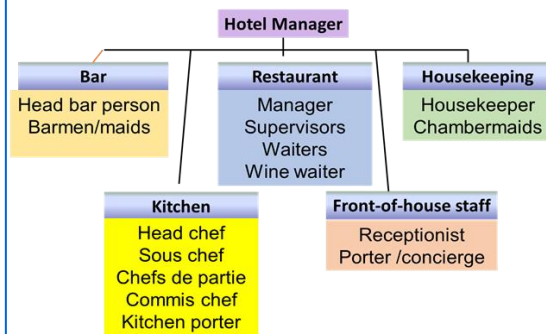
Diabetes (Type 2) –

Cardiovascular disorder –

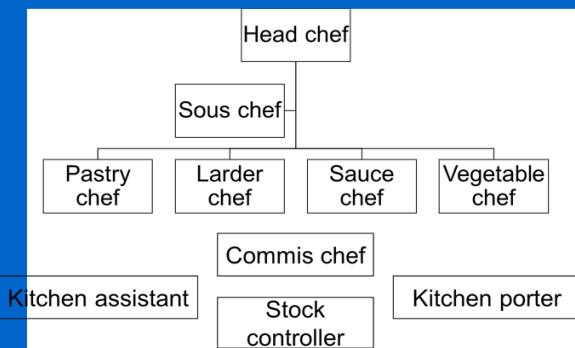
Iron deficiency –

Job roles in the industry

Staff structure in a hotel



The Kitchen brigade- Back of House



Most large establishments could have **chefs de partie** in the following areas:

- **Sauce chef-** Le Saucier
- **Pastry chef-** Le Pâtissier- baked goods and dessert
- **Fish chef-** Le Poissonnier
- **Vegetable chef-** L'entremetier
- **Soup chef-** Le Potager
- **Larder chef-** Le garde manger- cold starters and salads
- The **commis chef** or assistant chef is a chef in training
- The **kitchen porter** washes up and may do basic vegetable preparation
- The **stock controller** is in charge of all aspects of store keeping and stock control.

Front of House roles

Reception

Receptionist: meet customers and direct them to the correct person or place; they manage visitor lists and booking systems
Porter/ Concierge; assist hotel guests by making reservations, booking taxis and booking tickets for local attractions and events.

Restaurant and bar

Restaurant manager (Maitre d'Hote): The restaurant manager is in overall charge of the restaurant; they take bookings, relay information to the head chef, complete staff rotas, ensure the smooth running of the restaurant

Head waiter (ess): Second in charge of the restaurant,. Greets and seats customers, relays information to the staff, Deals with complaints and issues referred by the waiting staff.

Waiting staff Serve customers, clear and lay tables, check the customers are satisfied with the food and service. May give advice on choices from the menu and special order foods

Wine waiter- Le sommelier: Specialises in all areas of wine and matching food, advises customers on their choices of wine, Wine waiters serve the wine to the customer and can advise customers on their choices as well

Bar staff serve drinks and take food orders , wash up, clear tables, change barrels and fill shelves.

Baristas make and serve hot and cold beverages, in particular different types of coffee such as espresso, cappuccino and latte.

Personal attributes



Working hours

- Hospitality and Catering jobs tend to be long hours, early starts for breakfast in a hotel to late nights for dinner in a restaurant.
- Staff will still get 2 days off a week but it will be quieter days instead of the weekend
- Shifts could be 6-3. 11-6. 3-11 or other hours.
- Monthly salaried staff may not have set hours eg Head Chef who might work from early morning to late night every day

Contracts of employment

1. a written statement of employment or **contract** setting out their duties, rights and responsibilities
2. the statutory minimum level of paid holiday 28 days for full time workers
3. a pay slip showing all deductions, eg National insurance, tax . Earning above £166 a week
4. the **statutory** minimum length of rest breaks- one 20 min break for 6 hrs worked
5. Statutory Sick Pay (SSP) £94.25 pw for 28 weeks (some may get full wages for a limited amount of time)
6. Maternity, paternity and adoption pay and leave-90% of earnings for 6 weeks then ££148.68 for next 33 weeks

Casual staff / Agency staff

- work for specific functions and can be employed through an agency.
- They do not have a contract or set hours of work.
- They are needed at busier times of the year e.g. at Christmas or for weddings, New years eve

Temporary staff

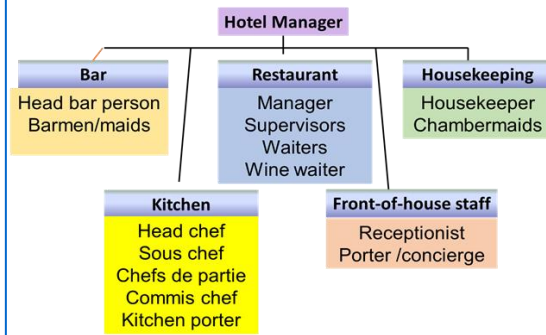
- Employed for a specific length of time such as the summer tourist season or the month of December.
- Temporary staff have the same rights as permanent staff for the duration of their contract.
- Temporary staff employed for longer than 2 years become permanent by law

Zero Hours Contract

This type of contract is between the employer and a worker, where the worker may sign an agreement to be available to work when they are needed, but no specific number of hours or times to start or end work are given. The employer is not required to offer the person any work and the worker is not required to accept the work.

Job roles in the industry

Staff structure in a hotel



Front of House roles

Reception
Receptionist:

Restaurant and bar
Restaurant manager (Maître d'Hôte):

Head waiter (ess):

Waiting staff

Wine waiter- Le sommelier

Bar staff

Baristas

Working hours

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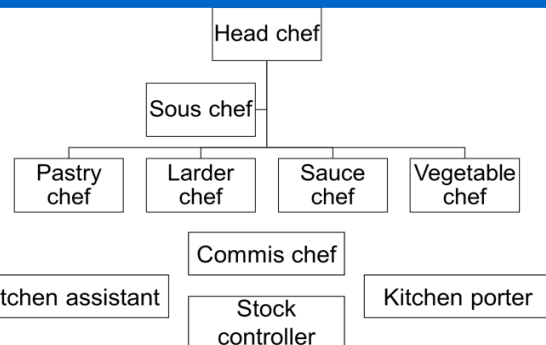
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The Kitchen brigade- Back of House



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- **Fish chef**
- **Vegetable chef**
- **Soup chef**
- **Larder chef**
- **The commis chef**
- **The kitchen porter**
- **The stock controller**

Personal attributes



Remuneration

Remuneration is a term used for the reward that people receive from working somewhere. It includes their basic pay, plus extra money to top up their income from: Tips and gratuities- money given to someone by a customer as a way of saying 'thank you' for good service

Service charge- a percentage added to the customers bill to reward the employees who have provided the customer with a service

Bonus payments and rewards- given by some employers as a way of rewarding hard work throughout the year and helping make the business successful.

It is quite common for all the tips, gratuities and service charges to be divided equally amongst all the workers in, e.g. restaurant. This is known as a tronc arrangement, and the person who works out and distributes the extra money is known as a 'tronicmaster'.

Paid annual leave

- All workers are entitled to 28 days paid leave annually
- no** legal right for employees to be given Bank and Public Holidays. Most hospitality staff would work these days

To calculate holiday entitlement,

Multiply the full-time entitlement (28 days) by the number of days worked and divide by the number of days full-time staff work

Entitlement for 3 days a week: $28 \times 3/5 = 16.8$ days

Compulsory Rest Breaks

Adult workers are entitled to 24 hours off in each 7 day period and young workers (15-18) are entitled to 2 days in 7.

Adult workers are entitled to at least 20 minutes uninterrupted rest if their working day is longer than 6 hours.

Young workers are entitled to 30 minutes rest if their working day is over 4.5 hours long.

Factors affecting success

Costs - need to make a profit. Consider cost of everything you buy and selling price.

- Material - Anything involved in making product
- Labour - Costs of staff
- Overheads** - Anything not connected with making products

Economy - when the economy slows down, business have lower sales as consumers eat out less because they have less disposable income

Environment - 3 R's, packaging, food waste, global warming, carbon footprint, clean eating

Technology - Using technology to improve service, delivery and stock control - touch screen customer ordering, EPOS systems, stock management, apps for delivery services

Emerging and innovative cooking techniques - sous vide, clean eating, steaming, new restaurants,

Customer demographics and lifestyle

- delivery services Facebook Twitter

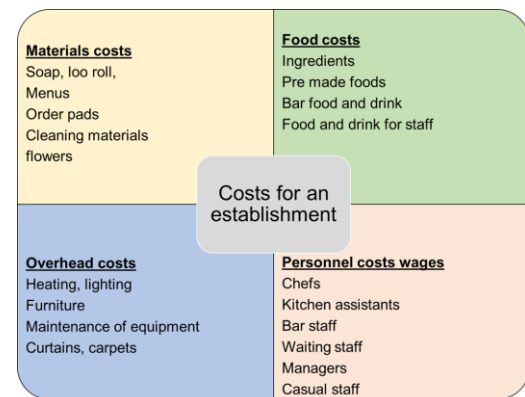
Customer service-customer satisfaction - free WiFi, order online

Competition - Low cost food (£1 menu, coffee McDonalds espresso v Starbucks)

Trends healthy food options, pop-up bars, cafes and restaurants, cronut, clean eating, low carb, good fats,

Political factors - Increasing regulations - from government due to health issues, Brexit, use of migrant labour, migrants - ethnic foods

Media - Strong global brand, Good community reputation - children's charities / Ronald McDonald House, celebrity chefs, celebrity endorsements, Masterchef,



What is portion control?

- Portion control is the amount of each menu item that is served to the customer.
- It depends on the type of customer, the type of food served,
- some foods are served in very small portions due to the high cost of the item eg caviar is served by the teaspoon

Reasons for failure

- A saturated market** - there is a fine line between competition & too many for the number of customers
- General business incompetence** - 46% of business fail due to lack of business knowledge
- Lack of capital** - not enough money to get through the first few months
- Location** - either not enough people walk past (foot-fall) live & work nearby
- Quality of life** - most restaurateurs work 60 hours a week - not the glamorous life they thought
- Lack of industry experience** - most successful restaurateurs tend to have previous industry experience
- Failure to create a good enough brand** - They did not incorporate the 12 Ps of restaurant branding.(Place, Product, Price, People, Promotion, Promise, Principles, Props, Production, Performance, Positioning and Press)
- Name of the restaurant is too long-** A restaurant with a name that is brief, descriptive and attractive is more likely to succeed.
- Lack of differentiation** -the brand is not different enough
- Poor financial controls** - Main costs - labour and food exceeded 60% of sales

Remuneration

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Service charge- a percentage added to the customers _____ to reward the employees who have provided the customer with a service
_____ payments and _____ - given by some employers as a way of rewarding hard work throughout the _____ and helping make the business successful.

It is _____ common for all the tips, _____ and service charges to be divided equally amongst all the _____ in, e.g. restaurant. This is known as a _____ arrangement, and the person who _____ out and distributes the extra money is known as a 'troncmaster'.

Paid annual leave

Compulsory Rest Breaks

Factors affecting success

Costs –

Material - Anything involved in making product

- Labour –
- Overheads –

Economy –

Environment –

Technology –

Emerging and innovative cooking techniques –

Customer demographics and lifestyle

–

Customer service–

Competition –

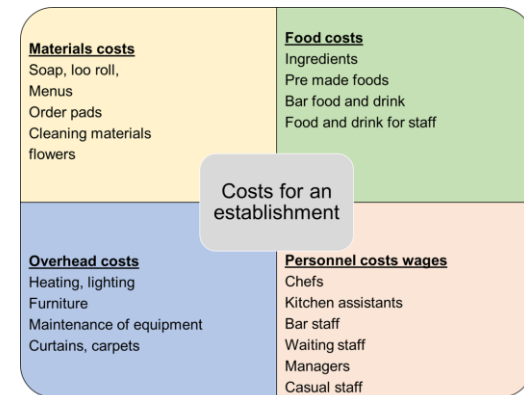
Trends

Political factors –

Media –

Reasons for failure

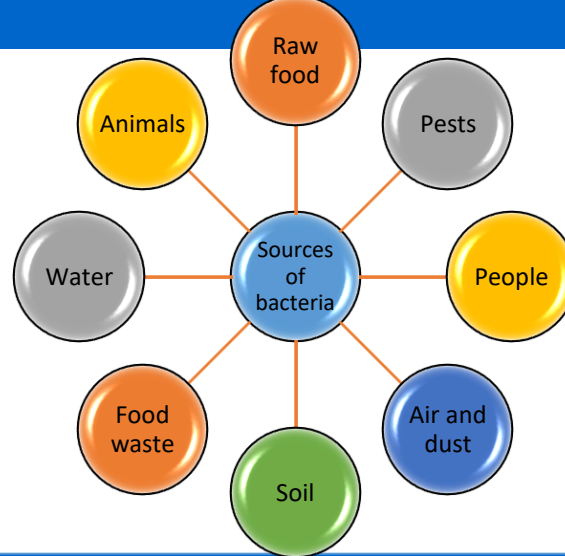
1. A saturated market –
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3. Lack of capital –
4. Location –
5. Quality of life -
6. Lack of industry experience –
7. Failure to create a good enough brand –
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9. Lack of differentiation –
10. Poor financial controls –



What is portion control?

Food-related causes of ill health

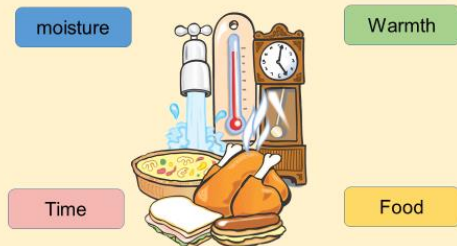
Microbes- are tiny micro-organisms that can contaminate food and spoil it, causing ill health. The micro-organisms discussed on this page are bacteria, yeasts and moulds



Bacteria

- Bacteria are single-celled micro-organisms. Bacteria can be found everywhere around you; on your skin, in food, in soil, in water and in the air.
- Most bacteria are harmless, but some are **pathogenic** and can cause food poisoning. General food poisoning **symptoms** are vomiting (being sick) and diarrhoea.
- Other types of bacteria cause food to decay; these are called food spoilage bacteria, which cause food to smell and lose its texture and flavour.

What do bacteria need to multiply?



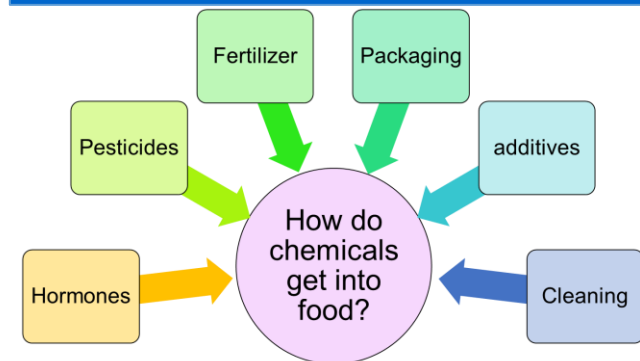
Yeasts

- Yeasts are a single celled fungi that reproduce by 'budding' – the yeast cell grows a bud, which becomes bigger until it eventually breaks off and becomes a new yeast cell.
- Yeast can grow in acidic, sweet foods; for example orange juice can ferment if it is not stored correctly, and honey can ferment if not pasteurised.
- Yeasts prefer moist, acidic foods.
- Yeasts can grow in high concentrations of sugar and salt.
- Yeasts grow best in warm conditions (around 25-29°C) but can also grow at fridge temperatures (0-5°C)
- Yeasts are destroyed at temperatures above 100°C.

Moulds

- Moulds are tiny fungi; they produce thread like filaments that help the mould to spread around the food.
- Moulds grow in warm and moist conditions.
- Moulds grow easily on bread, cheese and soft fruits, and can grow on foods with high sugar and salt concentrations.
- Moulds grow best between 20°C and 30°C, but can also grow in the fridge (0°C-5°C)
- Mould growth may be speeded up by high humidity and fluctuating temperatures
- Moulds can grow on fairly dry food, such as hard cheese (for example Cheddar cheese)
- Moulds often spoil food such as bread and other bakery products.

Chemicals



Metals

Aluminium

- Aluminium is one of the most common metals used in cookware as it is lightweight and conducts heat well.
- When aluminium surfaces are in contact with acidic foods, such as tomatoes and citrus fruits, the aluminium reacts and can leach (dissolve) into the food. This can give the food an unwanted metallic taste.
- When aluminium has been associated with Alzheimer's disease, there is no evidence that this causes the disease. The world health Organisation estimate that adults can consume more than 50 mg of aluminium daily without harm, so day to day exposure to aluminium from cooking is considered to be safe.
- Aluminium cookware can be anodised (hardened through a process that makes it unreactive) or coated with a less-reactive material, such as stainless steel, so that it does not react with food.

Copper

- Copper may be used in cups, pots and pans. It warms quickly and is the best conductor of heat.
- Copper and copper-alloy surfaces react with acidic foods, such as tomatoes and citrus fruits, and can leach (dissolve) into the food. High doses of copper can be toxic, so most copper pans are lined with stainless steel to avoid this happening.

Food-related causes of ill health

Bacteria

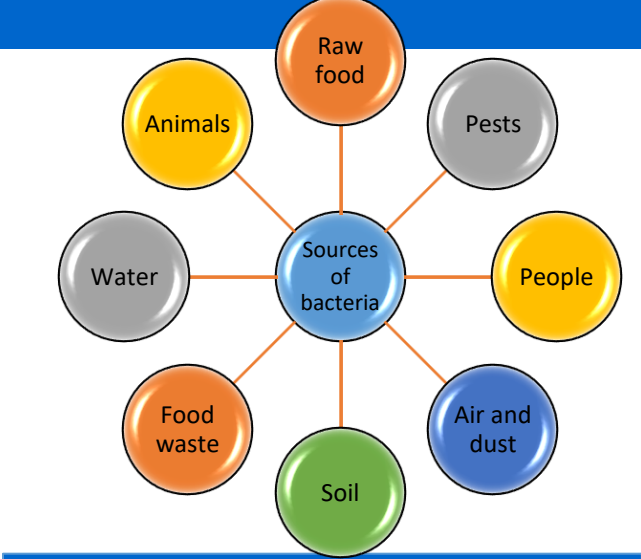
What do bacteria need to multiply?

moisture

Warmth

Time

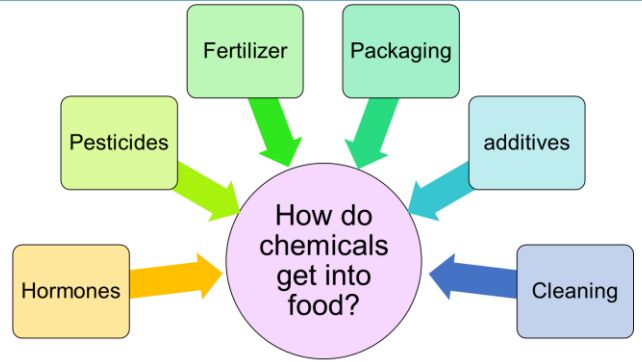
Food



Yeasts

Moulds

Chemicals



Metals

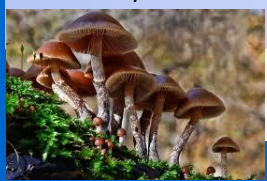
Aluminium

Copper

Food-related causes of ill health

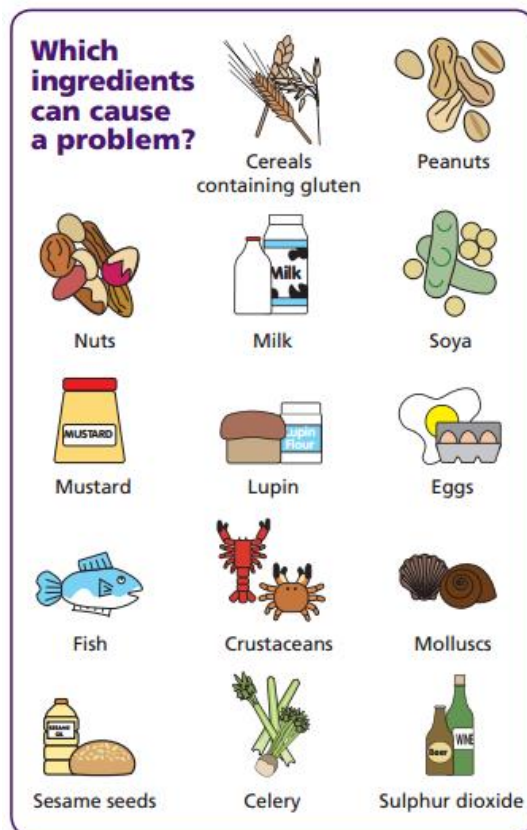
Poisonous plants

- Some mushrooms are poisonous, so you should pick mushrooms to eat unless you are 100% sure of what they are. The death cap and autumn skullcap are two of the most poisonous. Consuming poisonous mushrooms can lead to pain in the area of the kidneys, thirst, vomiting, headache and fatigue.
- Many berries that grow wild are poisonous and should not be eaten. Yew berries, deadly nightshade and unripe elderberries are all poisonous. Consuming poisonous berries can lead to nausea, vomiting, stomach ache and diarrhoea, but can also be fatal.
- Rhubarb leaves contain oxalic acid, which shuts down the kidneys and can be fatal; the stalks are safe to eat however.
- Glycoalkaloids are found in leaves, stems and sprouts of potatoes. They can build up in potatoes if they are left too long in the light, causing them to turn green. Eating glycoalkaloids can lead to cramps, diarrhoea and coma, and can prove fatal.
- If nuts and cereals get damp when they are stored, they can develop a mould that produces a **toxin** that can damage the liver.
- Dried kidney beans contain a toxin called lectin that makes them unsuitable for eating. Eating raw or inadequately cooked beans can lead to symptoms that indicate food poisoning. Kidney beans should be soaked and boiled for at least ten minutes to destroy the toxin.



Allergies

- A person with a food allergy experiences an allergic reaction when they eat or come into contact with specific foods.
- Allergic reactions are caused by the body's immune system reacting to the food and can be fatal.



Intolerances

Some people have sensitivity to certain foods. This is called a food intolerance. Eating these foods can cause symptoms such as nausea, abdominal pain, joint aches and pains, tiredness and weakness



Lactose intolerance

- A person with a **lactose** intolerance cannot digest the sugar in milk called lactose.
- People with a lactose intolerance need to avoid all dairy products and foods that contain dairy products in their ingredients.

Gluten intolerance

- Gluten is a protein present in a number of cereals including wheat, rye and barley.
- Wheat is a nutritious staple food in the UK diet and is found in a number of foods including flour, baked products, bread, cakes, pasta and breakfast cereals.
- People with a gluten intolerance need to follow a gluten free diet.
- It is important not to confuse gluten intolerance with **coeliac disease** which is an autoimmune disease caused by a reaction of the immune system to gluten. A person with coeliac disease is called a **coeliac**.

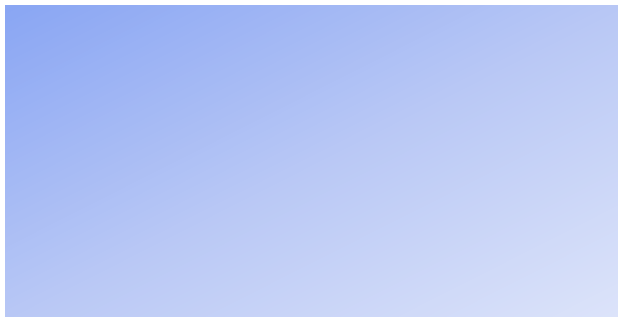


Food-related causes of ill health

Poisonous plants



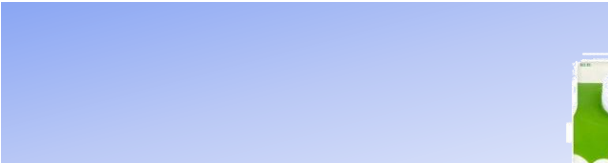
Allergies



Which ingredients can cause a problem?

 Cereals containing gluten	 Peanuts	
 Nuts	 Milk	 Soya
 Mustard	 Lupin	 Eggs
 Fish	 Crustaceans	 Molluscs
 Sesame seeds	 Celery	 Sulphur dioxide

Intolerances



Lactose intolerance



Gluten intolerance



The role and responsibility of the Environmental Health Officer

to provide support to minimise health and safety hazards. **Environmental Health Officers (EHOs)** are responsible for carrying out measures to protect public health and

Role of EHOs

- They look after the safety and hygiene of food through all stages of the manufacture or production from distribution to storage and service.
- They help develop, co-ordinate and enforce food safety policies.
- They have the right to enter and inspect food premises at all reasonable hours and can visit without advance notice.
- They carry out routine inspections of all food premises in their area; the frequency of routine inspections depends on the potential risk posed by the type of business and its previous record- some high-risk premises may be inspected at least every six months, others much less often.
- They visit premises as a result of a complaint.
- They have powers of enforcement and can close businesses in extreme cases.



Responsibilities of EHOs

- They check that food producers handle all food hygienically so as not to give customers food poisoning.
- They check that food is being kept at the specific temperatures at which it should be stored or held.
- They check that staff are properly dressed, with clean nails, no jewellery, hair covered or tied back, and showing good hygiene habits.
- They review processes in the workplace, such as the handling of food, use of equipment, use of colour coded chopping boards, washing-up and disposal of waste.
- They inspect food stores- fridges, freezers and dry stores.
- They check stock rotation and temperature logs
- They check that equipment is clean, well maintained and with safety notices if appropriate.
- They check the temperature of the food when it is cooked with probes to ensure that it is at the correct temperature.
- They ask questions to check compliance with the law or good practice
- They identify potential hazards
- They review safety management systems and plans
- At the end of an inspection they give verbal feedback, discuss any problems and advise on possible solutions. They complete a report of inspection findings, which tells the business what **enforcement action** is to be taken.

Enforcement action

Enforcement action is required by law following an inspection from an EHO.

Enforcement action can range from verbal advice, informal or formal letters, and notices through to prosecution.

- **Formal Inspection letters**- tells the food business which issues must be addressed to comply with the law. The EHO may revisit the business to check that the issues have been resolved.
- **Hygiene Improvement Notices**- An EHO can serve a Hygiene Improvement Notice when they believe that a food business is failing to comply with food hygiene regulations. This notice will specify what's going wrong and what needs to be done by which date. The EHO will visit again to see if the required work has been done. If it has not improved, it can lead to a fine or imprisonment.
- **Hygiene Emergency Prohibition Notices**- If an EHO believes that there is a significant risk to health and injury, a Hygiene Emergency Prohibition Notice may be served. The notice stops the use of the unsafe equipment, processes or premises immediately. It can only be removed by an EHO once the issues have been addressed.
- **Voluntary closure**- A food business may elect to close voluntarily to carry out improvements. However, should the business reopen before the improvements are completed, the EHO will serve a Hygiene Emergency Prohibition Notice.
- **Seizure and detention of food**- EHOs have the power to inspect and seize food suspected of not meeting food safety regulations. Food is taken if there is suspicion that it is contaminated and is likely to cause food poisoning or disease. Seized food may undergo microbiological examination and testing.
- **Condemnation of food**- In order to condemn or seize food, the EHO must present their findings to a court. They will consider the information and decide whether the food poses a risk to human health and whether or not to condemn it.
- **Voluntary surrender of food**- The owner of a business may surrender unfit food to the EHO voluntarily. This would avoid the involvement of the court.



The role and responsibility of the Environmental Health Officer

Role of EHOs



Responsibilities of EHOs

Enforcement action

Enforcement action is required by law following an inspection from an EHO.

Enforcement action can range from verbal advice, informal or formal letters, and notices through to prosecution.

- **Formal Inspection letters-**
- **Hygiene Improvement Notices-**
- **Hygiene Emergency Prohibition Notices-**
- **Voluntary closure-**
- **Seizure and detention of food-**
- **Condemnation of food-**
- **Voluntary surrender of food-**



Food safety legislation

Food Safety Act 1990

- This act is concerned with all aspects of food production and sale.
- It affects everyone involved in the production, processing, storage, distribution and sale of food.
- It ensures that all food produced is safe to eat.
- The act states that it is an offence to make food sold for human consumption unsafe to eat.
- A food producer or retailer may not add any substances to food, or subject food to any process or treatment, which will make it harmful to health.
- An EHO may inspect any food intended for human consumption at any reasonable times. If the food is regarded as unfit for human consumption, it may be seized.
- The legislation also provides a defence for food producers, processors and retailers. They must prove that all reasonable precautions were taken to prevent a food safety incidence. This is called **due diligence**.
- Failure to take reasonable precautions can result in prosecution.
- Magistrates' courts may impose a fine, prison sentence or both for offences committed.

Hazard analysis and critical control points (HACCP)

This is a process that is designed to help look at how you handle food and to put procedures in place to ensure that the food you produce is safe to eat. Every business that produces, sells or serves food is required to have a HACCP plan in place with a written **food safety plan**. It is the responsibility of the owner of the business to develop an appropriate food safety management system based on HACCP.

HACCP systems should apply the following principles:

1. Create a flow chart or table showing each step in the preparation, making, serving and storing of each dish.
2. Each step should be analysed to identify the hazards. Hazards can be:
 - Physical- foreign materials can cause injury to the consumer; these might be metal or plastic, or natural hazards such as bones in fish.
 - Biological- food can become infected by bacteria, which might lead to food poisoning
 - Chemical- potentially dangerous chemicals such as cleaning fluids can contaminate food.
3. Identify what can be done to control (prevent) the hazard.
4. Set guidelines on how to ensure food is going to be safe to eat- these are known as critical limits- and keep a record of this.
5. When new dishes are made, there needs to be a HACCP review to ensure that they are safe to eat.
6. All the documentation relating to the HACCP needs to be kept safe.

These regulations apply to food businesses and cover all activities involving food. The legislation clearly sets out the responsibility of food businesses to:

- Produce food safely and make sure it is consistently safe to eat; food is unsafe if it is harmful to health and unfit for human consumption
- Keep records of suppliers so that food can be traced; businesses must withdraw food that does not meet food safety requirements.

The whole food chain, from **farm to fork**, is covered by legislation. Farm to fork means that food can be traced through all the stages of production, processing and distribution back to the original source. The regulation require that food is stored, handled, cooked and served safely; that premises are clean and hygienic; and that people handling food follow basic hygiene rules.

Food safety plan

The following information should be included in a written safety plan:

- Purchase and delivery
- Stock control
- Storage and preparation
- Chilled foods
- Frozen foods
- Cooking
- Hot holding
- Cooling
- Reheating
- Personal hygiene
- Equipment and premises
- Cleaning and maintenance
- Pest control



Using this system can demonstrate the defence of 'due diligence' legally. To prove due diligence a business must be able to demonstrate that it took every possible reasonable step to achieve safe food. This may protect the owner of the business from prosecution.

It is likely that the court would demand written records to support the defence. These might include documents from the safety plans. Other relevant documentation may include staff training records, temperature logs, cleaning schedules, supplier specifications, traceability systems, remedial action where food safety problems have arisen, and pest control measures.

Record Keeping

Detailed records need to be kept of:

- Food safety management procedures
- Training records of staff and staff illness reporting procedures
- Cleaning schedules
- Pest control and waste disposal contracts
- Records of checks, problems found and actions taken, for example a food temperature log book
- List of suppliers

Year 10 Hospitality and catering:

Food safety legislation

Food Safety Act 1990

Record Keeping

Basic hygiene rules

Hazard analysis and critical control points (HACCP)

Food Safety (General Food Hygiene) Regulations 1995

Food safety plan

The following information should be included in a written safety plan:

- .
- .
- .
- .
- .
- .
- .
- .
- .
- .
- .



Food safety legislation

Nutrition claims

There are strict rules about claims that can be made about food on its packaging so that consumers are not misled. For example, if the packaging says that the product is 'fat free', the product must not contain more than 0.5g of fat per 100g or 100ml. Any health claim the manufacturer makes has to be reviewed to ensure it is accurate before it appears on the label.

Nutritional information must be expressed per 100g or per 100ml, and it must be listed in the following specific order:

- Energy-stated in kilojoules (kJ) and kilocalories (kcal) per 100g or 100ml
- Fat
- Saturated
- Carbohydrates
- Sugars
- Fibre (not required by law)
- Protein
- Salt
- Vitamins and minerals-these must also be expressed as a percentage of the **reference intake (RI)**

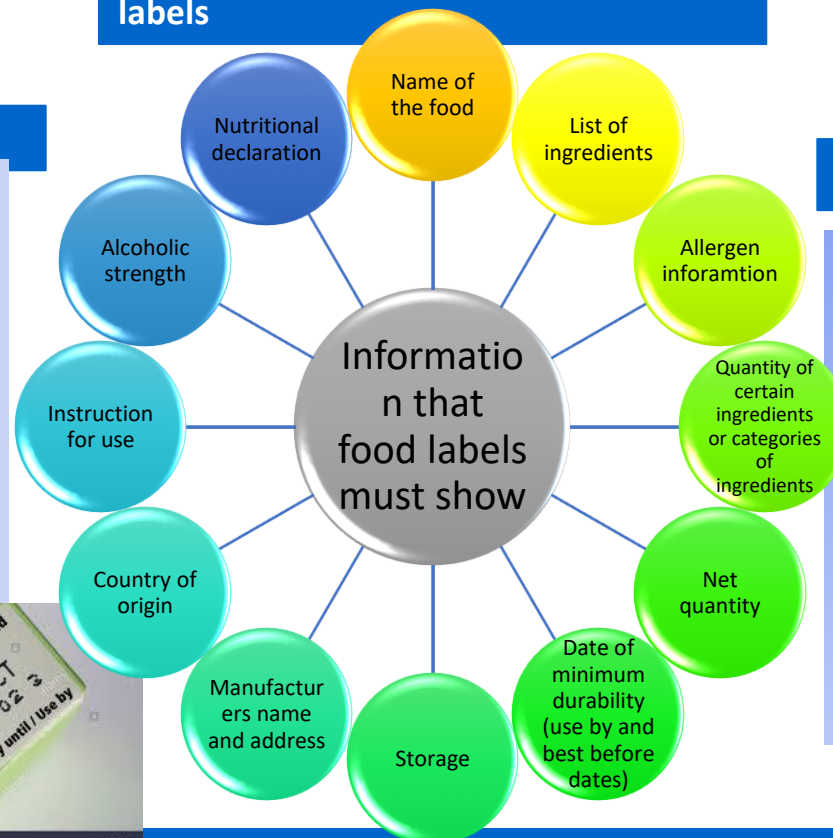
Traffic light labelling is a voluntary system that uses traffic light colours to indicate how healthy a product is at a glance in terms of fat, saturated fat, sugar and salt.

- **Red-** the food is high in something that consumers should try to cut down on in their diet; such foods should be chosen less frequently and eaten in small amounts.
- **Amber-** the food isn't high or low in the nutrient, so this is an acceptable choice most of the time.
- **Green-** the food is low in that nutrient; the more green, the healthier the choice.

Consumers should choose foods with more greens and ambers and fewer reds to ensure healthier choices.

Traffic light labels also give the amount of fat, saturated fats, sugars and salt in grams, the manufacturer or retailer's suggested 'serving' size, and information on the nutrient as a percentage of RI.

Mandatory information required on labels



Each serving (150g) contains

Energy 1046kJ 250kcal	Fat 3.0g LOW	Saturated 1.3g LOW	Sugars 34g HIGH	Salt 0.9g MED
13%	4%	7%	38%	15%

of an adult's reference intake
Typical values (as sold) per 100g: 697kJ/ 167kcal

Dates of minimum durability

Different types of dates are used to tell customers when food should be consumed by:

- **Use-by date-** usually on high risk foods such as soft cheeses, chilled meats, salads and sandwiches, which can go off quickly; it states the date that the food should be used by.
- **Sell-by or display-until date-** this date is aimed at shopkeepers rather than consumers; it is usually a few days before the use-by date to allow the consumer time to eat the food.
- **Best-before date-** these are given on foods that keep for longer, for example biscuits; the food should be eaten before this date for quality purposes, but it is not usually harmful to eat it after this date.



Food labelling regulations

Food labels are used by business to provide information about their products. They are needed to:

- Enable consumers to make informed decisions and choices, and to educate them about the food they choose to buy
- Help us to store, prepare and cook the food we buy correctly
- Identify the ingredients used in food-if a consumer has a severe allergy to certain ingredients (for example nuts), they need to check if the food contains those ingredients.
- Establish the nutrient content of the food- if a consumer has a health condition such as diabetes or high blood pressure, they may want to check the sugar, fat, carbohydrate or salt content of the food.
- Identify where the food comes from- some consumers may prefer to buy local ingredients.

Year 10 Hospitality and catering:

Food safety legislation

Nutrition claims

Dates of minimum durability

Different types of dates are used to tell customers when food should be consumed by:

- Use-by date-
- Sell-by or display-until date-
- Best-before date-

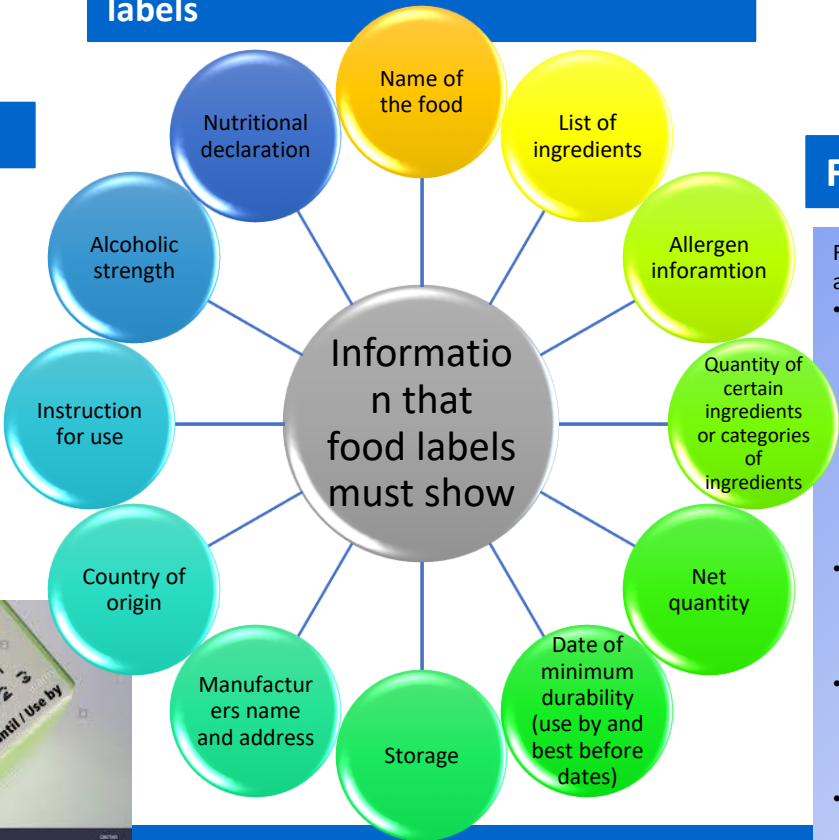


Nutritional labelling

Nutritional information must be expressed per 100g or per 100ml, and it must be listed in the following specific order:

- .
- .
- .
- .
- .
- .
- .
- .

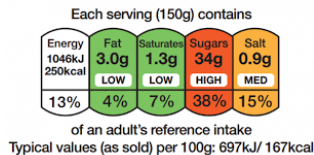
Mandatory information required on labels



Traffic light labelling

Traffic light labelling is a voluntary system that uses traffic light colours to indicate how healthy a product is at a glance in terms of fat, saturated fat, sugar and salt.

- Red-
- Amber-
- Green-



Food labelling regulations

Food labels are used by business to provide information about their products. They are needed to:

- .
- .
- .
- .
- .
- .
- .
- .

Year 10 Hospitality and catering: To know how food can cause ill health

4.4 Common types of food

Food poisoning can be caused by pathogenic bacteria but it can also be caused by virus, chemicals and metals contaminating the food. Food can even be contaminated with poisonous plants and animals.



Sources of food poisoning

- Food can become contaminated during production, preparation and retailing. The main sources are:
- Raw food-for example meat, poultry, shellfish and eggs.
 - People- food-poisoning bacteria are found on the skin, in septic wounds, in the nose and sometimes in the gut.
 - Pests- for examples rats, mice, cockroaches, ants, wasps and flies.
 - Animals- domestic pets and farm animals can carry *E.coli* in their intestines.
 - Air and dust- food must be covered as bacteria in the air can settle on the surface.
 - Water- bacteria such as *Salmonella* are carried in untreated water.
 - Soil- bacteria and spores can survive in soil, so can be found on unwashed vegetables.
 - Food waste-waste needs to be disposed of correctly as it could be a source of contamination and may attract pests.



Conditions necessary for food poisoning

- Bacteria can grow rapidly in the correct conditions. A single **bacterium** can divide into two by the process called **binary fission**. A single bacterium can produce 16 million bacteria in only 12 hours.
- Food poisoning bacteria have four essential requirements for growth:
- **Food**- bacteria grow rapidly in high risk foods that are good sources of protein; such as cooked meat and poultry, shellfish, and seafood, undercooked or lightly cooked eggs, unpasteurised milk and cheeses, cooked rice and pasta, and salads.
 - **Moisture**- bacteria cannot multiply without moisture, which means that they do not usually affect dried foods or products with high quantities of salt or sugar, which absorb water.
 - **Warmth**- most bacteria multiply at **ambient temperature** - normal room temperature. This falls within the danger zone between 5° C and 63° C. Below 5° C most bacteria are unable to multiply rapidly, and below -18° C they become **dormant**. Cooking food at high temperatures above 63° C will destroy most bacteria; when cooked, the food should reach 75° C for at least two minutes.
 - **Time**- in the right conditions the number of bacteria can double every 20 minutes.
- The acidity and alkalinity of a food can influence the growth of bacteria. If conditions are too acidic or too alkaline, bacteria can not grow.

4.5 Symptoms of food –induced ill health

How bacteria make you ill

- **Eating pathogenic bacteria**- when bacteria enter the stomach and intestines they multiply. This is how *Campylobacter* and *Salmonella* cause illness. Some types of food poisoning require the consumption of thousands of bacteria; others, such as *E.coli*, only require the consumption of a few to cause serious illness.
- **Eating a toxin**- a toxin is a poison produced as a waste product by bacteria. Some bacteria, such as *Staphylococcus aureus* and *Bacillus cereus*, produce a toxin when they multiply. Eating the toxin makes you ill, not eating the bacteria.

Symptoms of food poisoning

- A symptom is a sign or indication of a disease.
- The body reacts to bacteria or toxins by developing symptoms such as diarrhoea, vomiting, stomach pains, headache and sweating.
- Some of these symptoms are visible and some are non-visible

Visible symptoms	Non-visible symptoms
Shivering Diarrhoea Vomiting	Feeling tired or weak Stomach ache Headache Feeling nauseous (sick)

Symptoms of food allergies

A food allergy is a serious reaction to a food or ingredients in food. It is caused by the body's immune system reacting to an allergen. If the reaction to a food is a bad one, it could give the following symptoms:

- Skin rash
- Itchiness of skin, eyes and mouth.
- Swollen lips, face, eyes
- Difficulties in breathing.

In severe cases, it can bring about anaphylactic shock- the person develops swelling in their throat and mouth, making it difficult to speak or breathe. This can lead to death if appropriate treatment, such as an EpiPen, is not used quickly.

Symptoms of food intolerances and coeliac disease

Some people have a sensitivity to certain foods, which can cause symptoms such as nausea, abdominal pain, joint aches and pains, tiredness and weakness. This is called a food intolerance- this is not an allergic reaction and it does not involve the immune system.

Coeliac disease is neither a food allergy nor a food intolerance but an autoimmune disease caused by a reaction of the immune system to gluten- a protein found in wheat, rye and barley. The symptoms of coeliac disease vary from person to person and can range from mild to severe.

Symptoms of coeliac disease include:

- Severe diarrhoea, excessive wind and/or constipation
- Persistent or unexplained gastrointestinal symptoms, such as nausea and vomiting.
- Recurrent stomach pain, cramping or bloating.
- Iron, vitamin B12 or folic acid deficiency.
- Anaemia
- Tiredness
- Sudden or unexpected weight loss.

Symptoms of lactose intolerance include:

- Abdominal pain
- Nausea
- Diarrhoea
- flatulence

Year 10 Hospitality and catering: To know how food can cause ill health

4.4 Common types of food



Sources of food poisoning

Food can become contaminated during production, preparation and retailing. The main sources are:



Conditions necessary for food poisoning

Bacteria can grow rapidly in the correct conditions. A single **bacterium** can divide into two by the process called **binary fission**. A single bacterium can produce 16 million bacteria in only 12 hours.

Food poisoning bacteria have four essential requirements for growth:

- **Food-**
- **Moisture-**
- **Warmth-**
- **Time-** in the right conditions the number of bacteria can double every 20 minutes.

The acidity and alkalinity of a food can influence the growth of bacteria. If conditions are too acidic or too alkaline, bacteria can not grow.

4.5 Symptoms of food –induced ill health

How bacteria make you ill

- **Eating pathogenic bacteria-**
- **Eating a toxin-**

Symptoms of food poisoning

Visible symptoms	Non-visible symptoms

Symptoms of food allergies

A food _____ is a serious reaction to a food or _____ in food. It is caused by the body's immune system reacting to an allergen. If the reaction to a food is a bad one, it could give the following _____

In severe cases, it can bring about anaphylactic _____ - the person develops swelling in their _____ and mouth, making it difficult to speak or breathe. This can lead to death if appropriate treatment, such as an _____, is not used quickly.

Symptoms of food intolerances and coeliac disease

Some people have a sensitivity to certain foods, which can cause symptoms such as nausea, abdominal pain, joint aches and p_____, tiredness and weakness. This is called a _____ intolerance- this is not an allergic reaction and it does not involve the immune system.

Coeliac disease is neither a food allergy nor a food intolerance but an autoimmune disease caused by a reaction of the immune system to gluten- a protein found in wheat, rye and barley. The symptoms of coeliac _____ vary from person to person and can range from _____ to severe.

Symptoms of coeliac disease include:

Symptoms of lactose intolerance include:

Year 10 Design and Technology: our world

Technology Push is when research and development in new technology, drives the development of new products.

Technology push is when products are **re-designed because of changes in materials or manufacturing methods.**

This might mean that **new materials have become available**, with improved properties; or that improvements in manufacturing processes mean a manufacturer can **make the product cheaper or more efficiently**, which reduces manufacturing costs and carbon footprints

Market Pull

Market pull is when product ideas are produced in response to market forces.

Examples of market influences include:

- A demand from consumers for new or improved products.
- A competing product is launched by another manufacturer.
- A manufacturer wants to increase their of share the market.

Global Production

Products are sold and manufactured worldwide: we need to consider the positive and negative implications of this and how the products we design affect people, jobs & the environment.

- Developments in transport makes it easier for manufactures to ship materials, components and products worldwide.
- Allows for materials and components to be sourced in one country, manufactured into products or part-products in another and ship worldwide.
- Manufacturing costs can be reduced through automation or global production impacting jobs.
- Mobile technology & the internet make it easier to communicate with people all over the world.
- Greater competition among manufactures, reducing cost

CAD/CAM/CNC

CAD - Computer Aided Design

An effective method of drawing, editing and presenting design work digitally.

CAM - Computer Aided Manufacture

Using machinery to produce products. CAM machines run from instructions produced from CAD drawings.

CNC - Computer Numerically Controlled

Machine tools that are controlled by a computer.

Product Lifecycle

Product life cycle an important part of marketing. It covers the 4 stages a product goes through from its initial introduction to the market until it is replaced as it is not selling well or has been used.



The introduction stage is when the product is 1st developed, the 2nd is growth and manufacturing, maturity would be as the product is used by the customer and decline in and the end of its life when the product is disposed of.

Carbon Footprint

The impact human activities have on the environment in terms of the amount of green house gases produced, measured in units of carbon dioxide



Year 10 Design and Technology: our world

CAD/CAM/CNC

What is technology push?
(give examples)

What is market pull?
(Provide examples)

What is CAD?

What is CAM?

What is CNC?

What is product lifecycle? Explain the stages below:

Global Production- what are the positive and negative implications?

Products are sold and manufactured worldwide: we need to consider the positive and negative implications of this and how the products we design affect people, jobs & the environment.

- -
- -
- -
- -
- -

What is carbon footprint?



Year 10 Design and Technology: our world

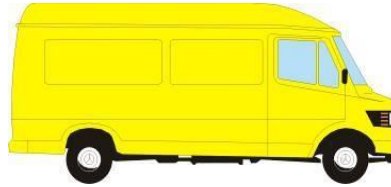
6 Rs - Sustainability

1. **Recycle** and reprocess the materials
2. **Re-use** materials/components/products for another purpose
3. **Reduce** the amount of energy and resources used throughout the whole product life cycle
4. **Repair** products/design them to be easily repaired
5. **Rethink** our current lifestyles and the way we design and make
6. **Refuse** products which are unnecessary or wastefully use resources

Product Miles

How many miles does the product travel?

- Source material to primary processor
- Material to factory
- Product to distributor
- Distributor to retail outlet
- Retail outlet to home



Scale of Productions

There are 4 scale of production:

- prototype or one-off production
- batch production
- mass production
- continuous production

Planned Obsolescence

When a manufacturer plans or designs a product to have a short, useful life. It could mean that after a period of time, the product:

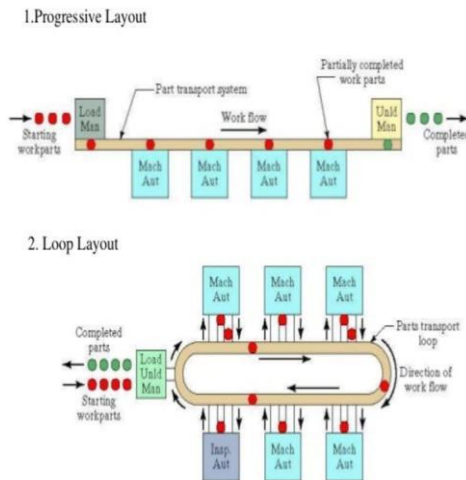
- becomes unfashionable
- will no longer function.

Just-in-Time (JIT)

Just-in-time (JIT) production is a method of organizing a factory so that materials and components are ordered to arrive at the product assembly plant just in time for production.

- triggered by a customer order.
- The correct amounts of materials are ordered in to cover the order, and these arrive just as they are needed by production.
- This saves money on storage, reduces waste and ensures there is no money wasted producing stock that will remain unsold.

Flexible Manufacturing Systems



Production is organized into cells of automated machines performing different tasks. Often along a conveyor line.

Lean Manufacture

Focuses on maximizing productivity while reducing waste when manufacturing.

- Reduced lead times and operating costs
- Improved product quality and customer satisfaction
- Resource savings and better sustainability
- Flexibility through small batch sizes and low inventories
- Better management of process complexity

Year 10 Design and Technology: our world

What are the 6 Rs of sustainability?

1. -
2. -
3. -
4. -
5. -
6. -

Product Miles

How many miles does the product travel?

- Source material to primary processor
- Material to factory
- Product to distributor
- Distributor to retail outlet
- Retail outlet to home



Scale of Productions

What are the 4 scales of production?

- -
- -
- -
- -

Planned Obsolescence

When a manufacturer plans or designs a product to have a short, useful life. It could mean that after a period of time, the product:

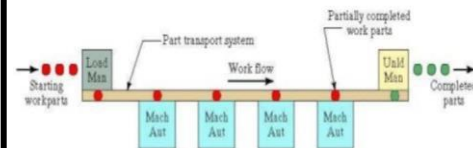
- -
- -

What is Just-in-Time (JIT) production? Give examples.

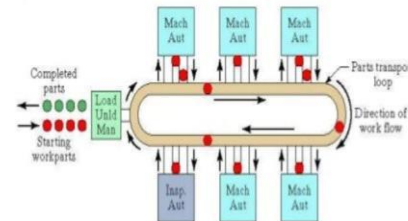
Just-in-time (JIT) production is:

Flexible Manufacturing Systems

1. Progressive Layout



2. Loop Layout



Production is organized into cells of automated machines performing different tasks. Often along a conveyor line.

What is lean manufacture?

Year 10 Design and Technology: Timbers

Timber Classifications

Hardwood

- comes from deciduous trees
- trees lose their leaves in winter
- trees have broad leaves
- is slower growing than softwood
- has seeds that are housed in fruit
- is generally more expensive than softwood
- generally good resistance to decay.



Softwood

- comes from coniferous trees
- is evergreen
- trees have needles rather than leaves
- is quick growing
- has seeds that are housed in cones
- is extensively used in joinery
- is generally less expensive than hardwood
- has generally poor resistance to decay.



Manufactured boards are usually made from timber waste and adhesive. To make them more aesthetically pleasing they are often veneered. They are cheap to buy but will need protective coatings for longevity.

Chip board

Medium Density Fibreboard (MDF)

Plywood

Stock Forms

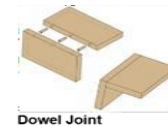
Timber and man-made boards are available in different standardised forms.

Timber cut at a sawmill, it is referred to as sawn finish and uses include garden fence posts and some building work. This type of finish is rough and has not been treated or machined further.

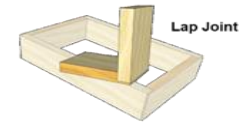
Timber that is sold at DIY shops or from a timber merchant can often be bought with planed edges that have been machined smooth.

Manufactured boards are in sheet form and in standard sizes with various thicknesses depending on the material.

Traditional Joints



Dowel Joint



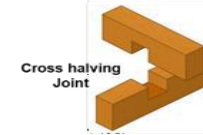
Lap Joint



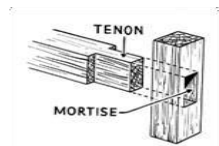
Mitre Joint



Finger Joint



Cross halving Joint



TENON

MORTISE

Fixings and Fastenings

Temporary fixings will often be done using fastening components, such as screws or knock-down fittings, which are most commonly used in joining flat-pack furniture.



Surface finishes.

Physical properties of timbers can be changed, such as colour and texture, by applying a surface finish to the wood.

- staining
- varnishing
- oiling
- waxing
- painting
- laminating

Year 10 Design and Technology: Timbers

Timber Classifications

Hardwood- list the characteristics:

- -
- -
- -
- -
- -
- -
- -



Softwood- list the characteristics

- -
- -
- -
- -
- -
- -
- -



Manufactured boards are usually made from timber waste and adhesive. To make them more aesthetically pleasing they are often veneered. They are cheap to buy but will need protective coatings for longevity. **Give 3 examples below:**

-
-
-

Stock Forms

Timber and man-made boards are available in different standardised forms.

Timber cut at a sawmill, it is referred to as sawn finish and uses include garden fence posts and some building work. This type of finish is rough and has not been treated or machined further.

Timber that is sold at DIY shops or from a timber merchant can often be bought with planed edges that have been machined smooth.

Manufactured boards are in sheet form and in standard sizes with various thicknesses depending on the material.

Traditional Joints- draw 4 different joints below:

Fixings and Fastenings

Temporary fixings will often be done using fastening components, such as screws or knock-down fittings, which are most commonly used in joining flat-pack furniture.



Surface finishes- list below:

- -
- -
- -
- -
- -

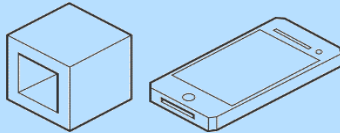
Year 10 Design and Technology: Design Skills

Isometric Drawings,

A good way of showing measurements and how components fit together. Unlike perspective drawings, they don't get smaller as the lines go into the distance.

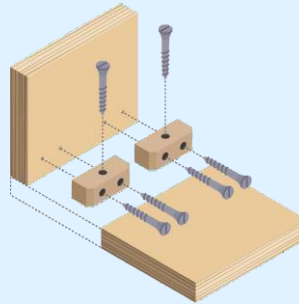
There are three main rules to isometric drawing:

- **horizontal edges are drawn at 30 degrees**
- **vertical edges are drawn as vertical lines**
- **parallel edges appear as parallel lines**



Exploded Diagrams.

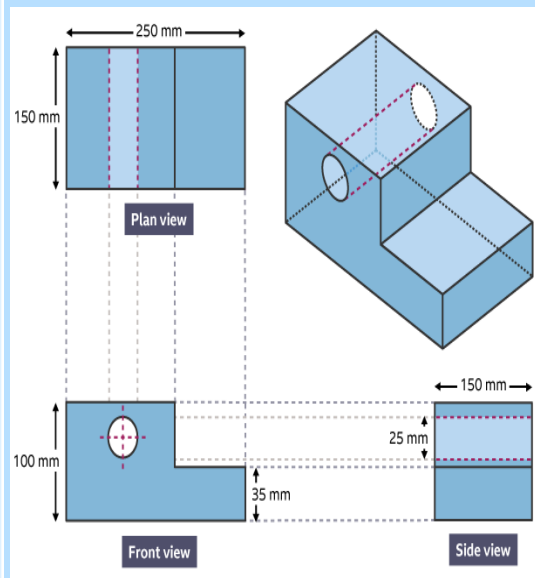
Exploded diagrams show how a product can be assembled and how the separate parts fit together, with dotted lines showing where the parts slide into place. The diagrams also show components that would usually be hidden in a solid drawing.



Orthographic Drawing.

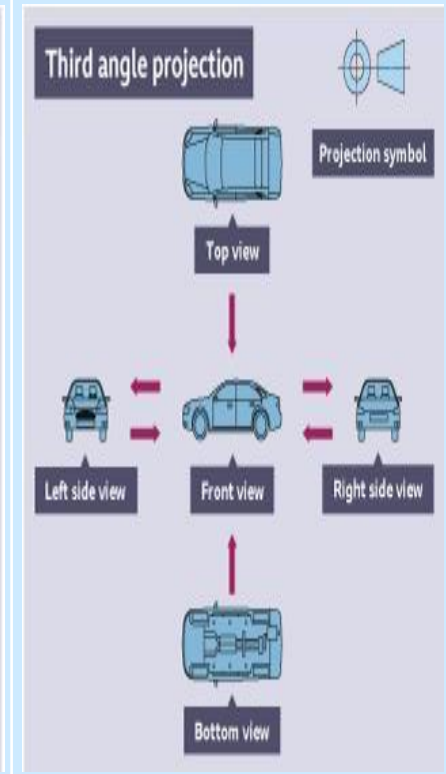
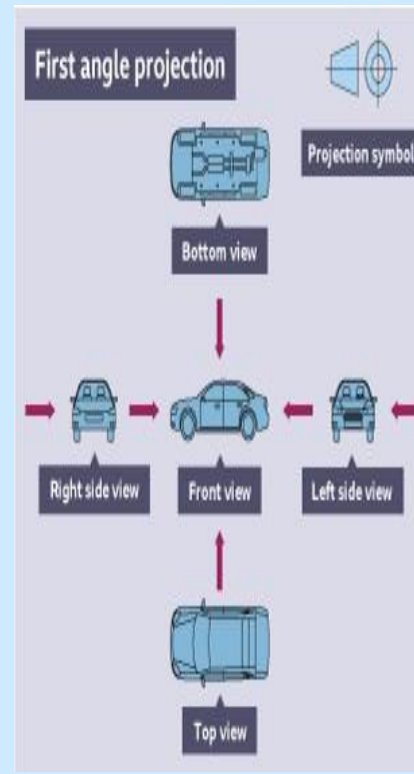
Orthographic projections are working drawings in either a **first or third angle projection** and show each side of a design without perspective, ie a 2D drawing of a 3D object.

They are used to show an object from every angle to help manufacturers plan production. Starting with a front view of a product, construction lines show where areas join and are used to draw a side and plan (top) view, ensuring that the drawing is accurate from all angles. These drawings are to scale and must show dimensions.



Orthographic projections have a set of standard lines to show different aspects of the diagram. These lines allow complex shapes to be drawn simply in 2D.

Outlines	
Construction lines	
Hidden details	
Dimension arrow	
Centre line	

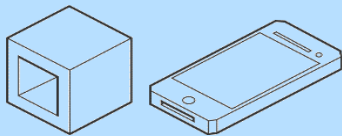


Year 10 Design and Technology: Design Skills

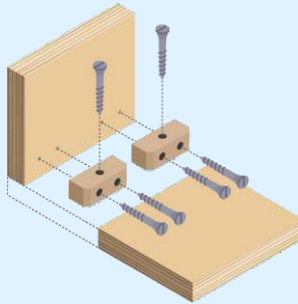
Isometric Drawings,

What are the 3 rules for isometric drawings?

- -
- -
- -



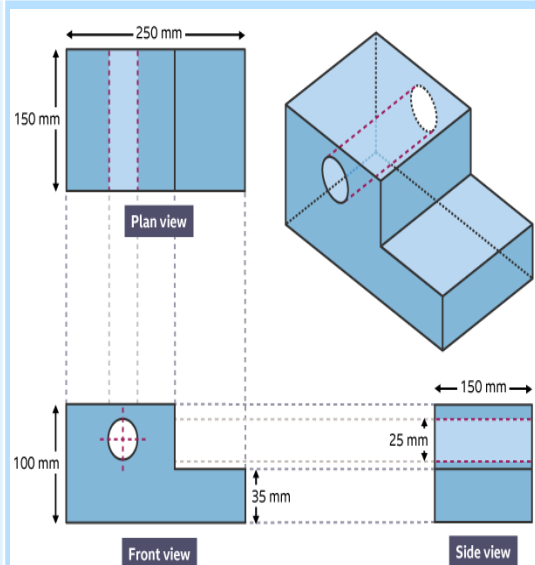
What is an exploded diagram?



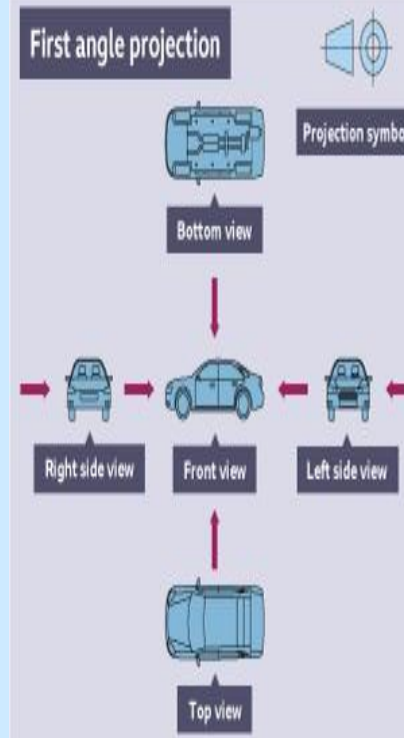
Orthographic projections have a set of standard lines to show different aspects of the diagram. These lines allow complex shapes to be drawn simply in 2D. **What are the lines called?**



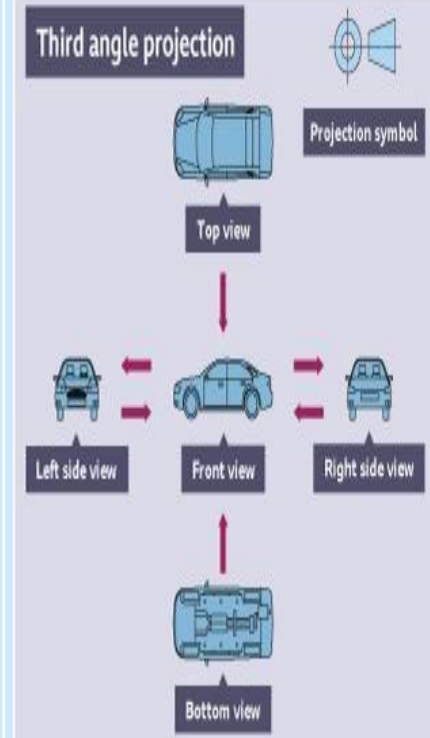
What are orthographic drawings?



First angle projection



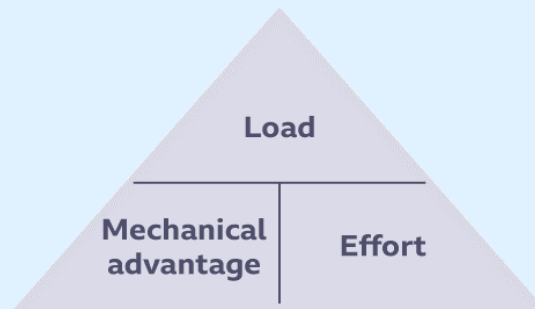
Third angle projection



Year 10 Design and Technology: Mechanical Components

Different Types of Motion

- **Rotary** - moves in a complete circle, e.g. a wheel turning.
- **Linear** - moves in a straight line, e.g. a train moving down a track.
- **Oscillating** - moves backwards and forwards in part of a circle, e.g. a pendulum of a mechanical clock.
- **Reciprocating** - moves backwards and forwards in a straight line, e.g. a piston or pump.



1. $\text{mechanical advantage} = \text{load} \div \text{effort}$
2. $\text{load} = \text{mechanical advantage} \times \text{effort}$
3. $\text{effort} = \text{load} \div \text{mechanical advantage}$

Levers

There are three different types of levers. They are based fulcrum and load in a different order:

First order levers (Class 1) place the fulcrum between the effort and the load. Examples would be a seesaw, which places the fulcrum in the centre and allows equally weighted children to lift each other up

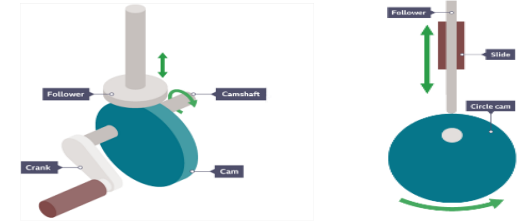
Second order levers (Class 2) place the fulcrum at one end of the lever and the effort at the other, with the load in the centre. The closer together the fulcrum and load are, the easier it is to lift the load. Examples include wheelbarrows, nutcrackers and some bottle openers.

Third order levers (Class 3) place the effort between the fulcrum and the load. If the effort and the fulcrum are further apart, it becomes easier to lift. Examples include tweezers or fishing rods.

Cams Mechanism

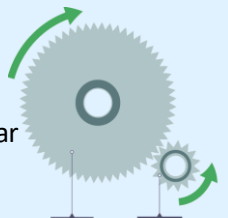
A cam mechanism has two main parts:

- **a cam** - attached to a crankshaft, which rotates
- **a follower** - touches the cam and follows the shape, moving up and down



Gear Trains

Gear trains are when two or more gears are joined together. In a simple gear train, the drive gear the driven gear to turn in the opposite direction.



$$\text{Gear ratio} = \frac{\text{number of teeth on driven gear}}{\text{number of teeth on the drive gear}}$$

Pulleys

Pulleys use mechanical advantage, similar to levers, to lift up loads. Pulleys are wheel shaped with a groove that allows a cord to sit inside the groove.

Belts can be attached around different-sized pulleys to drive shafts to change speed. As with gears, the bigger the wheel, the slower the speed. The velocity ratio between two pulleys can be calculated.

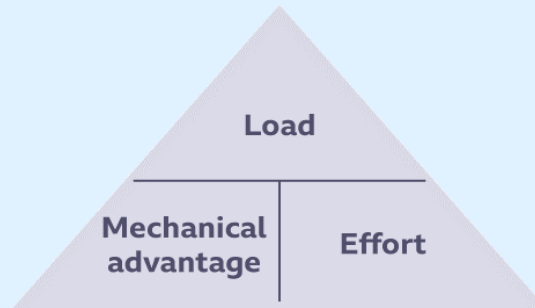
$$\text{Velocity ratio} = \frac{\text{diameter of the driven pulley}}{\text{diameter of the driver pulley}}$$

$$\text{Output speed} = \text{input speed} \div \text{velocity ratio}$$

Year 10 Design and Technology: Mechanical Components

What are the different types of motion?

- -
- -
- -
- -



1. $\text{mechanical advantage} = \text{load} \div \text{effort}$
2. $\text{load} = \text{mechanical advantage} \times \text{effort}$
3. $\text{effort} = \text{load} \div \text{mechanical advantage}$

Levers

There are three different types of levers.

They are based fulcrum and load in a different order. **Describe them below:**

First order levers (Class 1)

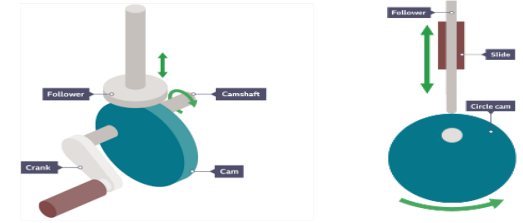
Second order levers (Class 2)

Third order levers (Class 3)

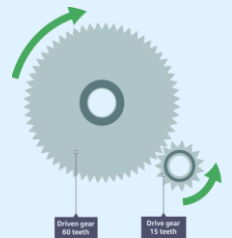
Cams Mechanism

A cam mechanism has two main parts- what are they?

- -
- -



Gear Trains How do we work out the gear ratio of a gear train?



Pulleys How does a pulley work?

Belts How can we calculate the velocity ratio of a belt mechanism?

Client or Potential user profiling

Who is the target user for a product you are designing its important to consider what they will need, like or use.

- Who is your product aimed at?
- Who are your clients or potential clients?
- What do your clients want from your product?
- How old are they?
- Are they male or female?
- Where do they live?
- What are the styling features of the product they currently use?
- How will price change their feelings about the product?
- What kind of lifestyle do they have?
- What products do they use at the moment?

Aesthetics

What does it look like? Is it in particular style? Does it have a theme?

Cost

How much does it cost to buy?
Is this good value for money?

Customer

Who is the product designed for? What age group?

Environment

Is the product environmentally friendly? Can it be recycled for example.

Size

How big is the product?

Safety

Is there any safety features? or safety warnings?

Function

What does it do? What parts does it have?

Materials

What materials is it made from?

Product Analysis

It is important to research similar products. To help you understand what is required from a product and even is some cases how it is made.

- It's a form of primary research.
- Involves looking existing products.
- Working out how they were made.
- Seeing what features might be useful to a new design.

When completing a product analysis it is best to use ACCESS FM. By using each of the keywords as a prompt

Primary research

Primary data is information that you find yourselves. This information is 'new' and directly related to your project.

- *This information could be gathered using:*
- *interviews*
- *questionnaires*
- *analysis of products*
- *materials' tests*
- *observations.*

Secondary Research

Secondary data is 'second hand data which has already been collected by someone else.

Examples of secondary research include:

- information from books, magazine and newspaper articles.
- Test reports.
- internet research.

It is usually easy to find but may be out of date.

It can save time as its much quicker than carrying out test, interview etc.

Data is not always accurate as its not specific to the users needs.

Client or Potential user profiling

Who is the target user for a product you are designing its important to consider what they will need, like or use.

Aesthetics

What does it look like? Is it in particular style? Does it have a theme?

Cost

How much does it cost to buy?
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Product Analysis

Primary research

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Economic

This is about the effects a product has on the economy and is split into two types Linear economy and circular economy.

Linear economy – products are made as cheap as possible. Materials are processed into a product, the product is use, then in is simply disposed of.

Circular economy – Uses a few resources/materials and possible, using the products from as long as possible. They are designed in a way that the products can be easily repaired, reused or recycled after use.

Ergonomics

Ergonomics is the relationship between people and the products which they use.

Things to consider are:

- Comfort?
- Usability?
- Intuitive?
- Knowing how?



Social

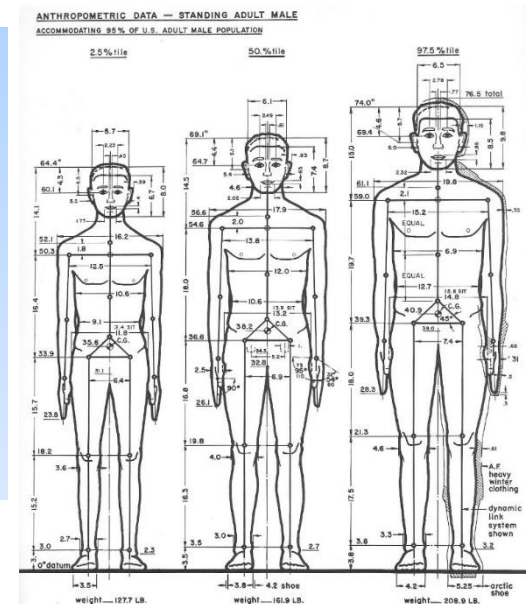
How the social factors of a group of people can influence the design of a product.

- ethnic groups
- political groups
- religious groups.
- Cultural factors.

Anthropometrics

Is the study of Human Measurements, it is important to consider sizes of people in relation to products.

- 5th percentile are the 5 per cent of people who are smaller in size.
- 50th percentile are people of average size
- 95th percentile are 5 per cent of people who are larger in size



Economic

Ergonomics

Ergonomics is the relationship between people and the products which they use.

Things to consider are:

-
-
-
-



Social

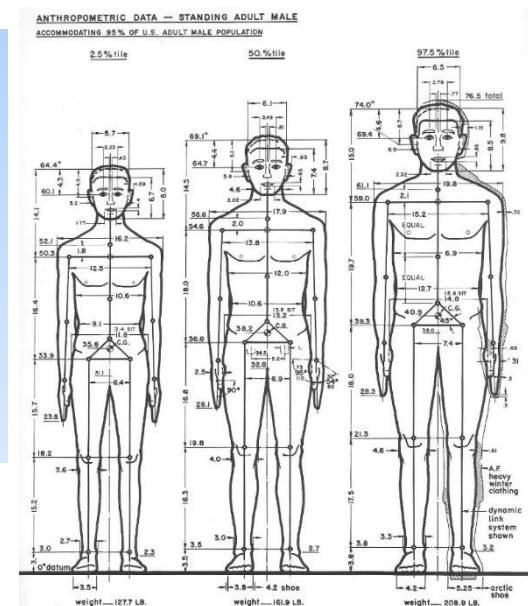
How the _____ factors of a group of people can influence the design of a product.

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-
-

Anthropometrics

Is the study of Human _____, it is important to consider _____ of people in relation to products.

-
-
-



Year 10 Design Technology: Paper & Boards

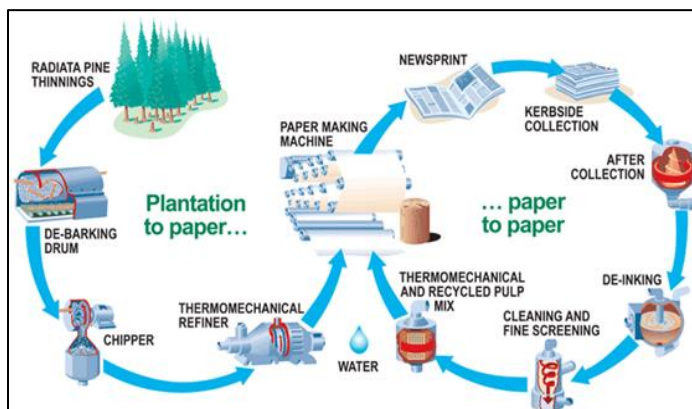
Type of paper	Properties	Uses
Layout paper	Lightweight, thin, cheap, smooth surface	Graphic drawings, animations
Bleedproof (marker) paper	Contains more chalk, smooth, hard, doesn't absorb ink, doesn't bleed	Creating special effects for designers or artists
Tracing paper	Good transparency, expensive	For seeing an image underneath
Grid paper	Covered with continuous square grid	Used in many maths contexts
Cartridge paper	Heavier weight, good quality, opaque	Writing and sketching

Weight and Thickness

Paper is selected by its thickness, measured in **grams per square metre (gsm)**. This is the weight of one square metre of the paper.

Board is selected by its thickness, measured in microns. One micron is 1/1,000th of 1 mm. Sometimes the thickness of board is given in sheets, referring to the number of pieces of paper that have been glued together to make a sheet of board

Manufacture and recycling



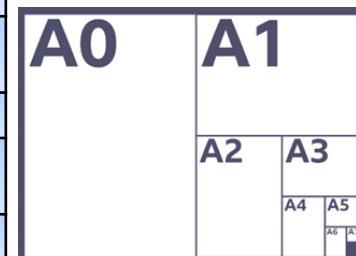
Lamination

Paper and board can be protected further by laminating, which gives a shiny, water-resistant surface. It creates a thick, durable surface, often making the paper or board last longer. The paper or board is placed in a plastic sleeve, which is then heated and pulled through rollers, bonding the two surfaces of the film together and sealing the product.

Type of board	Properties	Uses
Corrugated cardboard	Strong, lightweight	Packaging protection in transportation of products and used to package some hot food such as a pizza due to its insulating properties
Duplex board	Cheaper than white board, available with different finishes (metallic, holographic etc.)	Food packaging, eg biscuit boxes or containers
Solid white board	Top quality, range of thicknesses, excellent to print on	Hardback books
Foil-lined board	Expensive, good quality, aluminium foil lining, excellent barrier against moisture	Pre-packed food packages, cosmetic cartons
Inkjet board	Expensive, printable, photo quality	Posters, photography, art reproductions
Foam-core board (foam board)	Strong, lightweight, paper face, foam core	Model making, mounting photograph

Standard ISO size

Paper is available in many sizes, with A0 being the largest and the most common size being A4. Each is half the area of the one before, ie A4 paper (297 mm × 210 mm) is half the size of A3 paper (297 mm × 420 mm).

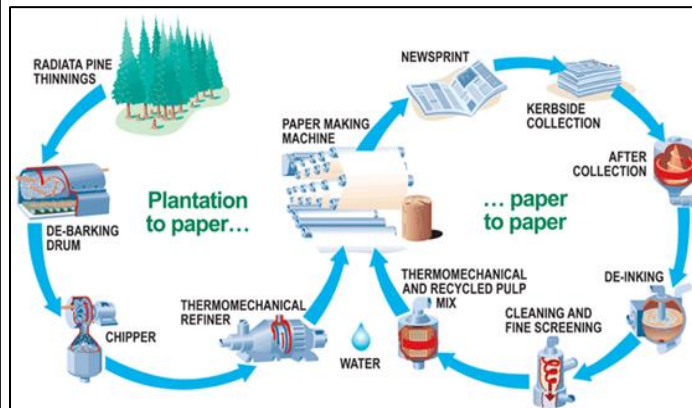


Year 10 Design Technology: Paper & Boards

Type of paper	Properties	Uses
Layout paper		
Bleedproof (marker) paper		
Tracing paper		
Grid paper		
Cartridge paper		

Weight and Thickness

Manufacture and recycling



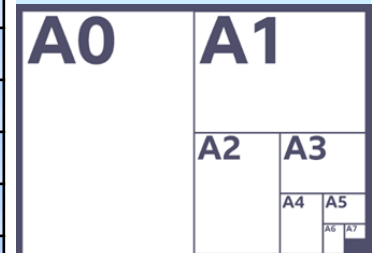
Lamination

Paper and _____ can be protected further by laminating, which gives a _____, water-resistant surface. It creates a _____, durable surface, often making the paper or board last _____. The paper or board is placed in a _____ sleeve, which is then heated and pulled through _____, bonding the _____ surfaces of the _____ together and sealing _____ product.

Type of board	Properties	Uses
Corrugated cardboard		
Duplex board		
Solid white board		
Foil-lined board		
Inkjet board		
Foam-core board (foam board)		

Standard ISO size

Paper is available in many sizes, with _____ being the largest and the most common size being A4. Each is _____ the area of the one before, ie A_ paper (297 mm × 210 mm) is _____ the size of A3 paper (297 mm × 420 mm).



Year 10 Design Technology: Polymers

Natural & Synthetic Polymers Polymers can be made from natural and synthetic resources.

- **Synthetic polymers** are made from crude oil by scientists and engineers.
- **Natural polymers** are made using a variety of materials like silk, wool, cellulose and proteins.

Type	Property	USE
Acrylic (PMMA)	has a hard, shiny and flat surface, but will scratch easily. It can be transparent, translucent or opaque.	It is used for illuminated shop signs, bath tubs and shower trays.
High-impact polystyrene (HIPS)	is tough, easily moulded and durable.	It is used for yoghurt pots, children's toys and fridge liners.
High-density polythene (HDPE)	is hard, stiff and resistant to chemicals.	It is used for washing up bowls, buckets and crates
Polypropylene (PP)	is tough, durable, and has good heat and chemical resistance.	It is used for children's toys, DVD/CD cases and medical equipment.
Polyvinyl chloride (PVC)	is hard, tough, and has good chemical and weather resistance. It has a low cost due to high-volume production	It is used for pipes, gutters and window frames.
Polyethylene terephthate (PET)	is tough, durable, food-safe and easily moulded.	It is used for drinks bottles and food packaging.

Type	Property	USE
Epoxy resin	is easily moulded because it is in a two-part liquid form. When mixed, the resin sets hard and has good insulating properties.	It is used as an adhesive and for casing electrical components.
Melamine formaldehyde	is stiff and hardwearing with good resistance to heat and staining.	It is used for kitchen work surfaces and picnic crockery.
Phenol formaldehyde	is hard and is a good electrical and heat insulator.	It is used for electrical fittings and pan handles.
Polyester resin	is easily moulded because it is in a two-part liquid form. When mixed, the resin sets hard but is brittle.	It is used to bind together the glass fibres when producing glass reinforced plastic (GRP) boat hulls and car body panels.
Urea formaldehyde (UF)	is stiff, hard and an excellent electrical insulator.	It is used extensively for electrical fittings.

Categorisation of Polymers

Polymers are classified into two groups: thermoforming and thermosetting

Thermoforming polymers can be softened with the use of heat and moulded into shapes.

Thermosetting polymers once moulded into shape, cannot be remoulded with the use of heat.

Examples of Natural and Synthetic Polymers

Natural polymers are made by living organisms.

Synthetic polymers are made by chemical reactions in a lab.



DNA



Rubber



Nylon



Polyester



Cellulose



Wool



Teflon



Epoxy

sciencenotes.org

Year 10 Design Technology: Polymers

Natural & Synthetic Polymers Polymers can be made from natural and synthetic resources.

- **Synthetic polymers** are
- **Natural polymers** are

Type	Property	USE
Acrylic (PMMA)		
High-impact polystyrene (HIPS)		
High-density polythene (HDPE)		
Polypropylene (PP)		
Polyvinyl chloride (PVC)		
Polyethylene terephthate (PET)		

Type	Property	USE
Epoxy resin		
Melamine formaldehyde		
Phenol formaldehyde		
Polyester resin		
Urea formaldehyde (UF)		

Categorisation of Polymers

Polymers are classified into ____ groups: _____ and thermosetting

Thermo _____ polymers...

Thermosetting polymers...

Examples of Natural and Synthetic Polymers

Natural polymers are made by living organisms.

Synthetic polymers are made by chemical reactions in a lab.



DNA



Rubber



Nylon



Polyester



Cellulose



Wool



Teflon



Epoxy

Categorisation

Non-ferrous

- does not contain iron
- is found in the Earth's crust in rock known as ore
- is not magnetic
- will not rust
- is malleable
- needs a protective finish which is also used to improve its aesthetic appeal.

Ferrous

- contains iron
- is found in the Earth's crust in rock known as haematite (iron ore)
- is usually magnetic
- will rust
- needs a protective coating to prevent rusting and improve its aesthetic appeal.

Types of Non Ferrous metals

Aluminium – is lightweight, soft, ductile and malleable. It is used extensively in the manufacture of aircraft, canned drinks and bike frames.

Copper – is ductile, malleable and an excellent thermal and electrical conductor. It is easily soldered and is resistant to corrosion. It is used extensively in the plumbing industry for pipes and fittings. It is also used in the manufacture of wire.

Brass – technically an alloy as it is a mixture of copper and zinc. It is an excellent conductor of electricity and is used in electrical fittings.

Bronze – an alloy of copper and tin. It has excellent resistance to wear and corrosion and is used in machinery where hard wearing parts are needed

Types of Ferrous metal

Cast iron – has a hard surface but a brittle core. It is strong and can be cast into intricate shapes, such as vices, roadside grids and manhole covers.

Low-carbon steel – has good tensile strength, is malleable but has poor resistance to corrosion. It is used extensively in the automotive industry and in steel structures (RSJ).

High-carbon steel – is harder than low-carbon steel, but brittle. It is used in the manufacture of tools.

Mild steel – is malleable and ductile, has low tensile strength but is relatively cheap.

Alloys

An alloy is a mixture of two or more metals that are combined to improve the mechanical or physical property of the original metal.

Alloys are divided into two categories: ferrous and non-ferrous alloys.

Ferrous alloy

- **Stainless steel** – a mixture of steel, chromium, nickel and magnesium. It is very hard, very resistant to corrosion and can keep a high-quality shiny finish.

Non-ferrous alloy

- **Brass** – a mixture of copper and zinc. It is very resistant to corrosion, strong, ductile, malleable and is a very good thermal and electrical conductor. Used to make taps and plumbing fittings.
- **Duralumin** – a mixture of aluminium, copper, magnesium and manganese. It is lightweight, soft, ductile and malleable. It is used extensively in the manufacture of aircraft structures and fuel tanks.

Categorisation

Non-ferrous

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Ferrous

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-
-

Types of Non Ferrous metals

Aluminium –

Copper –

Brass –

Bronze –

Types of Ferrous metal

Cast iron –

Low-carbon steel –

High-carbon steel –

Mild steel –

Alloys

An alloy is a _____ of two or more metals that are combined to improve the mechanical or _____ property of the _____ metal.

Alloys are divided into ____ categories: ferrous and non-ferrous alloys.

Ferrous alloy

- **Stainless steel –**

- **Non-ferrous alloy**

- **Brass –**

- **Duralumin –**

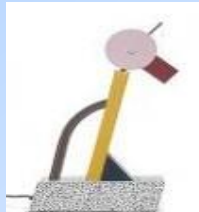
Year 10 Design Technology: Work of past and present professionals and companies

20th Century design movements



Memphis

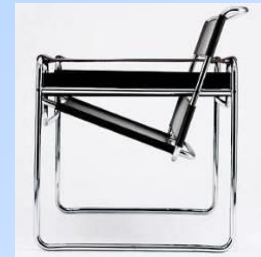
- A group of Italian designers, led by Ettore Sottsass exhibited an alternative viewpoint to minimalism.
- As a reaction to the clinical lines and lack of decoration which was typical of the Modernist movement
- They introduced highly decorative laminates and produced products which were amusing.
- Whilst the movement was restricted to the early 1980s their post-modernism influence can be seen in many of today's products.



Bauhaus

- Between 1919 and 1933 the German school of art and design called the Bauhaus.
- Producing designs which were truly made for mass production.
- 30yrs later until industry caught up with this thinking and was able to manufacture the designs for products such as furniture and lighting cheaply enough and in large quantities.

Many of the designs we now regard as **design classics** originate from the Bauhaus



Art Deco

- Began in Paris in 1925
- Typically involved the use of geometric shapes and the influences from the Egyptian tomb of Tutankhamen.
- Often regarded as a very glamorous period of design.
- Ceramicist Claris Cliff is a famous designer from that period



Year 10 Design Technology: Work of past and present professionals and companies

20th Century design movements



Bauhaus

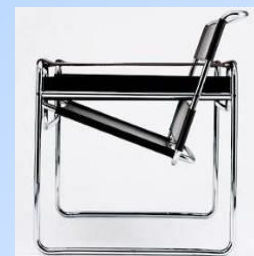
Memphis

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Art Deco

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Year 10 Design Technology: Work of past and present professionals and companies

Air Bus

- Design and manufacture commercial aircraft across Europe.
- Division developing helicopters, military and space travel
- Flagship model aircraft is the A380 and is the worlds largest passenger aircraft.
- Focus on the use of composite materials to reduce weight.
- Use biometric to inspire designs (ie structure of a eagles wing)
- Constantly developing technology to reduce fuel emissions.



Phillpe Stark

- Phillpe tark has been design products since 1980s
- Aims to improve life for people creating affordable & desirable products for the masses.
- His most well known product is 'juciy salif' a lemon squeezer inspired by a squid.
- He often uses pioneering manufacturing techniques and materails for example the injection moulded chair called 'lous Ghost' that has no visable fixings.



Apple

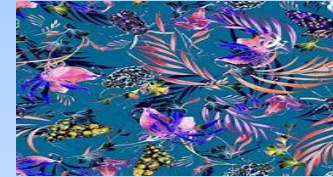
Sir Jonathan Ive



- An English designer he was the lead designer for Apple from 1992 to 2019.
- Created simple, sleek designs that give Apple products their iconic aesthetic appearance.
- Design have smooth round edges, simple interfaces and user friendly appeal.
- Apple are often criticized for the development of products with planned obsolesce, for example update not working on older models.

Matthew Williamson

- Matthew Williamson is a British fashion and interior designer
- Recognised by his bold and colourful designs. He mixes prints and contrasting colour
- Uses patterns, inspired by travel and nature.
- Design include have embellishment such as beading and embroidery



James Dyson

- An inventor and the founder of the Dyson Company employing 7000 people worldwide.
- Best know for the cyclonic bagless vacuum cleaner.
- Dyson company values innovation, efficiency and original design.



Year 10 Design Technology: Work of past and present professionals and companies

Air Bus

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Apple



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Matthew Williamson

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Phillpe Stark

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James Dyson

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Drama



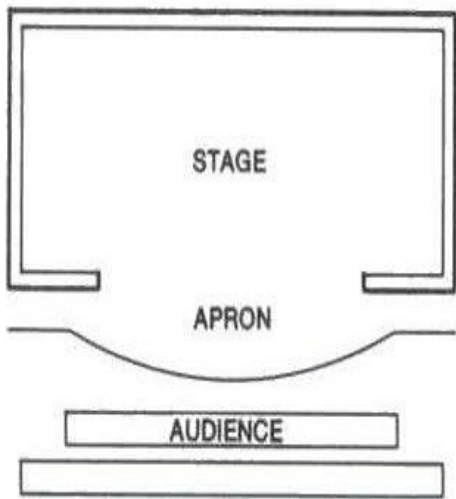
Helping every person achieve things they never thought they could.

Year 10 Drama: Staging Types

Proscenium Arch

Common in large theatres and opera houses.

The proscenium refers to the frame around the stage; **the area in front of the arch is called the apron**. The audience faces one side of the stage directly and may sit at a lower height or on tiered seating.



Advantages:

- Stage pictures are easy to create, as the audience look roughly at the same angle.
- Backdrops and large scenery can be used without blocking sightlines.
- There is usually fly space and wings for storing scenery.
- The frame around the stage adds to the effect of a fourth wall; creating a self-contained world.

Disadvantages:

- Some audience members may feel distant from the stage.
- The auditorium could feel formal and rigid.
- Audience interaction may be more difficult.

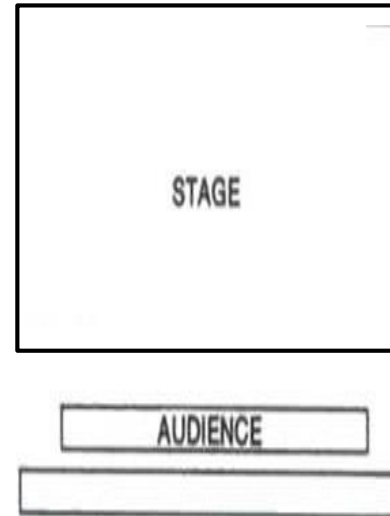


End On

This is similar to proscenium arch, as the audience faces one side of the stage directly and may sit at a lower height or on tiered seating.

However, **it doesn't have the large proscenium or apron**.

Our studio is set up as end on.



Advantages:

- The audience all have a similar view.
- Stage pictures are easy to create.
- Large backdrops or projections may be used.

Disadvantages:

- Audience members in the back rows may feel distant from the stage.
- It doesn't have the proscenium frame, which can enhance some types of staging.
- It may not have wings or a fly area.

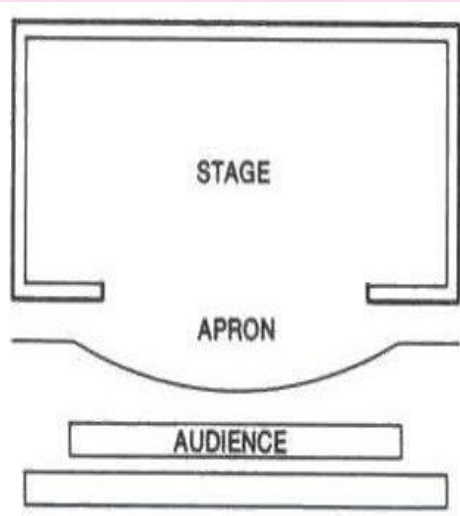


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What are the advantages?

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What are the disadvantages?

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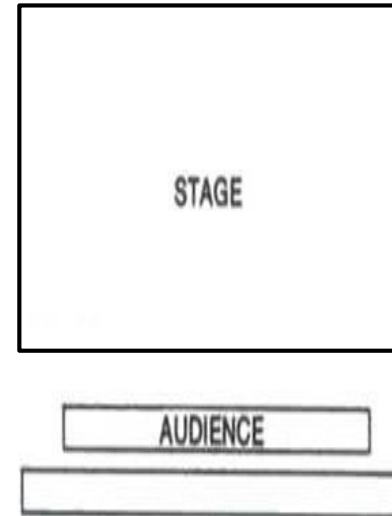


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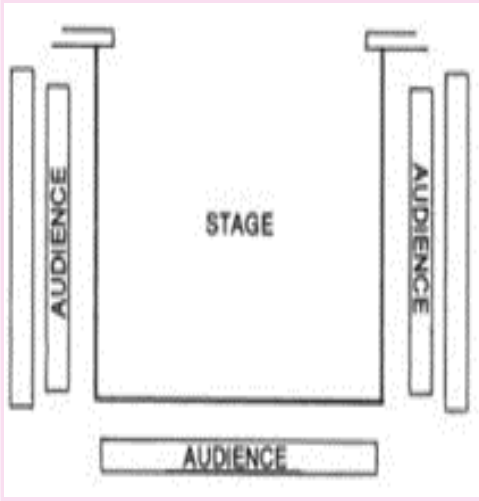
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Year 10 Drama: Staging Types

Thrust

When the stage in front of the proscenium protrudes into the auditorium, so that the audience are sitting on three sides. **This is one of the oldest types of staging;** Greek amphitheatres and Elizabethan theatres like Shakespeare's Globe are both types of thrust stages



Advantages:

- As there is no audience on one side of the stage, backdrops, flats and large scenery can be used.
- The audience might feel closer to the stage – there are 3 front rows.
- Fourth wall can be achieved while having the audience close to the action.

Disadvantages:

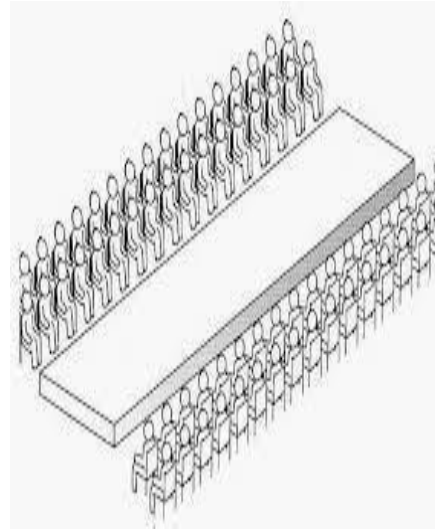
- Audience members in the back rows may feel distant from the stage.
- It doesn't have the proscenium frame, which can enhance some types of staging.
- It may not have wings or a fly area.



Traverse

The acting area is a long central space and the audience sits on two sides facing each other.

This type of staging can feel **like a catwalk show**.



Advantages:

- The audience feel very close to the stage as there are two long front rows.
- Audience members can see the reactions of the other side of the audience.
- The extreme ends of the stage can be used to create extra acting areas.

Disadvantages:

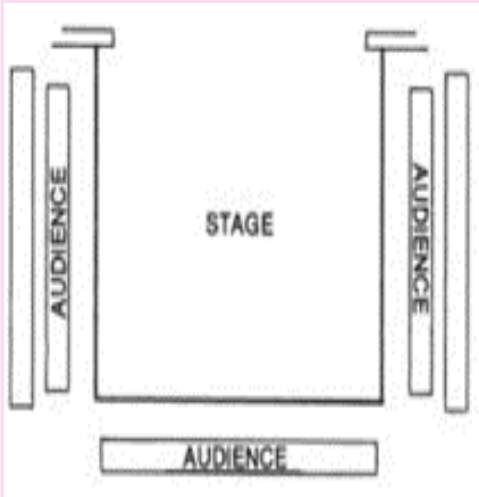
- Big pieces of scenery, backdrops or set can block sightlines
- The acting area is long and thin, which can make some blocking challenging.
- Actors must be aware of making themselves visible to both sides of the audience.



Year 10 Drama: Staging Types

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What are the disadvantages?

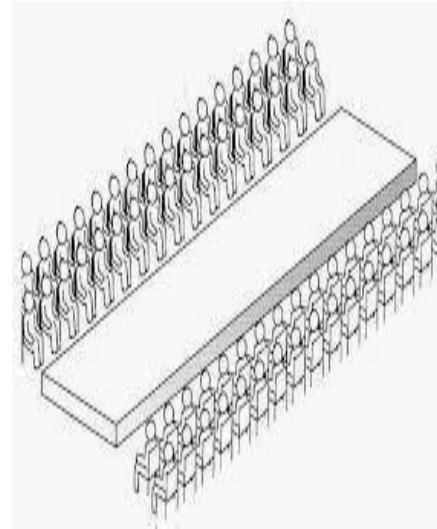
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Traverse

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What are the advantages?

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- -
- -

What are the disadvantages?

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- -
- -



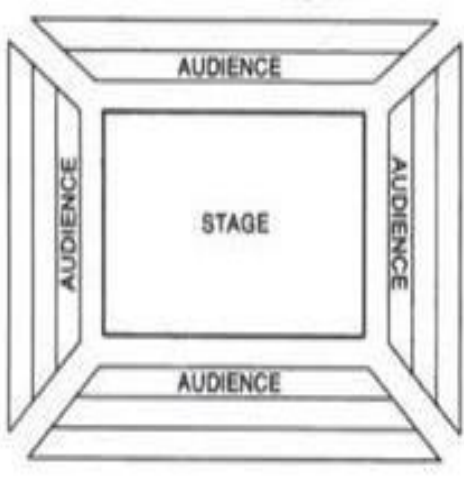
Year 10 Drama: Staging Types

In the Round

The stage is positioned in the centre of the audience and the audience are seated around all areas of the stage. The stage/audience can either be curved (creating a circle), or more like a square or rectangle. There are usually several 'tunnel-like' entrances, these are called **vomitories**.

Advantages:

- The audience is close to the stage as there is an extended first row.
- The actors enter and exit through the audience which can make them feel more engaged.
- There is no easily achieved fourth wall separating the audience from the actors – it is easy to interact with them.



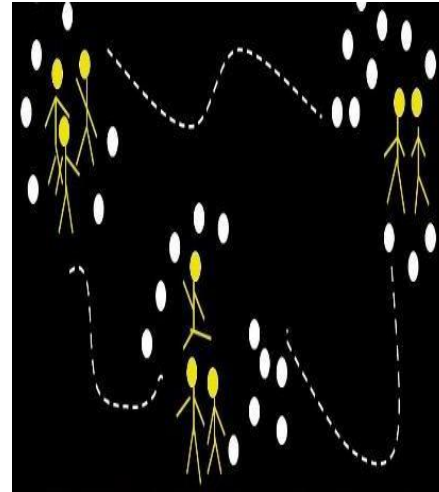
Disadvantages:

- Designers cannot use backdrops or flats as they would obscure the view of the audience.
- Stage furniture has to be chosen carefully so that audience sightlines aren't blocked.
- Actors must continually move around so that the audience can see them and critical interactions.



Promenade

The performance areas are set in various locations in a venue. Promenade means 'to walk' and the audience follows the action on foot, moving from one performance area to another. Promenade staging is often used in site specific performances (a performance in a location that is not a conventional theatre, e.g. a street, a warehouse)



Advantages:

- Interactive style of theatre where the audience feels involved.
- No set changes or need for movement of big bulky items.
- Enables audience to be more engaged as they move from one piece of action to the next.

Disadvantages:

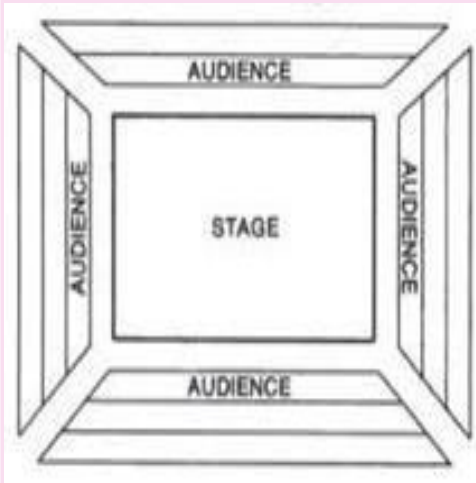
- The audience may find moving around the space difficult or might get tired.
- Actors and or crew need to be skilled at moving the audience around and controlling their focus.
- There can be health and safety risks



Year 10 Drama: Staging Types

In the Round

The stage is positioned in the centre of the audience and the audience are seated around all areas of the stage. The stage/audience can either be curved (creating a circle), or more like a square or rectangle. There are usually several 'tunnel-like' entrances, these are called **vomitores**.



What are the advantages?

- -
- -
- -

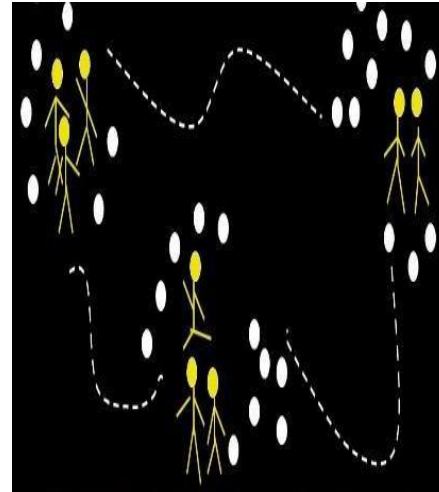
What are the disadvantages?

- -
- -
- -



Promenade

The performance areas are set in various locations in a venue. Promenade means 'to walk' and the audience follows the action on foot, moving from one performance area to another. Promenade staging is often used in site specific performances (a performance in a location that is not a conventional theatre, e.g. a street, a warehouse)



What are the advantages?

- -
- -
- -

What are the disadvantages?

- -
- -
- -



Year 10 Drama: Blood Brothers

Context Information Author: Willy Russell

Brief Biography: Willy Russell was born in 1947 into a working-class family near Liverpool. He left school at the age of 15 without academic qualifications and became a hairdresser. By the age of 20, he felt the need to return to education and after leaving university, he became a teacher in his home city.

Social: There was a large gap between working and middle class in Britain during this time. The Johnstones and Lyons families are class stereotypes. Many working class families struggled financially and to find work. There was also a class divide in education; this is shown when Mickey goes to secondary school and Edward attends a private boarding school.

Margaret Thatcher: The first female Prime Minister in power during that time. She was responsible for lots of working-class people losing their jobs. During her time in power, unemployment rates were raised higher than ever before. She believed everyone can be successful if they work hard.

Marilyn Monroe: A famous Hollywood movie star from the 1950s who Mrs J is compared to. She is known for being glamorous, but also struggled with depression which led her to commit suicide (by painkillers).

Mickey Johnstone	The lower-class twin. He is honest, sincere and goodhearted. He impregnates Linda, gets laid off, is arrested for Sammy's crime and ends up in prison and addicted to anti-depressants. His rage at Linda & Edward for having an affair drives the play's finale.
Edward Lyons	Is also good-natured but the higher-class twin. His sheltered upbringing makes him innocent but because of class he gets good opportunities e.g. university and a good job. His good-natured manner leads to the play's final scene.
Mrs Johnstone	Biological mother of the twins and a horde of other children. Left by her husband she gets a job as a cleaner. She is the moral centre of the play; is tortured by guilt and regret.
Mrs Lyons	Opposite of Mrs J whom she employs as a cleaner. She adopts Edward as her own child. Is haunted by the original act of a mother giving up her child. The guilt turns into suspicion and paranoia. She announces the affair and contributes to the murder of her adopted son.
Linda	Begins as a tomboyish young girl but both twins fancy her from an early stage. She only has eyes for Mickey as a teenager but later turns to Edward for comfort and support, which turns into an affair. Despite this, she loves both twins and is a sympathetic character.
Narrator	All-knowing and always slightly menacing- takes many roles throughout the play. Narrator constantly reminds the audience of the terrible choice that began this chain of events. Frequent mentions of fate and superstition but the Narrator claims it was class, not fate.
Sammy	When they are younger, Mickey just wants to be like Sammy. Quickly becomes a juvenile delinquent; even attempting to rob a bus as a teenager- he ends up in prison with Mickey.
Mr Lyons	Married to Mrs Lyons- away so Mrs L can adopt Edward. Grows increasingly concerned about his wife's mental health and wellbeing.

Key Quotations:

- ✓ Don't you know what a dictionary is?
- ✓ Y'know the devil's got y' number.
- ✓ A debt is a debt and must be paid.
- ✓ How come you got everything and I got nothin'?
- ✓ A mother, so cruel,/ There's a stone in place of her heart.
- ✓ If either twin learns that he was once a pair, they shall both immediately die.
- ✓ You've got to have an ending, if a start's been made./ No-one gets off without the price being paid.
- ✓ I could have been him.
- ✓ Do we blame superstition for what came to pass/ Or could it be what we, the English, have come to know as class?
- ✓ She's cooing and cuddling as if she were his mother. It's a, it's a thingy, innit?
- ✓ That's what's going to happen if I have anymore trouble from one of yours. I warned you last time.
- ✓ It was more of a prank, really, Mr Lyons. I'd just dock his pocket money if I was you.

Themes:

Superstition: The audience is constantly reminded of this. The narrator asks us if superstition is to blame for boys' fate.

Class: Russell shows us the injustice of the class divide with the Johnstones and Lyons, as well as M and E. Related to education, opportunity and power.

Nature vs. Nurture: Splitting up the twins shows us how the environment can have a huge impact on life chances.

Relationship: The development and change in friendship between M, E, and Linda. The interaction between Mr and Mrs L, mother and son, and Mrs J and society.

Keywords:

Protagonist, Theme, Injustice, Stigmatized, Simile, Metaphor, Juxtaposition, Dramatic, irony, Tension, Foreshadowing, Repetition, Dole, Manipulates, Prejudice, Dialogue, Ominous Vulnerable Working class, Middle class, Upper class, Act, Playwright, Stage directions Contrast, Tragedy, Superstition, Social divide recession



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Marilyn Monroe:

Key Quotations:

- ✓ Don't you know what a dictionary is?
- ✓ A....
- ✓ How come you got everything and I got nothin'?
- ✓ A mother,
- ✓ If either twin learns that he was once a pair, they shall both immediately die.
- ✓ You've
- ✓ I
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- ✓ She's
- ✓ That's
- ✓ It.....

	The lower-class twin. He is honest, sincere and goodhearted. He impregnates Linda, gets laid off, is arrested for Sammy's crime and ends up in prison and addicted to anti-depressants. His rage at Linda & Edward for having an affair drives the play's finale.
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Sammy	
Mr Lyons	

Themes:

Superstition:

Class:

Nature vs. Nurture:

Relationship:

Keywords:



Year 10 Drama: Blood Brothers

Plot

Act 1: before birth	Act 1- 7 years old	Act 2- 14 years old
The play starts with the narrator talking about a 'story about the Johnstone twins' and two men laid dead on the stage. We go back in time where we learn Mrs Johnstone's husband has just left her; she is very poor and already has 7 children. She starts a new job cleaning Mrs Lyons' house and finds out she's expecting twins. She strikes up a deal with Mrs L as she can't afford to keep both so Mrs L convinces Mrs J to give her one of the babies as her husband is currently away on business and she can't have a child of her own. The babies are born and Mrs J begrudgingly hands one of the babies over for Mrs L to later fire her. The narrator states that one day the devil will punish the two women.	Mickey and Eddie meet for the first time by chance at the park and become 'blood brothers' when they find out they share the same birthday. When Mrs J realise the two have met, she is horrified and sends Edward home. Mrs L reacts more violently and slaps Edward when he swears at her. She even contemplates uprooting her entire family in order to escape. Despite their mothers' disapproval, the boys continue to see each other and play lots of children's games with their friend, Linda. They play various pranks and end up getting caught by the police who threatens Mrs J but flatters Mr L. Mrs L decides they should move, before Edward leaves Mrs J gives him a locket with a picture of herself and Mickey. The Johnstones also find out they are being relocated.	Both boys have become interested in girls but feel awkward. Edward attends boarding school. Mickey and Linda have romantic feelings for each other but Mickey's lack of confidence is getting in the way. Sammy attempts to rob a bus by holding the driver at knife point. Mickey and Eddie both struggle at school- Mickey insults a teacher and Edward refuses to take off the locket. When Mrs L finds out, she's appalled but is more upset when she sees the content of the locket. The narrator returns to remind the audience that the devil will come. Mickey and Edward meet, by circumstance again- Mickey takes Edward back to his but they are not aware that Mrs L is following them. Once the boys leave the house, Mrs L attacks Mrs J with a knife and curses her, calling her a witch. The boys meet with Linda and spend the summer together- an idyllic sequence follows as the trio age from 14 to 18.

Act 2- 18 years old	Act 2- the end
At 18 in the sequence, the narrator warns that soon, both their joy and childhood will end. Edward has developed feelings for Linda and is at university whilst Mickey works in a factory. Edward self-sacrifices his feelings and encourages Mickey to ask Linda to be his girlfriend and she accepts. In October, Mickey tells his mum that Linda is pregnant and the two will be getting married. Their wedding coincides with a huge economic downturn resulting in Mickey getting paid off. When Edward returns from Christmas, Mickey is downtrodden and claims 'blood brothers' is childish. Edward confesses his love to Linda but she tells him she is married and pregnant. A desperate Mickey participates in a burglary with Sammy that goes wrong resulting in Sammy killing a man. They are both sentenced to prison and Mickey becomes depressed and is prescribed antidepressants which he becomes addicted to, even after he's been released.	Mickey continues to take the pills despite Mrs J & Linda's pleas. Linda, desperate, asks Edward, now a city councilman, to find them an apartment and getting Mickey a job. Mickey is angry about this and a devastated Linda seeks comfort with Edward and begins an affair with him. The affair continues and Mickey stops taking his pills for Linda's sake. Mrs Lyons reveals Linda and Edward's affair to Mickey. Enraged, he takes Sammy's gun out of the floorboards and confronts Edward, with a distraught Mrs J and Linda trying to get him to stop. The narrator warns the devil has arrived. Mickey finds and confronts Edward at the town hall about the affair, as well as whether Mickey's daughter is actually his. Edward denies fathering Mickey's child. The police surround the area and Mrs J bursts in and tells the boys they are twins separated at birth. Mickey asks why he couldn't have been Edward and then accidentally pulls the trigger of the gun, shooting and immediately killing Edward, the police then shoot Mickey. The play ends with the boys led on the stage and the narrator wonders what really killed the twins: superstition or the class system?

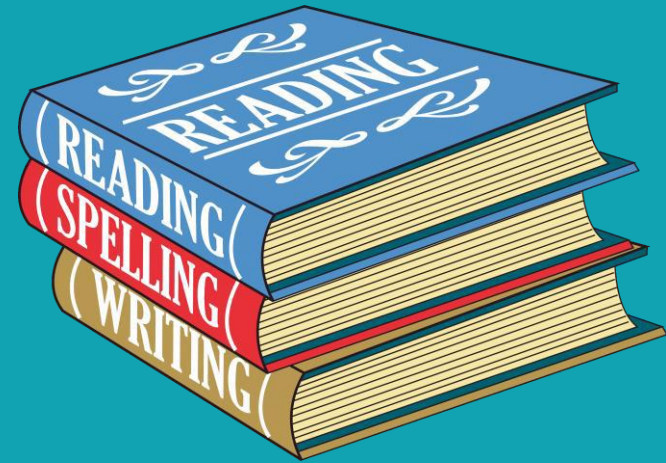
Year 10 Drama: Blood Brothers

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English



Helping every person achieve things they never thought they could.

Year 10 English: 'A Christmas Carol' by Charles Dickens

1. Charles Dickens wrote the novella in the **Victorian era**, where society believed that if you were poor it was because you were idle (lazy). This was a misconception.



2. Working class people actually worked very hard, for **long hours**, **little pay** and in **unsafe conditions**. They were exploited by Capitalist factory owners, who prioritised profit over their welfare. Children were also **exploited** as **child labourers**. As most middle and upper class business owners had the same attitudes, working class people were **trapped in poverty** with no opportunities to escape, through training or education.



3. The government has **Laissez Faire** attitudes towards poverty, meaning they knew it was a problem, but did not see it as their responsibility to fix it. It suited them to believe the poor did not deserve help, as **it justified their decision** to ignore them. **The Poor Law** (1834) introduced workhouses as a way to help poor people, but they were designed to humiliate and punish the poor.



4. Dickens alludes to the words of the economist **Thomas Malthus**, who claimed that war, famine and disease has positive impacts on the country's wealth, as it '**decreased the surplus population**'. By this he meant there would be fewer working class people requiring resources. He claimed that with a growing population, **poverty was inevitable** as there would never be enough resources to support everyone. Dickens disagreed. He argued there are enough resources – they just need to be **shared more fairly**.

5. Victorian Britain was a **God fearing society**. Dickens believed that many middle/upper class people were **hypocritical** as they ignored the **Christian values of generosity and charity**. He also used Scrooge's transformation to highlight that we are all capable of **redemption** if we accept our sins and vow to change.

Knowledge of Context

Writing about Literature

P Point

Answer the question

E Evidence

Embed a quote, or pattern of quotes that juxtapose or reinforce each other

A Analyse

Explain the inferences behind the quote in detail using as/so/because/which

Z Zoom

Explain the connotations of a powerful word or technique has and the effect of this

E Effect

Explain what the writer's intention is/ what they are trying to teach the reader

L Link to Context

Explain how these ideas link to the real world

Characters



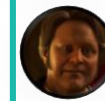
Ebenezer Scrooge
Miserly money lender



Bob Cratchit
Scrooge's poor clerk



Jacob Marley
Scrooge's deceased business partner



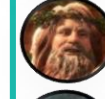
Fred Scrooge
Scrooge's nephew



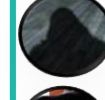
Tiny Tim
Bob's disabled son



The Ghost of Christmas Past



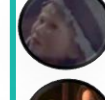
The Ghost of Christmas Present



The Ghost of Christmas Yet to Come



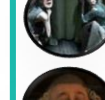
Belle
Scrooge's ex fiancé



Fan
Scrooge's sister



Portly Gentlemen
Charity Collectors



Ignorance and Want
Symbolic children



Fezziwig
Scrooge's old boss

Year 10 English: 'A Christmas Carol' by Charles Dickens

1. In what **era** was the novella written?
2. What **misconception** did people commonly believe about the poor?



3. What was life like for **working class** people in the Victorian era?
4. How did factory owners **exploit** their workers?
5. How were **children** exploited?
6. Why were working class people **trapped** in poverty?



7. What was the Victorian **government's attitude** to poverty?
8. Why did it suit the Victorian government to have this view?
9. What was the **Poor Law of 1834**?



10. Who was **Thomas Malthus**?
11. What were Malthus' views on poverty and **population growth**?
12. What did Malthus believe would have a positive effect on the economy (Britain's wealth)?
13. What were Dickens' views on Malthus?

14. Why did Dickens believe that the upper and middle class Christians were **hypocrites**?
15. What is **redemption**?

Writing about Literature

What does each part of PEAZEL ask you to do?

P Point

E Evidence

A Analyse

Z Zoom

E Effect

L Link to Context

Characters



Ebenezer Scrooge
Miserly money lender



Bob Cratchit
Scrooge's poor clerk



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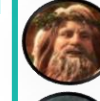
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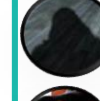
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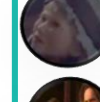
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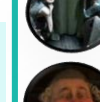
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Year 10 English: 'A Christmas Carol' by Charles Dickens

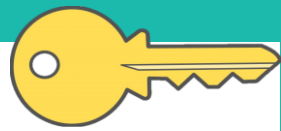
Key Quotations



<i>"Secret and self contained and solitary as an oyster"</i> Description of Scrooge Stave 1	<i>"If they had rather die they had better do it, and decrease the surplus population"</i> Scrooge, Stave 1	<i>"Are there no prisons? Are the (...) workhouses still in operation?"</i> Scrooge, Stave 1	<i>"Dismal little cell"</i> Description of Bob Cratchit's working conditions	<i>"The fog came pouring in through every chink and every keyhole"</i> Description of the weather, Stave 1
<i>"I wear the chains I forged in life. I made them link by link and yard by yard"</i> Marley, Stave 1	<i>"Mankind was my business!"</i> Marley, Stave 1	<i>"Would you so soon put out the light I give?"</i> Ghost of Christmas Past, Stave 2	<i>"A solitary child, neglected by his friends"</i> Description of Scrooge as a child, Stave 2	<i>"Yo ho my boys!"</i> Fezziwig, Stave 2
<i>"Gain engrosses you"</i> <i>"Another idol has displaced me...a golden one"</i> Belle, Stave 2	<i>"Bore a little crutch and his limbs were supported by an iron frame"</i> Description of Tiny Tim Stave 3	<i>"To Mr Scrooge! The founder of the feast!"</i> Bob Cratchit, Stave 3	<i>"Yellow, meagre, ragged, scowling, wolfish"</i> Description of Ignorance and Want, Stave 3	<i>"Reeked of crime and filth and misery"</i> Description of London slums
<i>"Overrun by grass and weeds"</i> Description of Scrooge's grave, Stave 4	<i>"Oh, tell me I may sponge away the writing on this stone!"</i> Scrooge Stave 4	<i>"No fog. No Mist. Clear, bright, jovial light. Sweet, fresh air"</i> Description of the weather, Stave 5	<i>"I'm as light as a feather, as happy and an angel, as merry as a schoolboy"</i> Scrooge, Stave 5	<i>"God bless us. Everyone!"</i> Tiny Tim, Stave 5

Year 10 English: 'A Christmas Carol' by Charles Dickens

Complete the key quotations below:



<i>"Secret and...</i> Description of Scrooge Stave 1	<i>"If they had rather...</i> Scrooge, Stave 1	<i>"Are there no...</i> Scrooge, Stave 1	<i>"Dismal...</i> Description of Bob Cratchit's working conditions	<i>"The fog ...</i> Description of the weather, Stave 1
<i>"I wear the...</i> Marley, Stave 1	<i>"Mankind...</i> Marley, Stave 1	<i>"Would you so...</i> Ghost of Christmas Past, Stave 2	<i>"A solitary...</i> Description of Scrooge as a child, Stave 2	<i>"Yo ho...</i> Fezziwig, Stave 2
<i>"Gain...</i> Belle, Stave 2	<i>"Bore a little...</i> Description of Tiny Tim Stave 3	<i>"To Mr...</i> Bob Cratchit, Stave 3	<i>"Yellow...</i> Description of Ignorance and Want, Stave 3	<i>"Reeked of...</i> Description of London slums
<i>"Overrun...</i> Description of Scrooge's grave, Stave 4	<i>"Oh, tell me...</i> Scrooge Stave 4	<i>"No fog...</i> Description of the weather, Stave 5	<i>"I'm as light...</i> Scrooge, Stave 5	<i>"God bless...</i> Tiny Tim, Stave 5

Year 10 English: English Language Paper 1

Reading Section

Question 1

List four things you learn about...

- 4 marks
- 5 mins (as part of your reading time)

Find answers
from the
correct lines

Write in full
sentences
with the key
word from
the question

Two answers
per line

Question 2

How does the writer use language to...?

- 8 marks
- 10-12 mins
- 3 x ZE paragraphs

Zoom

Pick a powerful
word or language
technique
+
Identify the
connotations
created

Effect

Explain in detail the
meanings created
the reader's
response
(as/so/because/which)

Question 3

How does the writer structure
the text to interest the reader?

- 8 marks
- 10-12 mins
- 2 PEA paragraphs
 - 1 PEA about the opening
 - 1 PEA about the ending

Point	What does the writer do/use to interest the reader? (choose from WATCH)
Evidence	Quote
Analyse	Explain how this makes the reader intrigued and curious

W

Withholding Information – What does the writer not tell us to make us curious?

A

Atmosphere – What atmosphere is created and why is this intriguing?

T

Topics/Themes – Which topics and themes do we focus on? Why does this hold our attention?

C

Characters – Why are we engaged by the character?

H

Hints – What do we expect to happen next? What is foreshadowed?

Question 4

How far do you agree or disagree (with the statement)?

- 20 marks
- 20 mins
- Split the statement

Complete 1 STEP METHOD paragraph on each part of the statement (2 in total).

Step A	Step B	Step C	Step D	Step E
State the part of the statement you are focusing on, whether you agree or disagree and why.	Embed a quote (or pattern of quotes) to prove that your judgement is accurate.	Analyse the inferences behind the quotes. Explain what they prove about the statement. As/so/because/which	Zoom in on 2+ methods or powerful words. Identify connotations and explain the effects. As/so/because/which	Summarise which you agree or disagree. Start with the word, <i>Overall...</i>

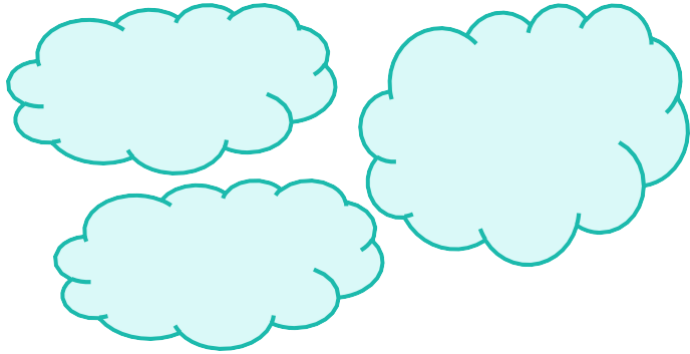
Year 10 English: English Language Paper 1

Reading Section

Question 1

List four _____

- 4 marks
- 5 mins (as part of your reading time)



Question 2

How does the writer use _____

- 8 marks
- 10-12 mins
- 3 x ZE paragraphs

Zoom

Effect

Question 3

How does the writer _____

- 8 marks
- 10-12 mins
- 2 PEA paragraphs
 - 1 PEA about the opening
 - 1 PEA about the ending

Point	
Evidence	
Analyse	

- W** _____ – What does the writer not tell us to make us curious?
- A** _____ – What atmosphere is created and why is this intriguing?
- T** _____ – Which topics and themes do we focus on? Why does this hold our attention?
- C** _____ – Why are we engaged by the character?
- H** _____ – What do we expect to happen next? What is foreshadowed?

Question 4

How far do you _____

- 20 marks
- 20 mins
- Split the statement

Complete 1 STEP METHOD paragraph on each part of the statement (2 in total).

Step A	Step B	Step C	Step D	Step E
State the part of the statement you are focusing on, whether you agree or disagree and why.				

Year 10 English: English Language Paper 1

Section B: Writing Section

Question 5

Write a descriptive story.

Choose from...

- A picture stimulus
- A written stimulus
- 45 minutes
- 40 marks
 - 24 marks – Content and Organisation
 - 16 marks – Technical Accuracy

Technical Accuracy =
Spelling,
punctuation
and grammar

Proof Read!

Content and Organisation =
The way you craft
and structure
your piece

Paragraph structure:

1	Hook	A dramatic opening that withholds information
2	Description	Detailed description of setting and character
3	Flashback	Descriptions of past event and how it impacts the present
4	One Liner	Dramatic sentence
5	Climax	Detailed description of one major event
6	Cliff Hanger	Unanswered questions at the end. Link to the hook

Don't Tell

Quality over Quantity

Varying sentence length

Use your sentence lengths to reflect the pace of the action in the **narrative**. Short sentences can show a faster pace and create drama and tension whereas longer sentences tend to slow it down.

Punctuation Marks

Capital Letters

Start of every sentence.
Proper nouns (names).
Abbreviations.

Full Stops

At the end of a statement
or piece of information.

Question Marks

At the end of
a question

Brackets and Dashes

Add extra information
(subordinate clauses) much
like commas.

Colon

Before a colon is a full
sentence. After colon is a list
or explanation.

Semi Colon

Links to full sentences that are
linked by topic or idea

Exclamation Marks

At the end of an
emotional or exaggerated
sentence

Apostrophes

To show possession or
missing letters in a
contraction (e.g. *can't*)

Commas

Separate items in a list or
used to add extra
information

Ellipsis Creates a dramatic pause

Vary the way that you start sentences to keep your writing interesting and lively.

Start your sentence with a...

Example

Verb – an action word

Running for her life, Sarah shouted at the bus to stop.

Simile - comparing something to something else

As quiet as a whisper, he turned to me.

Preposition – indicates the position of someone or something

Beyond the gate, the road stretched far away.

Adverb – modifies or describes a verb, adjective or another adverb

Cautiously, he moved away from the lion.

Connective – joining word

Despite the sunshine, Mr Tucker was wearing a heavy coat.

Year 10 English: English Language Paper 1

Section B: Writing Section

Question 5

Write a _____.

Choose from...

- A picture stimulus
- A written stimulus
- 45 minutes
- 40 marks
 - 24 marks – Content and Organisation
 - 16 marks – Technical Accuracy

Technical Accuracy =
Spelling, punctuation and grammar

Proof Read!

Content and Organisation =
The way you craft and structure your piece

Paragraph structure:

1	Hook	
2	Description	
3	Flashback	
4	One Liner	
5	Climax	
6	Cliff Hanger	

own n't Tell

Quality over Quantity

Why/when should we vary sentence length?

Punctuation Marks

Capital Letters	Full Stops	Question Marks
Brackets and Dashes	Colon	Semi Colon
Exclamation Marks	Apostrophes	Commas
Ellipsis		

... () : :
? ! -

Vary the way that you start sentences to keep your writing interesting and lively.

Start your sentence with a...

Example

_____ – an action word

Running for her life, Sarah shouted at the bus to stop.

_____ - comparing something to something else

As quiet as a whisper, he turned to me.

_____ – indicates the position of someone or something

Beyond the gate, the road stretched far away.

_____ – modifies or describes a verb, adjective or another adverb

Cautiously, he moved away from the lion.

_____ – joining word

Despite the sunshine, Mr Tucker was wearing a heavy coat.

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

1. Macbeth was written in 1606 the **Jacobean era**, under the reign of **James 1**. Shakespeare deigned the play to please the king, setting it in **Medieval Scotland** (as James 1 was Scottish) in the 1000s and explored the theme of the **supernatural**, as this was a fascination of the king.



2. A common belief in the Jacobean era was that everything had its place in the universe, which had been set out by God. This order was called **The Great Chain of Being** that included everything from God and the monarch at the top to plants and rocks at the bottom. If the order was disrupted, the universe **would descend into chaos** to correct the



3. Alongside this was the belief in **The Divine Right of Kings**. This was the belief that the monarch was chosen by God to be their representative on Earth. Therefore, their word was God's word. If you displeased the monarch, you would displease God and be punished. James 1 often spoke about this belief, to keep his God-fearing people under control.

4. James 1 spent much of his reign feeling insecure as a protestant king. In 1605, a group of Catholic rebels attempted to assassinate the king by exploding the Houses of Parliament, as they wished England to be ruled by a protestant monarch. This was know as **The Gunpowder Plot**. Even though the plot failed, James was left feeling vulnerable. A year later, Shakespeare wrote **Macbeth** to warn his audience that anyone who commits **regicide** will be punished in life and after death.



5. Many critics argue that the play is very closely linked to **The Original Sin** - this is one of the first stories of The Bible. In the Garden of Eden, the devil (in the form of a serpent) tempts Eve to persuade Adam to eat the forbidden fruit - the first sin of mankind. Christians believe that as we all descend from Adam and Eve, we have all **inherited the capacity to sin**. No person is fully good or fully evil and we should all use our free will to choose righteousness. This message occurs throughout the play.



Writing about Literature

P Point

Answer the question

E Evidence

Embed a quote, or pattern of quotes that juxtapose or reinforce each other

A Analyse

Explain the inferences behind the quote in detail using as/so/because/which

Z Zoom

Explain the connotations of a powerful word or technique has and the effect of this

E Effect

Explain what the writer's intention is/ what they are trying to teach the reader

L Link to Context

Explain how these ideas link to the real world

Characters



Macbeth
Thane and later king



Lady Macbeth
Macbeth's Wife



Duncan
King at the start of the play



Malcolm
Duncan's son and



Donalbain
Duncan's youngest son



Banquo
Macbeth's friend



Fleance
Banquo's son



The Weird Sisters
Three Witches



Macduff
Thane of Fife



Lady Macduff
Macduff's wife



Ross
A Scottish Thane



Hecate
Queen of the witches



Macdonald
Traitor

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

When was the play written?

Who was King at the time?

When was the play set?

How did Shakespeare design the play to interest the King?



What was The Great Chain of Being?

What was at the top of the chain?

What was at the bottom of the chain?

What would happen in the chain was disrupted?

What was The Divine Right of Kings?

Why did James 1 talk about this belief a lot?



What happened in The Gunpowder Plot?

How did this leave James 1 feeling?

How does the play reflect this?

What is the story of The Original Sin?

What do Christians believe about Good and Evil?

How is this reflected in the play Macbeth?



Writing about Literature

P

Point

E

Evidence

A

Analyse

Z

Zoom

E

Effect

L

Link to Context

Characters



Macbeth



Lady Macbeth



Duncan



Malcolm



Donalbain



Banquo



Fleance



The Weird Sisters



Macduff



Lady Macduff



Ross



Hecate



Macdonald

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

"Fair is foul and foul is fair, hover through fog and filthy air" <i>The Witches</i>	"So foul and fair a day I have not seen" <i>Macbeth's first line</i>	"O valiant cousin! Worthy gentlemen" <i>Duncan about Macbeth</i>	"Unseamed him from knave to chaps and placed his head upon our battlements" <i>Soldier about Macbeth killing Macdonald</i>	"Whose horrid image doth unfix my hair and make my seated heart knock against my ribs" <i>Macbeth when he heard the witches' prophecies</i>
"I do fear thy nature is too full of the milk of human kindness" <i>Lady Macbeth about Macbeth</i>	"Come you spirits (...) unsex me here (...) fill me with direst cruelty" <i>Lady Macbeth before Macbeth returns home</i>	"Take my milk for gall" "Make thick my blood" <i>Lady Macbeth to the spirits before Macbeth returns home</i>	"I would have plucked my nipple from its boneless gums and dashed it's brains out, had I so have sworn to you" <i>Lady Macbeth manipulating Macbeth</i>	"I have no spur to prick the sides of my intent, only vaulting ambition" <i>Macbeth to himself</i>
"Look like the innocent flower but be the serpent under it" <i>Lady Macbeth to the Macbeth</i>	"Will all Great Neptune's Oceans wash this blood clean from my hands" <i>Macbeth after regicide</i>	"I fear thou has played most foully for it" <i>Banquo, after Macbeth is King</i>	"False face must hide what the false heart doth know" <i>Macbeth to himself</i>	"Fly good Fleance! Fly!" <i>Banquo when murderers attack him</i>
"Never shake thy gory locks at me" <i>Macbeth to Banquo's ghost</i>	"All the perfumes of Arabia will not sweeten this little hand" <i>Lady Macbeth sleepwalking</i>	"Til Birnham Wood move to Dunsinane I shall not taint with fear" <i>Macbeth before his death</i>	"Turn hellhound. Turn" <i>Macduff to Macbeth before he kills him</i>	"The dead butcher and his fiendlike queen" <i>Malcom as king, about Macbeth</i>

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

"Fair is ... <i>The Witches</i>	"So foul ... <i>Macbeth's first line</i>	"O valiant ... <i>Duncan about Macbeth</i>	"Unseamed him ... <i>Soldier about Macbeth killing Macdonald</i>	"Whose horrid image ... <i>Macbeth when he heard the witches' prophecies</i>
"I do fear thy nature ... <i>Lady Macbeth about Macbeth</i>	"Come you ... <i>Lady Macbeth before Macbeth returns home</i>	"Take my ... "Make thick ... <i>Lady Macbeth to the spirits before Macbeth returns home</i>	"I would have plucked... <i>Lady Macbeth manipulating Macbeth</i>	"I have no spur ... <i>Macbeth to himself</i>
"Look like the ... <i>Lady Macbeth to the Macbeth</i>	"Will all Great ... <i>Macbeth after regicide</i>	"I fear thou ... <i>Banquo, after Macbeth is King</i>	"False face must hide ... <i>Macbeth to himself</i>	"Fly good ... <i>Banquo when murderers attack him</i>
"Never shake ... <i>Macbeth to Banquo's ghost</i>	"All the perfumes ... <i>Lady Macbeth sleepwalking</i>	"Til Birnham Wood ... <i>Macbeth before his death</i>	"Turn ... <i>Macduff to Macbeth before he kills him</i>	"The dead butcher ... <i>Malcom as king, about Macbeth</i>

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Ozymandias by Percy Shelley

"Ozymandias" tells the story of a broken statue that once represented a powerful king. Time and nature have destroyed the statue, showing the fleeting nature of human accomplishments. The poem teaches us that even the mightiest rulers and empires will eventually fade away, reminding us of the importance of humility. The poem is written in the form of a sonnet (traditional love poem) to symbolise the self love of the pharaoh and the ego of mankind.



Key Quotes

"My name is Ozymandias,
King of Kings, Look upon my
works you mighty and
imperial

"the hand that mocked them
and the heart that fed"

"the decay of that colossal
wreck"

Shelley was a Romantic poet who had a deep appreciation for nature and criticised the government, monarchy and absolute power.

London by William Blake



"London" by William Blake is a poem that explores the negative aspects of city life during the Industrial Revolution. It describes the author's observations of poverty, despair, and the loss of innocence among the people he encounters. The poem criticises the government and the monarchy's Laissez Faire attitudes that contribute to their suffering and emphasises the need for compassion and social change.

Blake includes an allusion to the French Revolution, where the people of France revolted and beheaded the monarchy, to glamourise the idea of a revolution in Britain.

Key Quotes

"Mind-forged manacles I
hear"

"Soldiers sigh runs in
blood down palace walls"

"Where the chartered
Thames does flow"

Blake was a Romantic poet who did not trust the government or the monarchy and wished to draw attention to the suffering of the poor (particularly children) in his work.

Comparing Poetry

P

Point

Answer the question

E

Evidence

Embed a quote, or pattern of quotes that juxtapose or reinforce each other

A

Analyse

Explain the inferences behind the quote in detail using as/so/ because/which

Z

Zoom

Explain the connotations of a powerful word or technique has and the effect of this

E

Effect

Explain what the writer's intention is/ what they are trying to teach the reader

L

Link to Context

Explain how these ideas link to the real world

C

Compare to second poem in detail

Explain similar or different meanings, messages and methods

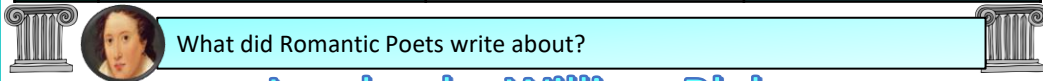
Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Ozymandias by Percy Shelley

1. What is the focus of the poem?
2. What destroys the statue?
3. What does the poem teach us?
4. What form is the poem written in?
5. What does this form symbolise?



Key Quotes	"My name is _____"	"the hand that _____"	"the decay _____"
	_____	_____	_____



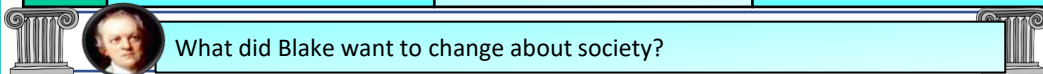
What did Romantic Poets write about?

London by William Blake

1. What does the poem focus on?
2. What does the poet see as he walks around the city?
3. What does the poem criticise?
4. What allusion does Blake include?
5. What does he include this allusion?



Key Quotes	"Mind-forged _____"	"Soldiers sigh _____"	"Where the _____"
	_____	_____	_____



What did Blake want to change about society?

Comparing Poetry

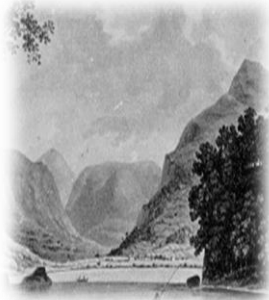
P	Point	_____
E	Evidence	_____ _____
A	Analyse	_____ _____
Z	Zoom	_____ _____
E	Effect	_____ _____
L	Link to Context	_____ _____
C	Compare to second poem in detail	_____ _____

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Extract from The Prelude by William Wordsworth

In "The Prelude" by William Wordsworth, the speaker reflects on a childhood experience of being overwhelmed by the power of nature. He remembers a moment when he rows a boat on a lake, and suddenly a majestic mountain emerges from behind a curtain of mist, leaving him in awe. The moment frightens and humbles him and he dreams about it for a long time after.

The poem is written in one long stanza with enjambment throughout, to emphasise the lack of control the speaker



Key Quote			
	"went heaving through the water like a swan"	"huge peak. Black and huge as if with voluntary power instinct."	"huge and mighty forms (...) were a trouble to my dreams"

Wordsworth was a Romantic poet who had a deep appreciation for nature's everlasting power and often used nature to escape from conflict in his family

My Last Duchess by Robert Browning



"My Last Duchess" by Robert Browning is a poem in which a wealthy Duke speaks about his former wife, who he had killed because of her alleged flirtatiousness. The Duke reveals his jealousy and possessiveness, as well as his desire for control and power. It offers a chilling insight into the mind of a man who sees women as objects to be possessed and controlled.

Browning writes the poem as a dramatic monologue to represent the Duke's ego, status and control, as he is the only character talking without interruption. We only hear his perspective on his relationship.

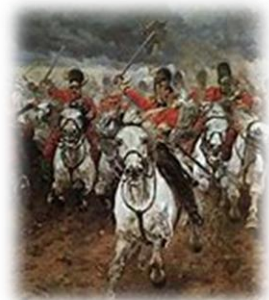
Key Quotes			
	"(None puts back the curtains I have drawn for you but I)"	"White mule she rode around the terrace"	"Notice Neptune taming a sea horse which Claus of Innsbruck cast in bronze for me!"

Browning was a Romantic poet of the Victorian era, which was a patriarchal time period that placed a high importance on the social status of the bourgeoisie.

The Charge of the Light Brigade by Alfred Lord Tennyson

"The Charge of the Light Brigade" recounts a heroic but tragic event of The Battle of Balaclava in the Crimean War. It describes the courage and loyalty of a brigade of British cavalry soldiers as they obey a misunderstood order to charge into enemy lines, despite being outnumbered and facing certain death. The poem honours their bravery and self-sacrifice, but raises questions about how far army leaders can be trusted.

Tennyson uses biblical allusions to 'the valley of death' to imply that God was with these heroic men.



Key Quotes			
	"Into the valley of death, into the mouth of hell"	"There's not to reason why. There's but to do and die"	"The noble 600"

At this time, most poetry presented war as heroic, glorious and an exciting adventure; writing such a critical poem was unusual for this time period.

Exposure by Wilfred Owen



"Exposure" by Wilfred Owen is a powerful war poem that captures the harsh reality of soldiers in World War I, that was a contrast to the glory of war promised by Government propaganda. It vividly describes the freezing conditions, fear, and despair they face. Through haunting imagery and vivid descriptions, Owen exposes the brutality and futility of war, urging us to remember its devastating consequences. Owen personifies the wind to emphasise its power and how the soldiers were just as vulnerable to the destructive forces of nature as the German army.

Key Quotes			
	"Our brains ache in the merciless iced winds that knife us"	"But nothing happens"	"war lasts, rain soaks clouds sag stormy"

Owen was a WW1 soldier who died in action. He wrote about the horrors of war criticising the way war was glorified in propaganda.

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Extract from The Prelude by William Wordsworth

1. What does the speaker reflect on in the poem?
2. What happens on the speakers' journey across the lake?
3. How does the experience affect the speaker?
4. How is the poem structured?



Key Quote	"went heaving _____"	"huge peak _____"	"huge and mighty _____"
	_____	_____	_____

What was Wordsworth inspired by?

My Last Duchess by Robert Browning

1. What is the poem about?
2. What does the poem reveal about the Duke?
3. How does the Duke view women?
4. Give 2 reasons why Browning wrote the poem as a dramatic monologue.



Key Quotes	"(None puts back the _____)"	"White mule _____"	"Notice _____!"
	_____	_____	_____

Who had power in Victorian society?

The Charge of the Light Brigade by Alfred Lord Tennyson

1. What battle is the poem about?
2. Why were the soldiers in this battle so heroic?
3. What questions does the poem raise?



Key Quotes	"Into the valley _____"	"There's not to reason _____"	"noble _____"
	_____	_____	_____

Why was this poem unusual for the time period?

Exposure by Wilfred Owen

1. What does the poem focus on?
2. What is described in the poem?
3. What does Owen want the reader to remember from the poem?
4. Why does Owen personify the wind?



Key Quotes	"Our brains ache _____"	"But nothing _____"	"war lasts, _____"
	_____	_____	_____

What did Owen frequently criticise in his poetry?

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Storm on the Island by Seamus Heaney

"Storm on the Island" by Seamus Heaney is a poem that explores the power of nature and its impact on human beings. Set on a remote island, the poem describes the fear and vulnerability experienced during a storm. Heaney emphasises the resilience of people and the need to unite in the face of adversity. The poem is an extended metaphor, that symbolises 'The Troubles' in Northern Ireland. This is created by the semantic field of war, that is used throughout the



Key Quotes	"spits like a tamed cat turned savage"	"We are bombarded by empty air"	"sea is company, exploding comfortably down the cliffs"



The Irish Troubles was a conflict in Northern Ireland (1960s-1990s) between Irish Nationalists (who wanted an independent Ireland) and Unionists (who wanted to remain part of the United Kingdom). The conflict involved bombings, shootings, riots and officially ended with the signing of the Good Friday Agreement in 1998.

Bayonet Charge by Ted Hughes

"Bayonet Charge" by Ted Hughes portrays the chaos and horror of war. It follows a soldier who impulsively charges into battle, driven by fear and survival instincts. Through vivid descriptions and intense imagery, Hughes exposes the brutality and dehumanising nature of war, questioning its purpose and consequences.

Hughes uses the symbol of a distressed "yellow hare" to symbolise how the soldier himself is in turmoil. This could also be a symbol for how war destroys nature as well as mankind.



Key Quotes	"suddenly he awoke and was running"	"Yellow hare that rolled like a flame and crawled in a threshing circle"	"Terror's touchy dynamite"



Many soldiers in WW1 were shocked at the horrific and traumatic conditions of war when they reached the trenches; propaganda had promised them glory and adventure, but the reality of conflict juxtaposed this.

Remains by Simon Armitage

"Remains" by Simon Armitage is a poem that explores the psychological impact of war on an individual. It follows a soldier haunted by guilt after shooting a looter in a conflict, as the forced used to 'tackle' him could be seen as unreasonable. The poem raises questions about the morality of war and the lasting trauma it inflicts on those involved.

Armitage repeats the phrase 'probably armed, possibly not' to emphasise the uncertainty the soldier feels as he considers how he took a human life.



Key Quotes	"probably armed, possibly not"	"tosses his guts back into his body"	"The drink and the drugs won't flush him out"



Many soldiers face Post Traumatic Stress Disorder (PTSD) after they have returned from war.

Poppies by Jane Weir

"Poppies" by Jane Weir explores the emotions of a mother whose son has gone off to war. It delves into her memories of him, the anxiety and fear she experiences, and her longing for his safe return. The poem reflects on the sacrifices and heartache associated with conflict. At the end of the poem it is suggested that he has died, yet we are left uncertain, representing the constant uncertainty felt by families of soldiers in war time.

When the mother removes the 'white cat hairs' from her son's uniform, it symbolises her removing his childhood innocence and the comfort of home.



Key Quotes	"I resisted the impulse to run my fingers through the gelled blackthorns of your hair"	"The world overflowing like a treasure chest"	"I traced the inscriptions on the war memorial and leant against it like a wishbone"



Weir is a mother to two sons so empathises with the grief felt by mothers of fallen soldiers. The poppy is a symbol of remembrance in all wars.

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Storm on the Island by Seamus Heaney

1. What is the poem about?
2. What happens in the poem?
3. What does the poet emphasise?
4. What is the poet an extended metaphor for?



Key Quotes	"spits _____"	"We are bombarded _____"	"sea is company, _____"
	_____	_____	_____



What were the Irish Troubles?

Bayonet Charge by Ted Hughes

1. What is the poem about?
2. What does the poem make us realise and question?
3. List 2 things the 'yellow' hare' could symbolise.



Key Quotes	"suddenly _____"	"Yellow _____"	"Terror's _____"
	_____	_____	_____



Why were the soldiers of WWI shocked when they reached the trenches?

Remains by Simon Armitage

1. What is the message of the poem?
2. What/who is the poem about?
3. What does the poem question?
4. What phrase does Armitage repeat?
5. Why does Armitage use repetition?



Key Quotes	"probably armed, _____"	"tosses his guts _____"	"The drink and the drugs _____"
	_____	_____	_____



What is PTSD?

Poppies by Jane Weir

1. Who is the focus of the poem?
2. What does the speaker think about in the poem?
3. What happens at the end of the poem?
4. Why might the poet have chosen this ending?
5. What could the 'white cat hairs' symbolise?



Key Quotes	"I resisted the impulse to _____"	"The world overflowing _____"	"I traced the inscriptions on _____"
	_____	_____	_____



What is the poppy used to symbolise?

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

War Photographer by Carol Ann Duffy

"War Photographer" by Carol Ann Duffy explores the experiences of a photographer capturing the horrors of war. It highlights the contrast between the photographer's detached professional life and the emotional impact of witnessing suffering. It raises questions about the morality of taking these images, the impact they have in the media and the **responsibility of bearing witness**.

Duffy lists countries where war occurs from across the world, to symbolise widespread and inescapable conflict.



Key Quotes	“Fields which don’t explode beneath the feet of children running in nightmare heat”	“Blood stained into foreign dust”	“their eyeballs prick with tears”
	The media buy the most shocking war photographs to share. This can be seen a spreading awareness but also making money from people’s suffering		

The Emigree by Carol Rumens



"The Emigree" by Carol Rumens is about a refugee who has left their home country and reflects on their memories of it. The speaker describes their city with vivid imagery and fondness, while also acknowledging the hardships and changes that forced them to leave. The poem explores themes of identity, nostalgia, and the impact of political events on individuals.

The speaker personifies her home country to emphasise her unbreakable loyalty and connection to it.

Key Quotes	"It may be at war, it may be sick with tyrants"	"I am branded by an impression of sunlight"	"I have no passport. There is no way back at all"
	 Refugees are often villainised as being invaders. Rumens emphasises that they are victims of war who have not chosen to seek refuge but have found themselves desperate.		

Tissue by Imtiaz Dharker

"Tissue" by Imtiaz Dharker reflects on the significance of paper in our lives. It explores how paper, like human connections, can be fragile yet powerful. The poem encourages us to value the small moments and relationships that shape our lives, reminding us of their **value**.

Dharker uses an ambiguous title that could refer to fragile paper or human flesh. This is to highlight that human life is as delicate as tissue paper.



Key Quotes	"Paper that lets the light shine through, this is what could alter	"Maps too. The sun shines through their borderlines"	"Fine slips from grocery shops (...) might fly our lives like paper kites"
	Dharker explores how paper overpowers humans and causes conflict across the world (maps, religious documents, money).		

Checking Out Me History by John Agard



"Checking Out Me History" by John Agard explores the importance of learning about neglected or overlooked figures from history, particularly those of non-Western backgrounds. The speaker challenges the traditional curriculum and calls for a more inclusive representation of diverse cultures and achievements. The poem celebrates the strength and resilience of individuals who have been marginalised, encouraging readers to question and reclaim their own histories.

Agard juxtaposes the 'nonsense' of nursery rhymes with the inspirational stories of non-western figures to question the National Curriculum.

Key Quotes	“Dem tell me what dem want to tell me”	“Blind me to my own identity”	“Florence Nightingale” “Mary Seacole”	
 	Agard criticises the ‘Eurocentric’ view of history and white supremacy in the education he received as a child in Britain.			

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

War Photographer by Carol Ann Duffy

1. What is the poem about?

1. What does the poem raise questions about?

3. Why does Duffy list countries affected by war?



Key Quotes

"Fields which don't explode

"Blood _____

"their eyeballs _____

How can publicising images of war be seen as positive as well as negative?

The Emigree by Carol Rumens

1. What is the poem about?

2. What does the speaker discuss in the poem?

3. What themes are explored in the poem?

4. Why does the speaker personify their home



Key Quotes

"It may be at war, _____

"I am branded by _____

"I have no passport.

How are refugees often judged?

Tissue by Imtiaz Dharker

1. What does the poem reflect on?

2. How does the poem present paper?

3. What does the poem teach us?

4. Why does the poet use an ambiguous title?



Key Quotes

"Paper that lets the
light shine through,

"Maps too. _____

"Fine slips from grocery
shops _____

How does the poem 'Tissue' relate to the theme of conflict?

Checking Out Me History by John Agard

1. What is the poem about?

2. What does the speaker want to change about what is taught at school?

3. What does the poem celebrate?

4. How does the poet use juxtaposition?



Key Quotes

"Dem tell me what dem
want to tell me"

"Blind me to my own
identity"

"Florence Nightingale"
"Mary Seacole"

What did Agard intend to teach his audience with this allegorical poem?

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Kamikaze by Beatrice Garland

"Kamikaze" by Beatrice Garland tells the story of a Japanese pilot who contemplates a suicide mission during World War II. It explores the conflict between personal identity and societal pressures. The poem raises questions about the value of individuality and the consequences of blindly following orders, as the pilot is ostracised by his family and community for deciding to return from the mission. Garland uses lots of natural imagery to explore the impact of war on nature but also to question whether war and conflict is a natural way to behave.



Key Quotes	"Shaven head full of powerful incantations"	"one-way journey into history"	"He must have wondered which had been the better way to die"
------------	---	--------------------------------	--



In WWII, Japanese people were socially conditioned to glorify Kamikaze pilots. If they returned from the suicide mission they would bring shame upon themselves and their families.



Poetic Form	Explanation	Examples
Sonnet	A poem of 14 lines, traditionally a love poem	Ozymandias
Narrative Poem	Tell a story to present an individual's experience	The Prelude, Kamikaze, Poppies
Dramatic Monologue	A single character speaks directly to an audience.	My Last Duchess
Free Verse Poem	Poems that do not follow any specific rhyme or rhythm patterns	Tissue, War Photographer

Poetic Methods

Metaphor: comparing two things without using "like" or "as," creating vivid and imaginative descriptions.

Imagery: using descriptive language to create sensory experiences, painting a vivid picture in the reader's mind.

Enjambment: when a sentence or phrase continues onto the next line without a pause or punctuation, creating a flow and adding emphasis.

Semantic Field: a group of words related to a specific theme or topic, creating a focused and consistent image.

Caesura: a pause or break in the middle of a line of poetry, often marked by punctuation.

Ambiguity: using language or descriptions that can be interpreted in more than one way, allowing for different meaning.

Symbolism: using objects, images, or actions to represent deeper meanings or ideas.

Allusion: making references to well-known people, events, or stories from literature, history, or mythology.

Repetition: repeating words, phrases, or lines for emphasis.

Onomatopoeia: using words that imitate or mimic sounds, adding a sense of realism or creating a particular mood.

Year 10 English: 'Macbeth' by William Shakespeare and Power and Conflict Poetry

Kamikaze by Beatrice Garland

1. What story is told in the poem?
2. What conflict is explored?
3. What questions does the poem raise?
4. Why does the poet use lots of natural imagery in the poem?



Key Quotes	"Shaven head ____ _____"	"one-way ____ _____"	"He must have ____ _____"



In WW2, how did Japanese people view Kamikaze pilots?



Poetic Form	Explanation	Examples
Sonnet		
Narrative Poem		
Dramatic Monologue		
Free Verse Poem		

Poetic Methods

Complete the definitions of each method

A metaphor is... _____

Imagery is... _____

Enjambment is... _____

A semantic field is... _____

Ambiguity
is... _____

Symbolism is... _____

An allusion is... _____

Repetition is... _____

Onomatopoeia is... _____

Geography



Helping every person achieve things they never thought they could.

Year 10 Geography: Natural Hazards - Tectonic hazards

Key Vocabulary

1	Earthquake	A sudden or violent movement within the Earth's crust followed by a series of shocks
2	Immediate responses	The reaction of people as the disaster happens and in the immediate aftermath
3	Long-term responses	Later reactions that occur in the weeks, months and years after the event
4	Monitoring	Recording physical changes to help forecast when and where a natural hazard might strike
5	Planning	Actions taken to respond to, and recover from, natural disasters
6	Prediction	Attempts to forecast when and where a natural hazard will strike
7	Primary effects	The initial impact of a natural event on people and property
8	Protection	Actions taken before a hazard strikes to reduce its impact
9	Secondary effects	The after-effects that occur as indirect impacts of a natural event
10	Subduction	A process occurring at destructive plate margins where a heavier oceanic plate is forced under a continental plate
11	Tectonic hazard	A natural hazard caused by movement of tectonic plates

12. Plate Margins

Where plate edges meet a plate margin is formed:

- **Conservative:** plates move past each other
- **Destructive:** plates move towards each other and one is subducted
- **Constructive:** plates move away from each other

Plate Tectonic Theory

13 Inner core, outer core, mantle and crust

14 Crust pieces are called tectonic plates

15 Convection currents cause magma to move in circular movements

16 Convection currents cause tectonic plates to move



Year 10 Geography: Natural Hazards - Tectonic hazards

Key Vocabulary

1	Earthquake	
2	Immediate responses	
3	Long-term responses	
4	Monitoring	
5	Planning	
6	Prediction	
7	Primary effects	
8	Protection	
9	Secondary effects	
10	Subduction	
11	Tectonic hazard	

12. Plate Margins

Where plate edges meet a plate margin is formed:

- Conservative:
- Destructive:
- Constructive:

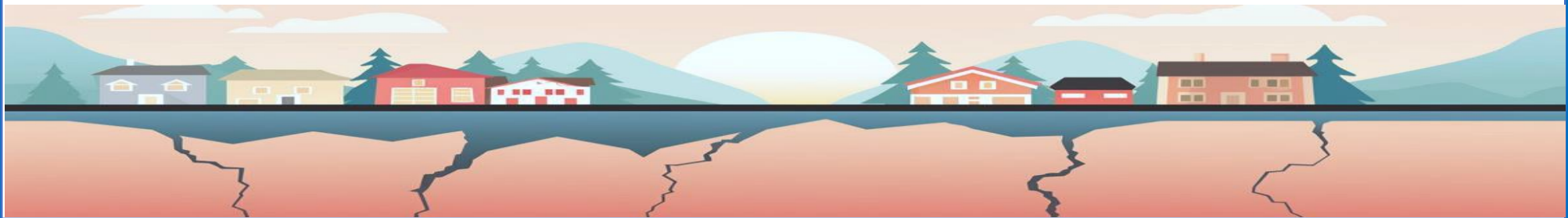
Plate Tectonic Theory

13

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16



Year 10 Geography: Natural Hazards - Tectonic hazards

Contrasting earthquake case studies:

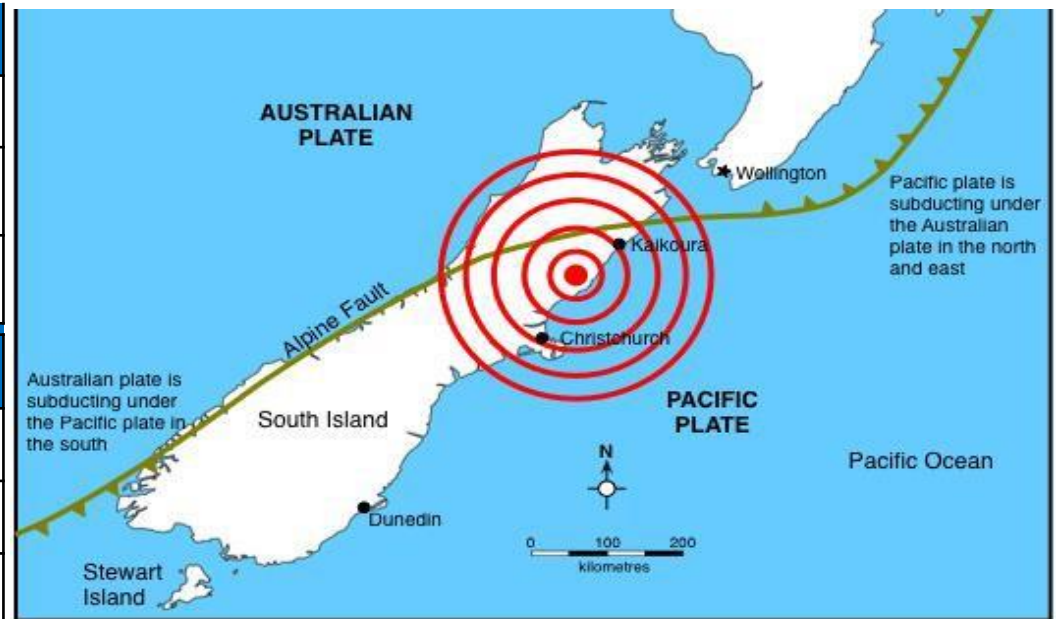
	Primary Effects		Secondary Effects		Immediate Response		Long-Term Response	
Nepal 2015 (LIC)	17	9000 deaths 7,000 schools destroyed - Water supplies cut off	19	3 million homeless - International airport congested	21	- UK and India sent search and Rescue - Half a million tents given	23	- Over 7000 schools re-built - Stricter controls on building quality
New Zealand 2016 (HIC)	18	5 deaths 60 people needed emergency housing	20	- The earthquake triggered a tsunami 5m in height. 100,000 landslides were triggered.	22	- A tsunami warning was issued 100s of people were housed in emergency shelters	24	- Roads and railways were repaired and reopened within 2 years - Earthquake proof water pipes were installed.

Management of Tectonic Hazards:

25	Planning	Hazard maps showing areas at risk
26	Prediction	Measuring sulphur from volcano Seismometers measure vibrations
27	Protection	Earth embankments divert lava Earthquake resistant buildings

Living with Risk

28	Geothermal energy to power homes and industry	
29	Dramatic scenery attracts tourists	
30	Lava and ash deposits provide valuable nutrients for soil	



Year 10 Geography: Natural Hazards - Tectonic hazards

Contrasting earthquake case studies:

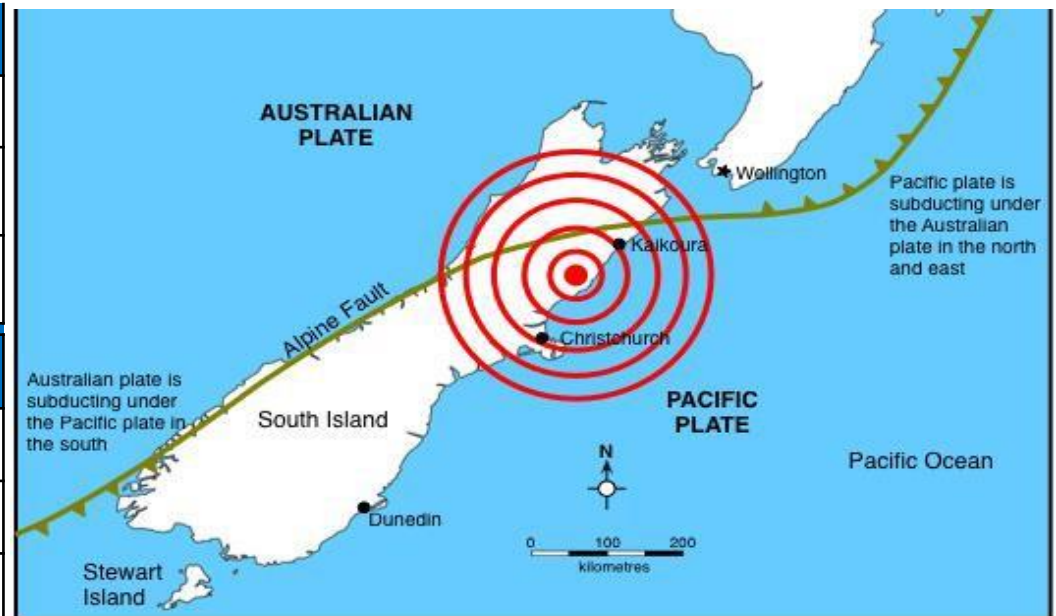
	Primary Effects		Secondary Effects		Immediate Response		Long-Term Response	
Nepal 2015 (LIC)	17		19		21		23	
New Zealand 2016 (HIC)	18		20		22		24	

Management of Tectonic Hazards:

25	Planning	
26	Prediction	
27	Protection	

Living with Risk

28	
29	
30	



Year 10 Geography: Urban Issues and Challenges

Key Vocabulary

1	Economic opportunities	Opportunities to improve standard of living
2	Megacity	A city over 10 million people
3	Multiplier effect	→ Factories are built → Jobs are provided in factories → Increase in taxes → Taxes reinvested in local infrastructure
4	Sanitation	Provision of clean water and disposal of sewage and waste
5	Squatter settlement	An area of illegal and informal housing that is poor quality
6	Favela	A squatter settlement in Brazil
7	Urbanisation	An increase in the proportion of people moving to urban areas
8	Push factor	Something that pushes someone away from an area (e.g. lack of access to water)
9	Pull Factor	Something that pulls people to an area (e.g. well-paid jobs)



The world is becoming more urban

10	Causes	• Natural increase • Migration → rural to urban • Pull factors → Employment,
11	Trends	Urban area populations in 2020: HIC's: 1 billion LIC's: 3.7 billion

Rio de Janeiro - Location and growth:

12	Location	Continent: South America Oceans: Atlantic Ocean to east Countries: Brazil, Paraguay
13	Growth	• International migrants • National migration • Natural increase

Rio de Janeiro: Importance of the city

14	Local	• Tourism • Diverse population
15	Regional	• The former capital • Major port
16	Global	• Exporter of coffee and sugar • 2012 Olympics and 2014 FIFA World Cup

Year 10 Geography: Urban Issues and Challenges

Key Vocabulary

1	Economic opportunities	
2	Megacity	
3	Multiplier effect	
4	Sanitation	
5	Squatter settlement	
6	Favela	
7	Urbanisation	
8	Push factor	
9	Pull Factor	



The world is becoming more urban

10	Causes	
11	Trends	

Rio de Janeiro - Location and growth:

12	Location	
13	Growth	

Rio de Janeiro: Importance of the city

14	Local	
15	Regional	
16	Global	

Year 10 Geography: Urban Issues and Challenges

Opportunities from urban growth in Rio:

17		• 105 hospitals • 1000 primary schools, 400 secondary schools • 95% have access to mains water supply • 99% have access to the power grid
18	Economic	Employment at the port, industrial sites and manufacturing.

Improving quality of life:

19	Problems in the favelas	• Houses built on steep hillsides • High crime rates • Poor sanitation
20	Favela Bairro Project	• Removal of hillside houses • Pacifying Police Unit • Weekly waste collections
21	Problems with the Favela Bairro Project	• Overpopulation • Pacifying Police Unit is corrupt • \$1billion budget is not enough

Challenges

Solutions



Squatter settlements	Favela Bairro Project
Poor access to healthcare	Home visits with health kits
Poor attendance in education	'School grants'
Poor access to clean water	7 new water treatment plants
Unreliable electricity	60km of new power lines
Air pollution	Toll roads and metro system
Water pollution from industry	12 new sewage works



Year 10 Geography: Urban Issues and Challenges

Opportunities from urban growth in Rio:

17	Social	
18	Economic	

Improving quality of life:

19	Problems in the favelas	
20	Favela Bairro Project	
21	Problems with the Favela Bairro Project	

Challenges	Solutions
Squatter settlements	
Poor access to healthcare	
Poor attendance in education	
Poor access to clean water	
Unreliable electricity	
Air pollution	
Water pollution from industry	



Key Vocabulary

1	Erosion	
2	Attrition	
3	Abrasion	
4	Hydraulic Power	
5	Solution	
6	Weathering	
7	Massmovement	
8	Swash	
9	Backwash	
10	Constructive	
11	Destructive	
12	Transportation	
13	Deposition	
14	Longshore drift	

15	Weathering	
16	Mass Movement:	

Erosional landforms:

17	Headland	
18	Bays	
19	Cave	
20	Arch	
21	Stack	
22	Stump	

Depositional landforms:

23	Beach	
24	Spit	
25	Sand Dune	

Management strategies:

26	
27	Hard engineering
28	
29	Soft engineering 
30	

Holderness:

31	Mablethorpe –	
32		
33	Advantages: Disadvantages:	 

Key Vocabulary

1	Agribusiness	Application of business skills to agriculture
2	Carbon footprint	Measurement of the greenhouse gases we produce
3	Energy mix	Range of energy sources used in a region
4	Export	Send (goods or services) to another country for sale
5	Food miles	The distance covered supplying food to consumers
6	Import	Bring (goods or services) into a country from abroad for sale
7	Mal nourishment	Lack of proper nutrition caused by not eating enough of the nutrients and mineral
8	Organic produce	Food produced without using fertilisers and nutrients
9	Resource Management	The control and monitoring of resources so that they do not become depleted or exhausted
10	Under nourishment	Having insufficient food for good health

Food in the UK:

		Used to be seasonal/locally sourced
11		→ Now globally sourced all year → More disposable income → Increased demand for greater choice
12	Changing demand	Positive impacts: • Jobs in LICs • Higher tax income 
13		Negative impacts: • Less land for locals • High water use • Exposure to chemicals 
14		Organic Produce Since 1990s increase in demand 
15	Larger carbon footprint	Food grown cheaply elsewhere → increase in food miles
16		Push now for Buying local; Having an allotment
17	Agri-business	Main aim is profit Impact on the environment Use of pesticides & fertilizers 

Energy in the UK:

18	The changing energy mix	2015 → 31% from coal 1970 → 91% was from coal and oil
19		Investing in renewable energy (solar)
20	Decreasing	Decreasing reserves of fossil fuels
21	Domestic supply of oil, coal and gas	EU regulations on emissions → decrease in fossil fuel use
22		12% less used in homes since 1970 60% less in industry

Water in the UK:

23	Changing demand	Increasing wealth Improved hygiene Increasing industrial and domestic use Increasing population 
24	Water quality and pollution management	Water quality is managed by: • Legislation • Education campaigns • Wastewater treatment • Infrastructure
25		Key pollutants: Fertilisers and pesticides Heavy metals from industry Acid rain
26	Matching supply and demand	Highest population is in the South East = water deficit Highest rainfall is in the North West = water surplus
27		80% of Southern England relies on groundwater 50% are affected by water quality
28	Maintain supply	Kielder Water Scheme Moves water from Northumberland to the NE
29		Positive and negative impacts → loss of homes → reliable supply for industry

Exploitation of resources

30	Nuclear sites being decommissioned → current plants will close by 2023
31	Economic issues: Jobs; Set up costs; Research;;Reliability
32	Environmental costs: Ecosystems damaged; Waste disposal; Emissions and pollution; Radiation leaks

Key Vocabulary

1	Agribusiness	
2	Carbon footprint	
3	Energy mix	
4	Export	
5	Food miles	
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20	Decreasing	
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22		

Water in the UK:

23	Changing demand	
24	Water quality and pollution management	
25		
26	Matching supply and demand	
27		
28	Maintain supply	
29		

Exploitation of resources

30	
31	
32	

Key vocabulary

1	Aquifer	Rock which can contain water
2	Desalinisation	Removal of salt from sea water
3	Irrigation	Artificial watering of the land
4	Over abstraction	When water is being used more quickly than it is being replaced
5	Porous	Allows water to pass through it
6	Waterborne diseases	Diseases caused by contaminated water
7	Water conflict	Disputes between different regions about the use of water
8	Water deficit	Where water demand is greater than supply
9	Water insecurity	Not having enough clean water for the population
11	Water security	Reliable availability and quality and quantity of water
12	Water stress	Demand exceeds the available amount during a certain time
13	Water surplus	Supply is greater than demand

Factors Affecting Water Availability:

14	Climate	Tropical; temperate; mountains
15	Geology	Porous rocks = aquifer forms
16	Pollution	Industrial waste
17	Over abstraction	High demand exceeds replacement
18	infrastructure	Water lost from leaking pipes
19	Poverty	Prevents access to safe water

20	Waterborne diseases and pollution	Chemicals & waste lead to disease e.g. cholera
21		11% of world's population is water insecure
22		2.6 billion lack access to sanitation
23	Food production	Reliant on water 
24	Industrial output	Limited water → no industry → failing economy

Managing Water Supply:

25	Grey water	Wastewater from homes is recycled and put to good use
26	Groundwater management	Regulation of water levels, pollution and groundwater
27	Water conservation	The preservation , control and prevention of pollution
28	Water transfer schemes	Systems of canals and pipes → transport water from one river basin to another
29	Diverting supply and increasing storage	Diverting supply: Expensive; Environmental impacts; Encourage wastage
30		50,000 large dams worldwide
31		Desalination: Expensive; Becoming more common; UAE, Kuwait and Saudi Arabia use it

China Water Transfer Scheme:

32	12 trillion gallons per year 1000 km 3 routes; Yangtze to Yellow River basin Cost US\$62 billion	
33	Reliable supply in the north for 500 million people	⊕
34	Increased availability of water for drinking, industry and irrigation	⊕
35	Displaced 350,000 people Loss of productive farmland in south	⊖
36	Water export may leave south dry	⊖

Sustainable Future:

37	Water conservation	Push taps, mend leaks, drip agriculture
38	Groundwater management	Decrease pumping Decrease use of fertiliser and pesticides
39	Recycling	Use reclaimed water  treated sewage water
40	Grey water	Toilets & irrigation Expensive system 

Hitosa Sustainable Water Scheme:

41	Hitosa; Ethiopia - 1990s Gravity pipes take water from Mount Bada 140km pipelines, 100 public water points	
42	Half funding from Water Aid	⊕
43	Reliable supply for 65,000 people	⊕
44	Cattle fattening business	⊕
45	Pipeline needs replacing → 30yr	⊖
46	Hygiene around taps neglected=disease	⊖
47	Encouraged migration to the area	⊖

Key vocabulary

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2	Desalinisation	
3	Irrigation	
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30		
31		

China Water Transfer Scheme:

32		
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34		⊕
35		⊖
36		⊖

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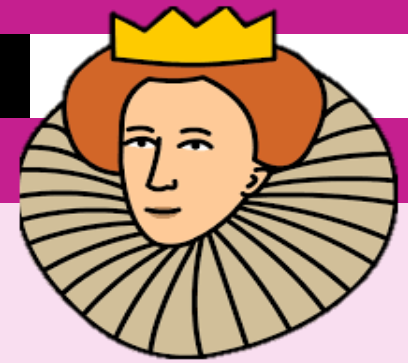
41		
42		⊕
43		⊕
44		⊕
45		⊖
46		⊖
47		⊖

History



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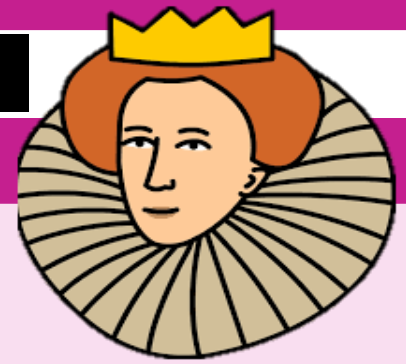
Year 10 History: Elizabethan England



Elizabeth and her Government

Topic	Question	Answer
Elizabeth and her Government	1 Which Dynasty ruled in this period?	Tudor
	2 Who were seen to be England's main rivals?	Spain, France (the papacy?)
	3 How had Henry VIII caused a rivalry with the Papacy?	Broken with the Catholic Church/Papacy to divorce first wife. Set up Protestant Church of England.
	4 Which of Elizabeth's siblings had reigned before her?	Edward. Mary.
	5 Why was Elizabeth seen by some as an 'unrightful heir'?	She was born to Henry's second wife Anne Boleyn whilst he was still married.
	6 Who was Elizabeth's Catholic cousin who some claimed had a stronger claim to the throne?	Mary Queen of Scots.
	7 Why did Elizabeth grow up as an independent, strong character?	Her mother was executed by her father. She was sent away from Court. Well educated.
	8 Why did Elizabeth grow up to be cautious and brave?	She was accused of treason by her brother and sister.
	9 Why does Elizabeth keep Mary Queen of Scots under house arrest when she arrives in England?	Because she is a potential catholic threat to Elizabeth's crown
	10 What was the royal court?	Made up of 500 nobles advisors and servants who revolve around the Queen. Wherever she went, the court followed. It was the centre of political power.
	11 Who were the most influential part of Elizabeth's court?	The Privy Council
	12 Name three members of Elizabeth's Privy Council	Francis Walsingham, William Cecil, Robert Dudley

Year 10 History: Elizabethan England



Elizabeth and her Government

Topic

Question

Answer

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- 10 What was the royal court?
- 11 Who were the most influential part of Elizabeth's court?
- 12 Name three members of Elizabeth's Privy Council

Year 10 History: Elizabethan England



Topic	Question		Answer
Elizabeth and her Government	13	How did Elizabeth use patronage?	She would hand out jobs and titles to encourage loyalty
	14	What was a royal progress?	Elizabeth would tour the country, visiting loyal subjects and keeping an eye on others.
	15	What was Elizabeth's thinking behind divide and rule?	She would put rivals on the privy council to encourage them to compete & work harder. At least one would support her.
	16	Why was Elizabeth put under pressure to marry?	Produce an heir, stop Mary QoS becoming Queen, form a powerful alliance
	17	Name 2 of Elizabeth's suitors	King Phillip of Spain, Robert Dudley, Francis, Duke of Anjou
	18	Why did Elizabeth refuse to marry?	Loss of authority to a man, giving birth was risky, past experiences of family and marriage had been bad, being single could be used to her advantage.
	19	What did Elizabeth use parliament for?	Raising taxes, making laws.
	20	How did Elizabeth manage parliament?	She issued statements about authority, arrested MPs who went too far, dismissed parliament when she wished.
	21	What issues did Elizabeth and parliament conflict over	Religion, freedom of speech, marriage & succession, monopolies.
	22	How did the Earl of Essex initially upset Elizabeth?	They argued during a meeting, she hit him & he nearly drew his sword.

Year 10 History: Elizabethan England



Topic	Question		Answer
Elizabeth and her Government	13	How did Elizabeth use patronage?	
	14	What was a royal progress?	
	15	What was Elizabeth's thinking behind divide and rule?	
	16	Why was Elizabeth put under pressure to marry?	
	17	Name 2 of Elizabeth's suitors	
	18	Why did Elizabeth refuse to marry?	
	19	What did Elizabeth use parliament for?	
	20	How did Elizabeth manage parliament?	
	21	What issues did Elizabeth and parliament conflict over	
	22	How did the Earl of Essex initially upset Elizabeth?	

Year 10 History: Elizabethan England



Topic	Question	Answer
Elizabeth and her Government	23 How did Essex make things worse regarding Ireland?	He made peace without permission, returned home without permission & entered Elizabeth's chambers & caught her undressed.
	24 How did Essex rebel?	Took 4 privy councillors hostage, marched to London with 200 supporters
	25 How was the Essex rebellion stopped?	Essex was labelled a traitor and most of his followers fled.
	26 What were the consequences of the Essex rebellion?	Essex was executed, most of his supporters were fined, Elizabeth showed she wouldn't tolerate challenges to her authority.
Life in Elizabethan Times	27 Name two Elizabethan sailors	Walter Raleigh, Francis Drake, John Hawkins
	28 What made exploration possible?	Better defences to explore hostile territory, better navigation e.g. the astrolabe, better ships that were faster
	29 What was the impact of Elizabethan voyages?	England became involved in the slave trade, England became wealthier after raiding Spanish ships & ports as well as trade in the East, England's naval power grew, England's colonies began to grow e.g. North America.
	30 Who were the gentry?	A new social class, often wealthy landowners with important positions. Richer than peasants, but not born with titles.
	31 How did homes change in the Great rebuilding?	They showed off wealth & taste rather than defence. They used lots of expensive glass. They used symmetry and replaced halls with a great chamber. They would be built with the intention of attracting the queen to visit.

Year 10 History: Elizabethan England



Topic	Question		Answer
Elizabeth and her Government	23	How did Essex make things worse regarding Ireland?	
	24	How did Essex rebel?	
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Year 10 History: Elizabethan England

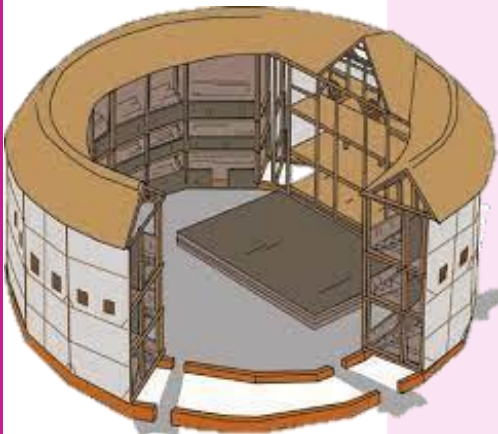
Topic

Question

Answer



Life in Elizabethan Times



32 Who were the Lord Chamberlain's men?

A theatre troupe or company who were funded by a patron.

33 Why would people fund a theatre troupe?

To impress the Queen, who loved theatre.

34 Describe an Elizabethan theatre such as the Globe

The pit is where ordinary people stood in the open weather, the galleries had covered seats for the rich, the Lord's rooms were most expensive and sat behind the stage for all to see. Ticket price depended on where you were and an opportunity to show how rich you were

35 Why was theatre so popular?

It was affordable, new & exciting, carried political messages, entertaining.

36 Why did some oppose theatre?

Large gatherings could spread disease, Puritans saw it as sinful and a distraction from prayer, theatres were dangerous with drunkenness and crime.

37 Why was poverty an problem in Elizabethan England?

Henry VIII had closed monasteries responsible for helping the poor. Bad harvests led to increases in food prices. Population increases led to rent increases. A flu outbreak killed 200,000 people.

38 Who were the undeserving poor?

Untrustworthy beggars who weren't interested in working e.g. Counterfeit cranks, clapper dudgeons, Tom O' Bedlams.

39 How did people try to deal with poverty initially?

Stocks, whippings, holes burnt in ears, hangings.

40 What did the poor Law do?

Taxed the wealthy to pay for the care of the poor. Fit & healthy paupers given work. Those who refused whipped or sent to house of correction.

Year 10 History: Elizabethan England

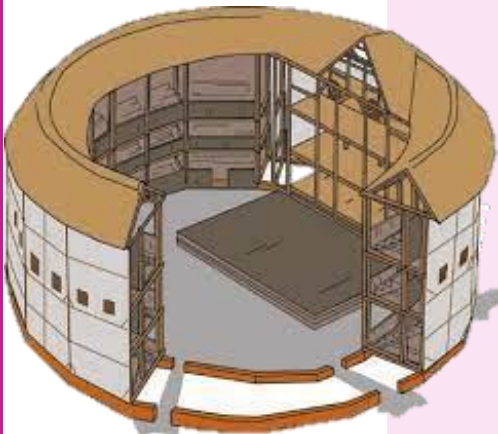
Topic

Question

Answer



Life in Elizabethan Times



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- 35 Why was theatre so popular?
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- 38 Who were the undeserving poor?
- 39 How did people try to deal with poverty initially?
- 40 What did the poor Law do?

Year 10 History: Elizabethan England

Topic	Question		Answer
Trouble at Home and Abroad	41	Who were the Puritans?	Extreme protestants, unwilling to compromise their faith.
	42	Who were the Jesuits?	Missionaries sent to England to help restore Catholicism.
	43	How did Elizabeth demonstrate her 'Middle way'?	The Act of supremacy, which made her Governor, rather than head of the church. The Act of uniformity, which created an English prayer book, allowed Catholics to worship in private, allowed candles and colourful robes, made attendance at Anglican churches compulsory.
	44	What was the Northern rebellion?	Plan to kill Elizabeth & marry Duke of Norfolk to Mary QoS. Earls of Westmoreland & Northumberland took control of Durham Cathedral & had a catholic mass. Marched south with 4600 men, but fled. Northumberland executed.
	45	What was the Papal bull?	Message from the Pope excommunicating the Queen, encouraging rebellion.
	46	Describe two catholic plots to kill Elizabeth and replace her with Mary QoS	Ridolfi plot (Marry Mary QoS to Norfolk, Catholics to invade). Throckmorton plot (Kill Elizabeth, replace with Mary QoS. French invade). Babington plot (Kill Elizabeth, replace with Mary QoS. Mary agrees)
	47	What was the impact of Mary QoS's execution?	Catholics lose their alternative monarch. Mary became a martyr. Outrage was caused in France and Spain.
	48	What led to conflict with Spain?	Elizabeth turned Phillip down, Spain saw it as their duty to return Catholicism to England. Spain was keen to follow the Papal Bull. English sailors had raided Spanish ships & ports with license from Elizabeth.
	49	How did the Spanish plan to invade England?	Sail 151 ships, 7000 sailors and 34,000 soldiers to the Netherlands & collect more men. Sail in a crescent formation. Invade England with support from English Catholics.

Year 10 History: Elizabethan England

Topic	Question		Answer
Trouble at Home and Abroad	41	Who were the Puritans?	
	42	Who were the Jesuits?	
	43	How did Elizabeth demonstrate her 'Middle way'?	
	44	What was the Northern rebellion?	
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	48	What led to conflict with Spain?	
	49	How did the Spanish plan to invade England?	

Year 10 History: America- opportunity for all

	Topic	Question	Answer
Why was there an economic boom in the 1920s	1	What are the signs of an economic boom?	Successful businesses, rising wages, and low unemployment
	2	How did WWI contribute to the economic boom?	Other countries damaged, increased demand for US goods, Money loaned to allies with interest
	3	How did Republican Policies contribute to the boom in the 1920s?	Laissez-Faire/Low taxes on business so they re-invest, low taxes on people so they spend. Tariffs on imports so people buy American goods.
	4	What was hire purchase? How did it contribute to the boom?	Buy now, pay later. Meant more people could afford to buy consumer goods, which increased demand.
	5	What is the cycle of prosperity?	A successful economy. More demand leading to increased production, higher employment, more disposable income, more spending.
	6	Why was mass production so important to the economy in the 1920s?	Helped to produce consumer goods quickly and cheaply so more people could buy them
	7	How did the stock market contribute to the USA's economic boom?	Normal people could buy shares in businesses and made money as their value increased.
1920s Society and Entertainment	8	What type of dance was danced to Jazz?	The Charleston
	9	What year was the first 'talkie' film, called the 'Jazz Singer'?	1927
	10	Name one famous actress made a celebrity by the 'star system'	Clara Bow
	11	Why were more people able to watch spectator sports such as baseball in the 1920s?	More disposable income, more car ownership



Year 10 History: America- opportunity for all

Topic	Question	Answer
Why was there an economic boom in the 1920s	1 What are the signs of an economic boom?	
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	11 Why were more people able to watch spectator sports such as baseball in the 1920s?	



Year 10 History: America- opportunity for all



Topic	Question		Answer
Racial tension in 1920s	12	What were the Jim Crow Laws?	Laws which enforced segregation of whites and blacks in public places in the South
	13	Members of the KKK were white supremacists. What does this mean?	They believed that the white race was superior/better and wanted to stop African Americans from getting the rights they deserved.
	14	How many members of the KKK were there at its peak in 1925?	6 million
	15	African Americans had the right to vote in the 1920s, but there were three things which discriminated against them from using it. What were they?	Intimidation.. Literacy (reading and writing test, which many AAs couldn't). Poll tax (had to pay money to vote, which many AAs couldn't afford).
Red Scare	16	Russia became communist in 1917. Describe three aspects of what communism is	One party runs the whole country, business owned and run by the state (government), the lives of individuals tightly controlled
	17	Why were so many Americans scared of communism?	The were worried it would ruin their way of life.
	18	Describe America's capitalist society	Governments are elected in free and fair elections, businesses are owned by individuals who enjoy the profit, individual freedom in very important
	19	What were the Palmer Raids in 1919?	A series of raids led by the Mitchell Palmer to capture, arrest and 'send home' suspected communists from the United States. 6000 suspects were arrested

Year 10 History: America- opportunity for all



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Year 10 History: America- opportunity for all



Topic	Question		Answer
Roosevelt's election	20	What did Franklyn D Roosevelt offer the American people?	A new deal
	21	How did Roosevelt campaign for the presidency?	He toured the country, sometimes making 15 speeches a day
	22	How had Roosevelt helped the depression before becoming president?	He spent \$20 million as Governor of New York to help unemployment.
New deal	23	What were the 'three Rs' of the New Deal?	Relief, recovery, reform.
	24	How did the New Deal try to kickstart the American economy	Spending would lead to a cycle of recovery.
	25	How did the New Deal discriminate against women?	The average wage for a women in 1937 was \$525 compared to \$1000 for men
	26	Why is the TVA an example of permanent change for the better?	Thousands of jobs were created, the land became fertile and quality of life greatly improved.
1950s prosperity	27	What did American Express create in 1958?	A worldwide credit card network that allowed people to purchase items and pay off instalments every month.
	28	How did America's fear of communism help the economy in the 1950s?	The government massively increased military spending
	29	How did the 4 million babies born each year during the 1950s help the economy?	Each infant was thought to be worth \$800 to the producers of baby and child products.

Year 10 History: America- opportunity for all



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Life Chances



Helping every person achieve things they never thought they could.

Year 10 Life Chances: CEIAG (careers)

Technology is one of the biggest **influences** on the changing opportunities in the world of work.

- **Artificial intelligence (AI)** is the development of machines that can mimic human behaviours such as learning, reasoning and self-correction.
- **Robots** can help humans do physical tasks. Not all robots are physical robots. Robotic process automation (RPA) is software that can be configured to do specific tasks that humans do on computers.
- **Automation** are tasks done by machines instead of humans to increase efficiency and reduce mistakes.

800,000 jobs have been lost but nearly **3.5 million new ones have been created** due to technology.

Technology has boosted employment in knowledge-intensive sectors such as **medicine**, **accounting** and **professional services**.

Career or Job?

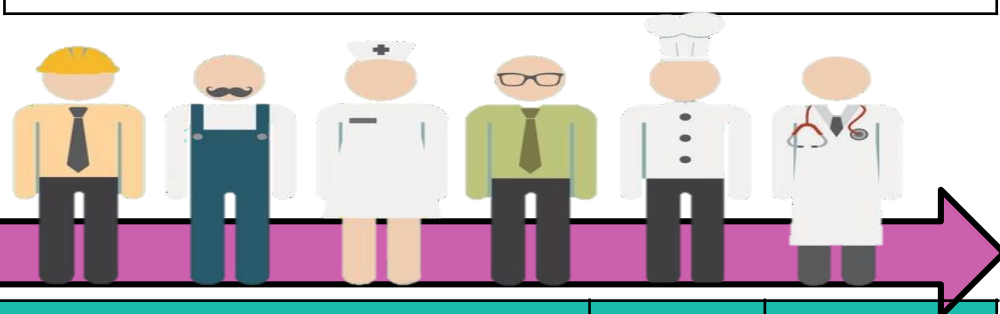
What is a job?

Your job is the role you have at your place of work. **Firefighter, airline pilot, teacher, politician** – these are all jobs.
In a nutshell, a job is about the here and now.

A job can be something you do just to earn money. But it can also be part of something much bigger. This is called a "career".

What is a career?

A career is about more than just earning a wage. It is to do with your long-term **aims** and **ambitions**, and what you want to achieve in your life.
In a career, each job you have helps you achieve this goal.
This is called your career path.



Your Journey Through Education...

Institution	Age	Year Group	Qualification	Level	Status
Primary School	4-11 years	Reception – Year 6	SATs (In year 6)	N/A	Compulsory
Secondary School	11-16 years	Year 7 – Year 11	GCSEs (taken in year 11)	Level 2	Compulsory
Further Education (College/Sixth Form)	16+	Year 12 – Year 13	A Levels / T Levels / BTECs / Apprenticeships	Level 3	Compulsory
Higher Education (University/College)	18+	Undergraduate	Degree / Foundation degree / Degree apprenticeships	Level 4 - 6	Optional

Year 10 Life Chances: CEIAG (careers)

Technology is one of the biggest **influences** on the changing opportunities in the world of work.

- **Artificial intelligence (AI)** is...
- **Robots** can...
- **Automation** are..

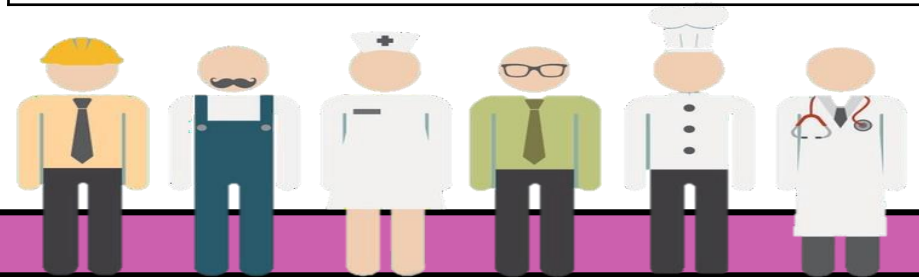
800,000 jobs have been lost but nearly _____ due to technology.

Technology has boosted employment in knowledge-intensive sectors such as _____, _____ and _____.

Career or Job?

What is a job?

What is a career?



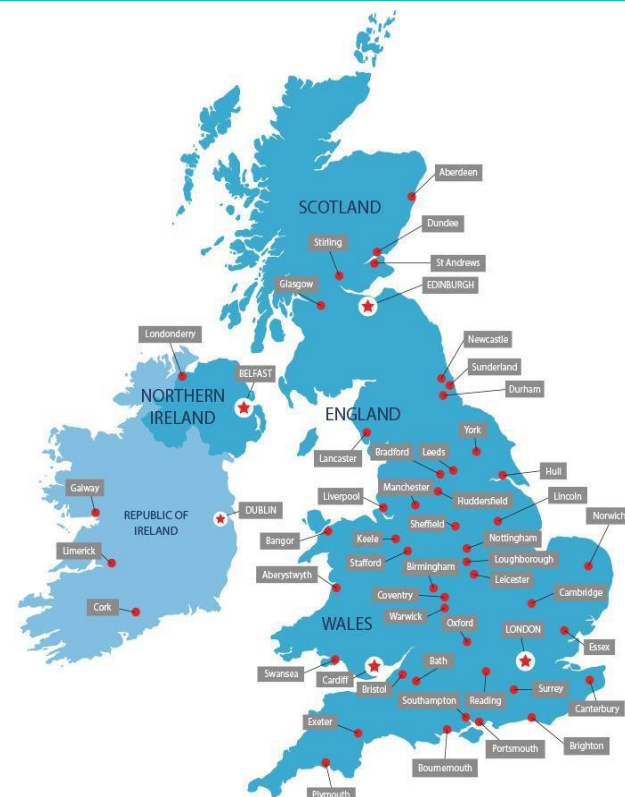
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	11-16 years	Year 7 – Year 11		Level 2	
	16+	Year 12 – Year 13		Level 3	
	18+	Undergraduate		Level 4 - 6	

Year 10 Life Chances: CEIAG (careers)

Understanding what university life is like

Level 4	1st Year Honours Degree - Certificate of Higher Education	- BTEC Professional Qualifications - Foundation Degree Year 1 - HNCs	1st Year Degree Apprenticeship - Higher Apprenticeship - NVQ Level 4
Level 3	- A and AS Levels - International Baccalaureate - Open University Access Modules	- T Levels - Vocational Level 3	- Advanced Apprenticeship - NVQ Level 3
Level 2	- GCSE Grades 4-9 - Maths /English/ Functional Skills Course	- Transitional Year (to get ready for T Levels) - Vocational Qualifications (BTEC etc.)	- Intermediate Apprenticeship - NVQ Level 2



How do students learn at university?

Lectures

University students are taught in lectures. A lecture is a formal educational talk given by a subject specialist to a group of students who listen and take notes. Lectures can be attended by hundreds of students at once.

Seminars

A seminar is another form of teaching at university. Small groups give presentations and hold discussions, often based around the lectures they have attended. It is a more informal way of teaching and acts as an opportunity for students to share their ideas.

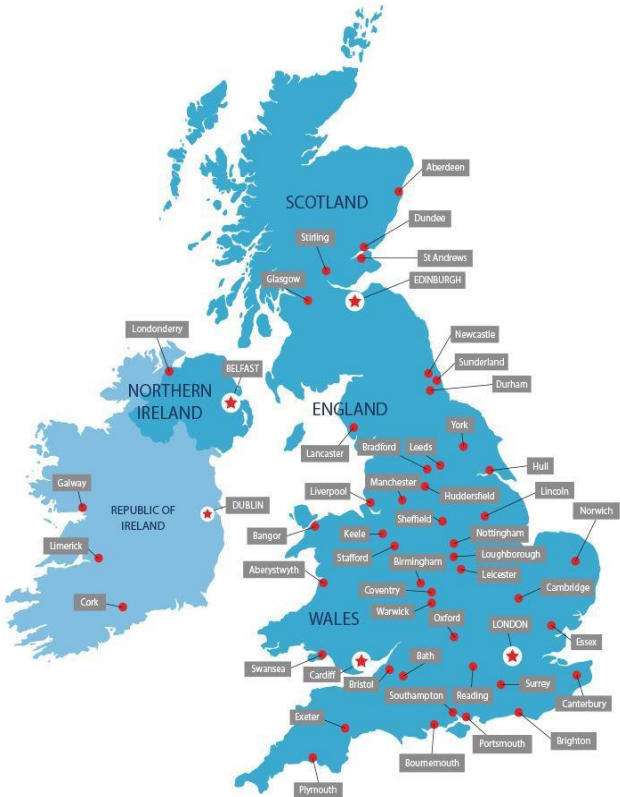
Independent Study

There are many different types of teaching methods used in universities, lectures and seminars are just the most common. You will also be expected to do a lot of independent study during your degree.

Year 10 Life Chances: CEIAG (careers)

Understanding what university life is like

Level 4	• - • -	• - • -	• - • -
Level 3	• - • - • -	• - • -	• - • -
Level 2	• - • -	• - • -	• - • -



How do students learn at university?

What are lectures?

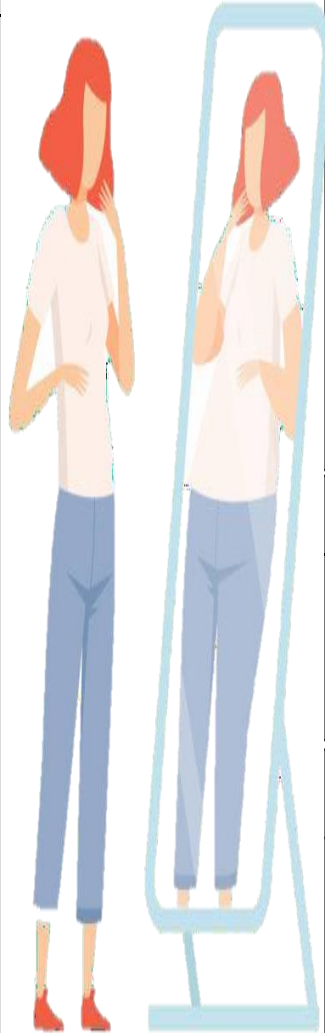
What are seminars?

What is independent study?

Year 10 Life Chances: Wellbeing

Useful Emotional Wellbeing Strategies

- Relaxation techniques, e.g. mindfulness and deep breathing
- Following interests and hobbies that provide an enjoyable distraction
- Getting plenty of good quality sleep
- Keeping active, e.g. running, swimming, walking, playing sport
- Spending time with friends and family
- Doing dedicated exercises intended to promote relaxation, e.g. yoga
- Getting outside into nature
- Online mindfulness, stress and anxiety apps
- Asking for support from teachers, family, friends, online support when things get a bit much.



Unhealthy Coping Strategies

- Sharing emotional and personal details on social media
- Working excessively on school work to cope with anxiety about studies
- Regularly over-exercising to the point of collapse
- Following a restrictive eating plan that involves eating less food than the body needs to maintain a healthy lifestyle
- Using energy drinks to boost energy levels and to enhance mood.
- Smoking to calm the nerves.

What is body image?

Body image is the way we think and feel about the size, shape, weight and overall appearance of our bodies.

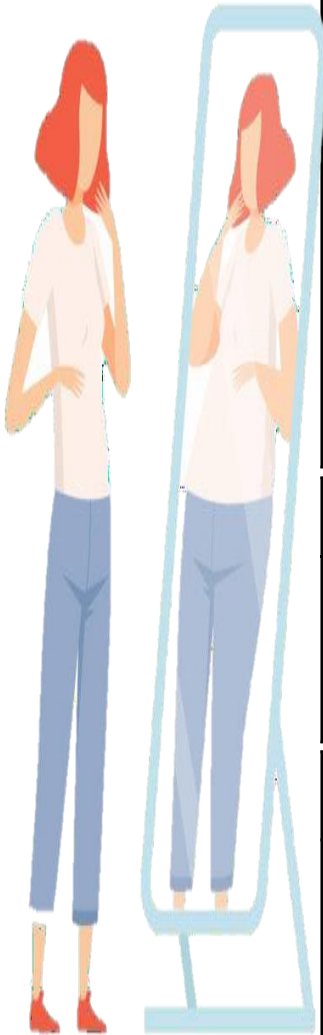
The dangers from cosmetic surgery

Blood loss	Infection
Depression	Scarring
Financial pressures	Nerve damage
Body dysmorphia	Disappointment

Year 10 Life Chances: Wellbeing

Useful Emotional Wellbeing Strategies

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Unhealthy Coping Strategies

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What is body image?

The dangers from cosmetic surgery

Year 10 Life Chances: Wellbeing

Understanding the laws surrounding drugs.

Possession means that an individual is caught with a controlled drug for personal use. The person does not have to be using it, just to have it in their possession.

Possession with intent to supply means that a person is planning to give controlled drugs to someone else. This includes selling, sharing or giving for free.

Supply means that a person distributes or gives someone else controlled drugs. This can be selling, giving for a reward of some form, sharing or giving for free.



Drug	Effect 1	Effect 2
Depressants (E.G. Alcohol or solvents)	Initial feeling of pleasure or confidence before risk of losing consciousness at higher doses.	Lowers cognitive abilities, slows reactions and risks blackouts.
Stimulants (E.g. MDMA or cocaine)	Increased energy, pleasure, dilated pupils and increased confidence.	People can experience a clenched jaw and/or racing heart which increases the risk of a heart attack.
Hallucinogens (E.g. Magic mushrooms or LSD)	Altered perception or hallucinations.	Anxiety and panic, impaired decision making.
Dissociatives (E.g. Ketamine or nitrous oxide)	Disconnected from body, floaty or feeling numb.	Unable to move or protect self. Unpleasant feeling of being detached from own body.
Opioids (E.g. Heroin)	Pleasure, a sense of wellbeing and pain-relief.	Sleepiness and loss of consciousness. Risk of injury whilst feeling less pain.
Steroids (E.g. Anabolic steroids)	Over repeated doses, increased muscle mass and quicker recovery from exercise.	Linked to paranoia and aggressive behaviours.
Cannabinoids (E.g. Cannabis)	Feeling 'chilled out' or giggly.	Linked to paranoia and mood swings, also increased loss of memory.

Year 10 Life Chances: Wellbeing

Understanding the laws surrounding drugs.

Possession means...

Possession with intent to supply means...

Supply means...



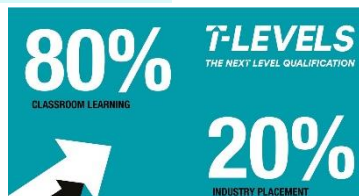
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Cannabinoids (E.g. Cannabis)		

Year 10 Life Chances: Post 16 Pathways

What is it like to take 'A' Levels (Advanced Levels)?

- You will study fewer subjects than you did at GCSE but, as A-levels are advanced qualifications, you will need to develop a much deeper understanding and knowledge of these subjects.
- Because you're picking fewer subjects, A-levels are a good opportunity to start specialising and thinking about potential future careers.
- At A-level, you have a lot less input from teachers and are expected to do more independent study.
- However, you normally go to more lessons, so you can have more time with your teachers to ask questions and work on projects.
- While A-levels are a great entry ticket to university, there are some subjects that certain unis won't accept, and some they will prefer – so do your research!

A-LEVELS



T-levels (Technical Levels) are a new type of technical qualification, designed for after your GCSEs. They've been developed alongside employers to make sure that what you learn meets the needs of industry and prepares you for work. Here's some key information to give you an idea of what to expect:

- T-levels are **two-year courses**
- They are **equivalent to three A-levels**
- Your time is split: **80% classroom** learning; **20% industry placement**
- Placements are at least 315 hours (approximately 45 days)
- T-levels could help you get into **skilled employment, further study or a higher apprenticeship**.

T-LEVELS
THE NEXT LEVEL QUALIFICATION

Year 10 Life Chances: Post 16 Pathways

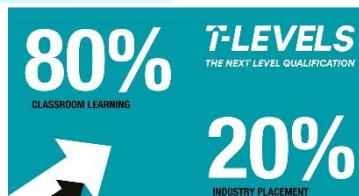
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- .
- .
- .
- .
- .

A-LEVELS



T-LEVELS
THE NEXT LEVEL QUALIFICATION

Apprenticeships

Key points to remember-

- There are many different types and levels of apprenticeships, so do your research.
- Different levels of apprenticeships will have different entry requirements, so make sure you have the grades or qualifications you need.
- When you do an apprenticeship, you are normally required to work as well as study towards a qualification, so it can be quite full-on.
- You can do an apprenticeship in lots of different fields, from media to business, from construction to social care.
- A wide range of businesses offer apprenticeships, from hair salons to digital agencies.
- The web is a good place to start researching the right apprenticeship for you.

Key points to remember-

- Not all are advertised, so it's important to have a good network. Doing work experience and talking to people in local businesses are great ways of finding out about opportunities.
- Much like applying for a job, getting an apprenticeship can be quite competitive.
- As well as your qualifications and previous experience, so-called 'soft skills' are also very important to employers. Example of soft skills include: communication skills, being able to work in a team and independently, the ability to do project work. Basic English and Maths skills are important too.
- As well as giving you on-the-job experience and a wage, an apprenticeship will increase your awareness of the work environment and of the field you work in.
- But be aware that you are aligning yourself to a particular career, which could limit your options later.
- Take the decision to do an apprenticeship seriously: you'll be in a working environment and will be expected to work and behave to certain standards.



Year 10 Life Chances: Post 16 Pathways

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Year 10 Life Chances: Types of sexuality



Gender identity

Many people identify as male or female and see their sex and gender as the same thing. For others their gender identity is different from the sex registered on their birth certificate (male or female).



There are different types of sexuality. Here are some terms used:

Straight: attracted to people of the opposite sex.

Gay: attracted to people of the same sex. This term is used by both men and women.

Lesbian: attracted to people of the same sex. This term refers specifically to women.

Bisexual: attracted to both men and women. Some people prefer the term pansexual to indicate that they are attracted to different kinds of people, regardless of gender.

Asexual: not sexually attracted to anyone.

- Some people may be registered as male at birth, but not identify as male.
- Some people may be registered as female at birth, but not identify as female.
- Some people's gender identity sits between male and female, whilst others don't feel male or female in any way.

There are a variety of terms that can be used to describe this, such as gender diverse or non-binary (neither male nor female). Views on gender identity are wide ranging and discussion of the topic can often become contentious.



Year 10 Life Chances: Types of sexuality



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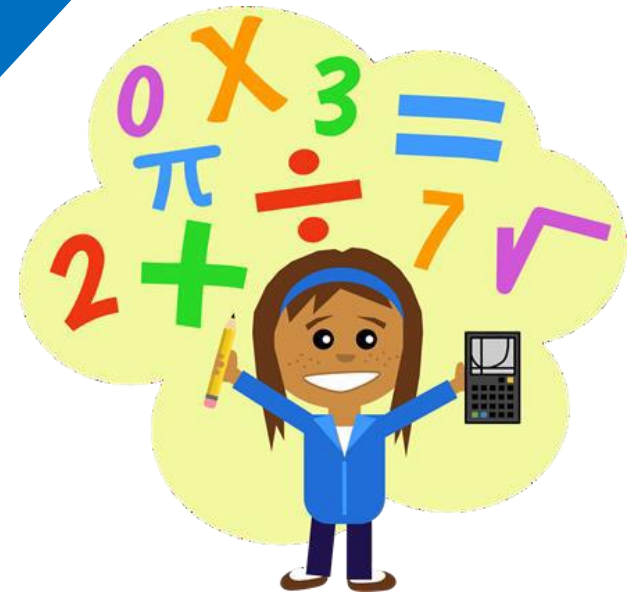
Asexual:

- Some
- Some
- Some.....

There are a variety of terms that can be used to describe this, such as gender _____ or non-_____ (neither male nor female). Views on gender identity are wide _____ and discussion of the _____ can often become contentious.



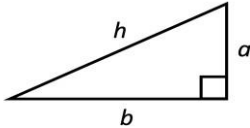
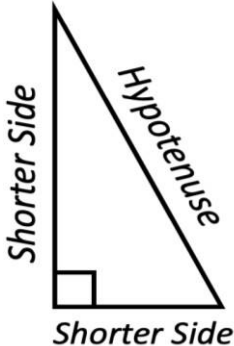
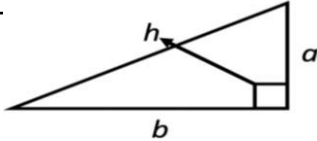
Maths



Helping every person achieve things they never thought they could.

Year 10 Maths:

Key Vocabulary

1	Pythagoras's Theorem	A relationship between the squares of the sides of a right angled triangle, written as the formula $a^2 + b^2 = h^2$	
2	Right-Angled Triangle	Any triangle where one of its interior angles is 90°	
3	Hypotenuse	- The longest side of a right-angled triangle - Opposite the right angle	
4	Shorter Sides	The remaining sides of the right-angled triangle that are not the hypotenuse	
5	Labelling	- Identifying the hypotenuse and the short sides - a and b are the shorter sides - h is always the hypotenuse	
6	Squared	Multiplying a number by itself	4 squared = $4^2 = 4 \times 4 = 16$ 8 squared = $8^2 = 8 \times 8 = 64$
7	Square Root	The number that has been multiplied by itself to make a square number	Square root of 36 $\sqrt{\quad} \quad \sqrt{\quad}$ $= 36 = 6 \times 6 = 6$
8	Rearranging Formula	Changing the subject of a formula so that it equals a different part of a formula	$a^2 + b^2 = h^2$ can be rearranged to $a^2 = h^2 - b^2$ OR $b^2 = h^2 - a^2$
9	Substitution	Replacing a letter with a number in a formula	$a = 3, b = 4$ $3^2 + 4^2 = h^2$

Key Facts

10	Rounding to decimal places: - Identify how many numbers after the decimal point and use the next number to round up or down. - E.g. 5.246 to 2 decimal places = 5.26
11	Rounding to significant figures: - Identify how many non zero digits are required then round up or down to make all the other numbers zero. - E.g. 236.543 to 2 significant figures = 240
12	Pythagoras' Theorem to find the hypotenuse length: $a^2 + b^2 = h^2$
13	To calculate the length of a short side: $h^2 - b^2 = a^2$, or $h^2 - a^2 = b^2$
14	Pythagorean Triples are where a, b and h are all positive integers: 3, 4, 5 where $3^2 + 4^2 = 5^2$ 7, 24, 25 where $7^2 + 24^2 = 25^2$

Key Formula

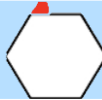
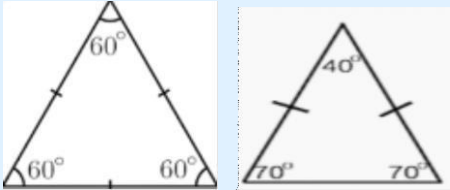
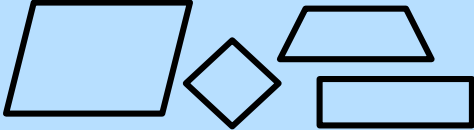
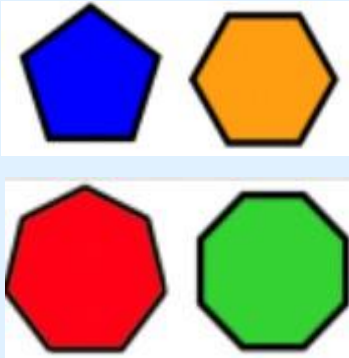
Pythagoras' Theorem

$$a^2 + b^2 = h^2$$



Year 10 Maths:		
Key Vocabulary		
1	What is Pythagoras's Theorem ?	
2	Define a right-angled triangle	
3	Which side of a right angled triangle is the hypotenuse ?	
4	Which sides of a right angled triangle are short sides ?	
5	How do you label a right angled triangle to be able to use Pythagoras' Theorem	
6	What does it mean to square a number?	
7	What does square root mean?	
8	Explain rearranging a formula .	
9	What does substitution mean?	

Key Facts		
10	What do you know about rounding to decimal places?	
11	What is meant by rounding to significant figures?	
12	State the formula for calculating the long side of a right angled triangle.	
13	State the formula for calculating a short side of a right angled triangle that is labeled b.	
14	Describe where a line of symmetry would on an isosceles triangle.	
Key Formula		
Pythagoras' Theorem		

Year 10 Maths:					Key Facts	
Key Vocabulary						
15	Vertically Opposite Angles	- Formed when two straight lines intersect - The four angles add up to 360°			25	A regular polygon has lines of symmetry equal to its number of sides
16	Polygons	A 2D shape with straight sides			26	Vertically opposite angles are equal
17	Interior angle	An angle between one side of a polygon and the adjacent side			27	Angles on straight line about a point add to 180°
18	Exterior angle	An angle between the extended side of a polygon and the adjacent side			28	Angles around a point add up to 360°
19	Triangles	3 sided polygon - Equilateral triangle has 3 equal sides and 3 equal angles (all 60°) - Isosceles triangles has 2 equal sides and 2 equal angles			29	Interior angle + Exterior angle = 180°
20	Quadrilateral	4 sided polygon - For example: Square, Rectangle, Rhombus, Parallelogram, Kite, Trapezium and Arrow Head			30	Sum of Interior Angles in any triangle add up to 180°
21	Pentagon	5 sided polygon			31	Sum of Interior Angles in any quadrilateral add up to 360°
22	Hexagon	6 sided polygon			32	Sum of Exterior Angles in any polygon equals 360°
23	Heptagon	7 sided polygon				
24	Octagon	8 sided polygon				

Year 10 Maths:

Key Facts

Key Vocabulary

15

What do you know about **vertically opposite angles**?

16

Name the **polygons** with the following numbers of sides
4 sided
9 sided
10 sided

17

What is an **interior angle**?

18

On a polygon where is its **exterior angle**?

19

Define an **equilateral triangle** and an **isosceles triangle**.

20

Name as many **quadrilaterals** as you can.

21

Name the **polygon with 5 sides**.

22

Name the **polygon with 6 sides**.

23

Name the **polygon with 7 sides**.

24

Name the **polygon with 8 sides**.

25

A regular 6 sided polygon, has how many lines of symmetry?

26

What can you say about vertically opposite angles?

27

What do angles on a straight line about a point sum to?

28

What do angles around a point sum to?

29

An interior angle added to an exterior angle is straight line – why?

30

What do the interior angles of a triangle sum to?

31

What do the interior angles of a quadrilateral sum to?

32

What do the exterior angles of any polygon sum to?

Year 10 Maths:				Key Facts										
Key Vocabulary														
33	Algebraic Expressions	An expression consists of variables, numbers and operations	$4x + 5y$ $2a$ $y^2 - 5y$	42	Simplify $4x + 6x$ $10x$									
34	Variable	A letter/symbol that stands for an unknown value	x y	43	Simplify $4x + 3y - 6x + 7y$ <i>Collect like term</i> $4x + 3y - 6x + 7y$ $= -2x + 10y$									
35	Term	- Terms make up algebraic expressions - A term can be a number, variable or combination of both	x $5y$ ab 8	44	Simplify $2 \times 3c$ $6c$									
36	Indices	- How many times something has been multiplied by itself - Also called a power	y to the power of 5 means: $y^5 = y \times y \times y \times y \times y$	45	What does w^4 mean? $w \times w \times w \times w$									
37	Substitute	Swapping the variable for a number	Evaluate $2a + 5b$ when: $a = 4, b = 3$ $2 \times 4 + 5 \times 3 = 8 + 15 = 23$	46	Substitute $a = 4$ into $3a + 7$ Swap a for 4 $3 \times 4 + 7 = 12 + 7 = 19$									
38	Simplifying	Adding, subtracting, multiplying and dividing terms	$2 \times 4a = 8a$ $4b + 3b = 7b$	47	Expand $y(y + 2)$ $y \times y = y^2$ and $2 \times y = 2y$ $y \ y + 2 = y^2 + 2y$									
39	Like Terms	Like terms share the same letters and powers	x and $2x^2$ are not like terms $4a$ and $5b$ are not like terms $4y$ and $4y^2$ are not like terms	48	Expand and simplify $3 \ 2x - 5 + 4(x + 1)$ $6x - 15 + 4x + 4 = 10x - 11$									
40	Expand	Multiplying out the brackets	$(2 \ x + 3) \ a$ $a \ a + b = a^2 + ab$	49	Factorise $12y + 20$ HCF of 12 and 20 = 4 $12y + 20 = 4(3y + 5)$									
41	Factorise	- Putting an expression back into brackets - The inverse of expanding	$10x + 15y = 5(2x + 3y)$	50	Expand and simplify $(x + 7)(x - 3)$ <table border="1"><tr><td>$\times$</td><td>x</td><td>$+7$</td></tr><tr><td>x</td><td>x^2</td><td>$+7x$</td></tr><tr><td>-3</td><td>$-3x$</td><td>-12</td></tr></table> $x^2 + 7x - 3x - 12$ $x^2 + 4x - 12$	$\times$	x	$+7$	x	x^2	$+7x$	-3	$-3x$	-12
$\times$	x	$+7$												
x	x^2	$+7x$												
-3	$-3x$	-12												
				51	Factorise $x^2 + 7x + 6$ $a = 1, b = 7, c = 6$ $ac = 6$ Factors of 6: 1, 2, 3, 6 $1 + 6 = 7$ $(x + 1)(x + 6)$									

Year 10 Maths:

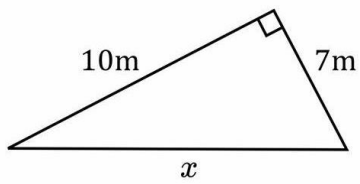
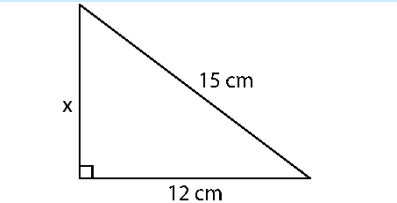
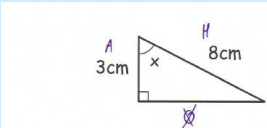
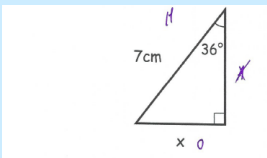
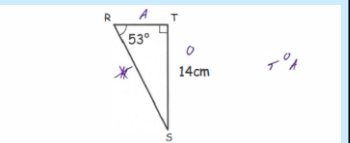
Key Vocabulary

33	What is an algebraic expression ?	
34	What is a variable in algebra?	
35	Give an example of a term in algebra.	
36	What is an index (indices plural) ?	
37	How do you substitute into expressions?	
38	What does simplify mean in algebra?	
39	What are like terms ?	
40	Give an example of how to expand a single bracket.	
41	What does factorise mean?	

Key Facts

42	Explain how you would simplify $2x + 4x$
43	How would you collect like terms to simplify $2x + 8y + 3x - 2y$
44	Simplify $3 \times 2c$
45	How else could you write $w \times w \times w \times w$?
46	Explain what substitution means in algebra.
47	Explain how you would expand the bracket $x(x - 4)$.
48	Explain how you would expand and simplify $3(2x - 4) + 4(3x + 2)$.
49	What does factorise fully mean in algebra?
50	Explain how you would expand and simplify $(x + 5)(x - 4)$.
51	What is the method for factorising quadratic expressions such as $x^2 + 7x + 12$

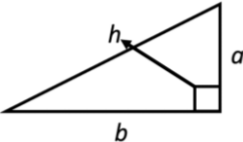
Year 10 Maths: Pythagoras' Theorem and Trigonometry

	Key Skill	Thinking Point	WAGOLL
1	Pythagoras' Theorem (finding the length of the hypotenuse)	Pythagoras' Theorem to find the hypotenuse length: $a^2 + b^2 = h^2$	$a^2 + b^2 = h^2$ $7^2 + 10^2 = h^2$ $49 + 100 = h^2$ $149 = h^2$ $\sqrt{149} = h$ $h = 12.2 \text{ cm (1 d.p.)}$ 
2	Pythagoras' Theorem (finding the length of a shorter side)	To calculate the length of a short side: • $h^2 - b^2 = a^2$, or • $h^2 - a^2 = b^2$	$h^2 - b^2 = a^2$ $15^2 - 12^2 = b^2$ $225 - 144 = b^2$ $81 = b^2$ $\sqrt{81} = b$ $b = 9 \text{ cm}$ 
3	Trigonometry (working out a missing length or angle)	$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$ $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$	 Use trigonometry to work out the size of angle x. $\cos x = \frac{3}{8}$ $x = \cos^{-1}\left(\frac{3}{8}\right)$ 67.98°  Use trigonometry to work out the length x. $x = \sin(36) \times 7$ 4.11 cm  Work out the length of RT. $RT = \frac{14}{\sin 53}$ 10.55 cm

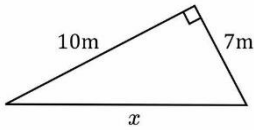
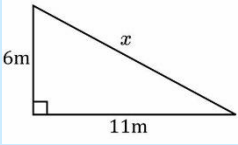
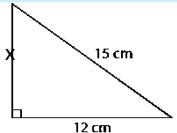
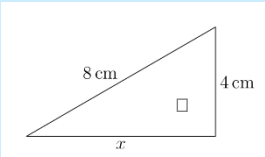
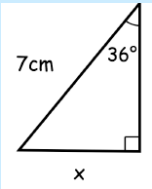
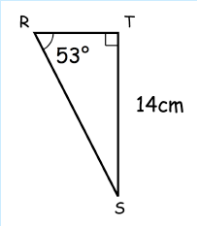
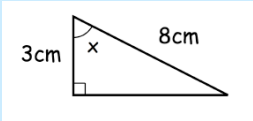
Key vocabulary

Hypotenuse

- The longest side of a right-angled triangle
- Opposite the right angle

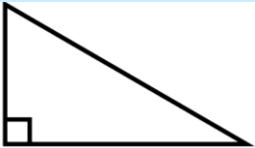


Year 10 Maths: Pythagoras' Theorem and Trigonometry

	Key Skill	Thinking Point	Practice		
1	Pythagoras' Theorem (finding the length of the hypotenuse)	How do you work out the length of the hypotenuse?			
2	Pythagoras' Theorem (finding the length of a shorter side)	How do you work out the length of one of the short sides?			
3	Trigonometry (working out a missing length or angle)	What are the three trigonometric ratios you know for right angled triangles?			

Key vocabulary:

Define hypotenuse, then label it on the triangle



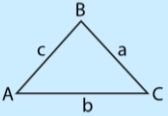
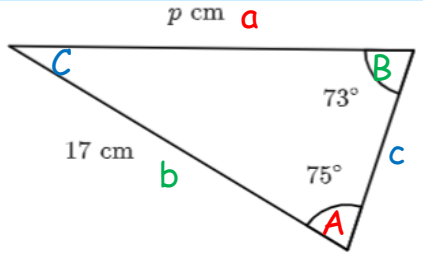
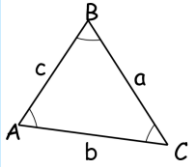
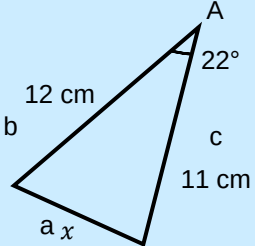
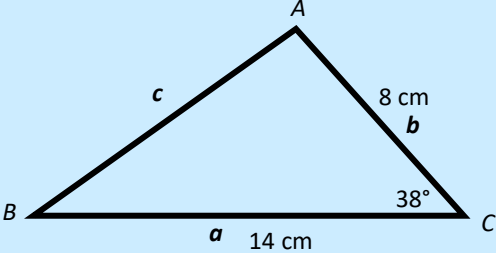
Year 10 Maths: Solving Equations

	Key Skill	Thinking Point	WAGOLL
1	Solving Linear Equations	You can use function machines or the balancing method.	$Solve \frac{x}{4} - 7 = 5$ $x \rightarrow \div 4 \rightarrow - 7 \rightarrow 5$ $48 \leftarrow \times 4 \leftarrow + 7 \leftarrow 5$ $x = 48$ $Solve 5x + 4 = 39$ $- 4 \left\{ \begin{array}{l} 5x + 4 = 39 \\ 5x = 35 \end{array} \right. \div 5 \left\{ \begin{array}{l} 5x + 4 = 39 \\ x = 7 \end{array} \right. - 4$ $Solve \frac{3x - 8}{4} = 4$ $\times 4 \left\{ \begin{array}{l} \frac{3x - 8}{4} = 4 \\ 3x - 8 = 16 \end{array} \right. \div 3 \left\{ \begin{array}{l} 3x - 8 = 16 \\ 3x = 24 \end{array} \right. \div 3 \left\{ \begin{array}{l} 3x - 8 = 16 \\ x = 8 \end{array} \right. + 8$

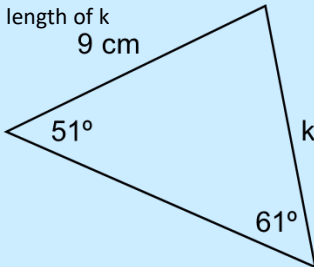
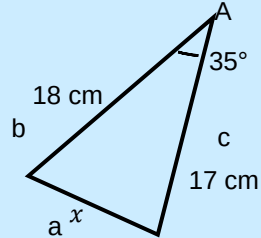
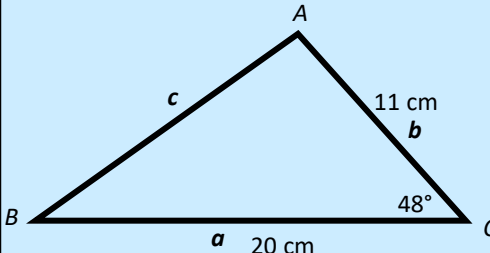
Year 10 Maths: Solving Equations

	Key Skill	Thinking Point	Practice
1	Solving Linear Equations	Which two methods can you use to solve linear equations?	<i>Solve</i> $\frac{x}{3} - 7 = 2$ <i>Solve</i> $8x + 1 = 65$ <i>Solve</i> $\frac{7x - 8}{4} = 5$
2	Equations with x (or any variable) on both sides	What do you need to do to an equation that has a variable on both sides?	<i>Solve</i> $2x + 13 = 5x + 4$ <i>Solve</i> $x - 8 = 2x - 15$ <i>Solve</i> $3x + 6 = -x + 46$
Below is higher only			
3	Solving Quadratic Equations (using the Quadratic Formula)	What is the quadratic formula?	<i>Solve:</i> $6x^2 - 7x - 3 = 0$

Year 10 Maths Higher: Sine and Cosine Rule

	Key Skill	Thinking Point	WAGOLL
1	Sine Rule	Use this to work out a missing angle or side in a triangle when you have information about an angle and the side opposite it, and another angle and the side opposite it. $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$	 $\frac{a}{\sin(A)} = \frac{b}{\sin(B)}$$\frac{p}{\sin(75^\circ)} = \frac{17}{\sin(73^\circ)}$$p = \frac{17}{\sin(73^\circ)} \times \sin(75^\circ) \quad p = 17.2 \text{ cm}$
2	Cosine Rule	Can be used to: - Find missing length (if SAS) - Find missing angle (if SSS) $a^2 = b^2 + c^2 - 2bc \cos A$ 	 Substitute Simplif y ✓ $a^2 = b^2 + c^2 - 2bc \cos A$$x^2 = 12^2 + 11^2 - (2 \times 12 \times 11 \times \cos 22)$$x^2 = 20.22346 \dots$$x = \sqrt{20.22346 \dots}$$x = 4.5 \text{ cm}$
3	Using Sine to find area	$\text{Area} = \frac{1}{2} ab \sin C$	 $\text{Area} = \frac{1}{2} ab \sin C$$= \frac{1}{2} \times 14 \times 8 \times \sin(38)$$= 34.5 \text{ cm}^2$

Year 10 Maths Higher: Sine and Cosine Rule

	Key Skill	Thinking Point	Practice
1	Sine Rule	What is the sine rule?	Work out the length of k  A triangle with a side of 9 cm opposite a 51° angle, and a side of k opposite a 61° angle.
2	Cosine Rule	What is the cosine rule?	Work out the length of x  A triangle with vertices A, B, and C. Side AB is 18 cm, side AC is 17 cm, and the angle at vertex A is 35°. Side BC is labeled x.
3	Using Sine to find area	What is the rule for the area of any triangle?	Work out the area  A triangle with vertices A, B, and C. Side AB is c, side AC is 11 cm, and the angle at vertex C is 48°. Side BC is 20 cm.

Year 10 Maths Higher: Algebraic Fractions

	Key Skill	Thinking Point	WAGOLL
1	Simplifying	- Divide the numerator and denominator by the highest common factor - You may need to factorise into brackets	Simplify: $\frac{15xy^2}{5x}$ $\downarrow$ $\frac{3xy^2}{x}$ $\downarrow$ $\frac{3y^2}{1}$ $= 3y^2$ coefficients $15 \div 5 = 3$ variable $x \div x = 1$ Simplify: $\frac{x^2 + 5x + 6}{2x + 4}$ $= \frac{(x+2)(x+3)}{2(x+2)}$ $= \frac{x+3}{2}$
2	Adding and Subtracting	Make sure both fractions have the same denominator	$\frac{x}{5} + \frac{3x}{8}$ $\times \frac{8}{8}$ $\times \frac{5}{5}$ Common denominator $= \frac{8x}{40} + \frac{15x}{40}$ $= \frac{23x}{40}$ $\frac{x+2}{3} + \frac{x+3}{2}$ $\times \frac{2}{2}$ $\times \frac{3}{3}$ Common denominator $= \frac{2(x+2)}{6} + \frac{3(x+3)}{6}$ $= \frac{2(x+2) + 3(x+3)}{6}$ $= \frac{2x+4+3x+9}{6} = \frac{5x+13}{6}$
3	Multiplying and Dividing	- To multiply, multiply both numerators and multiply both denominators. - To divide, use the reciprocal method.	$\frac{6x}{2y} \times \frac{4y}{5}$ $= \frac{6x \times 4y}{2y \times 5}$ $= \frac{24xy}{10y} \div 2$ $= \frac{12x}{5}$ $\frac{x-2}{x+3} \times \frac{x+1}{x-2}$ $= \frac{(x-2) \times (x+1)}{(x+3) \times (x-2)}$ $= \frac{(x-2)(x+1)}{(x+3)(x-2)}$ $= \frac{x+1}{x+3}$

Year 10 Maths Higher: Algebraic Fractions

	Key Skill	Thinking Point	Practice
1	Simplifying	What do you divide the numerator and denominator by to simplify a fraction?	Simplify: $\frac{30xy}{5xy}$ Simplify: $\frac{x^2 + 7x + 6}{3x + 18}$
2	Adding and Subtracting	What do you need to ensure before you can add or subtract fractions?	$\frac{7x}{3} + \frac{4x}{5}$ $\frac{x+9}{4} + \frac{x+1}{2}$
3	Multiplying and Dividing	How do you multiply fractions? How do you divide fractions?	$\frac{xy}{3} \times \frac{x}{y}$ $\frac{x+3}{x-2} \times \frac{x-1}{x+1}$

Year 10 Maths: Standard form

Key Vocabulary	Definition	
Standard Form	- Writing large and small numbers easily - It is in the form $A \times 10^n$ where $1 \leq A < 10$ and n is an integer (a whole number)	
Key Skill	Thinking Point	WAGOLL
Converting from standard form to an ordinary number positive powers	When a positive power multiply by 10 that many times	Write 2.4×10^3 as an ordinary number 2.4×10^3 Means multiply by 10 three times $2.4 \times 10 \times 10 \times 10 = 2400$
Converting from standard form to an ordinary number negative powers	When a negative power divide by 10 that many times	Write $2.4 \div 10^3$ as an ordinary number 2.4×10^{-3} Means divide by 10 three times $2.4 \div 10 \div 10 \div 10 = 0.0024$
Converting from an ordinary number to standard form: large numbers	- When a large number, divide by 10 until the number is less than 10 but larger than 1. - The number of divisions is the power of 10.	Write 67300 in standard form $67300 \div 10 \div 10 \div 10 \div 10 = 6.73$ We have divided by 10 four times so the power will be 4. $= 6.73 \times 10^4$
Converting from an ordinary number to standard form: small numbers	- When a small number, multiply by 10 until the number is less than 10 but larger than 1. - The number of multiplications is the negative power of 10.	Write 0.0673 in standard form $0.0673 \times 10 \times 10 = 6.73$ We have multiplied by 10 twice so the power will be -2. $= 6.73 \times 10^{-2}$

Year 10 Maths: Standard form

Key Vocabulary	Definition
Standard Form	- Why do we write numbers in standard form? - What do numbers in standard form look like?

Key Skill	Thinking Point	Practice
Converting from standard form to an ordinary number positive powers	When a positive power _____ by 10 that many times	Write 3.2×10^4 as an ordinary number
Converting from standard form to an ordinary number negative powers	When a negative power _____ by 10 that many times	Write $3.2 \div 10^4$ as an ordinary number
Converting from an ordinary number to standard form: large numbers	- When a large number, _____ by _____ until the number is less than ____ but larger than ____. - The number of _____ is the power of 10.	Write 73600 in standard form
Converting from an ordinary number to standard form: small numbers	- When a small number, _____ by ____ until the number is less than ____ but larger than ____. - The number of _____ is the negative power of 10.	Write 0.0703 in standard form

Year 10 Maths: Standard form

Key Skill	Thinking Point	WAGOLL
Multiplying Standard form	- Multiply ordinary numbers together - Add powers together - Check answer is written in standard form	Calculate $(4 \times 10^2) \times (3 \times 10^5)$ $(4 \times 3) \times (10^2 \times 10^5)$ $12 \times 10^{2+5}$ 12×10^7 Not in standard form as 12 is larger than 10. 1.2×10^6
Dividing Standard Form	- Divide ordinary numbers together - Subtract second power from first power - Check answer is written in standard for	Calculate $(4 \times 10^2) \div (8 \times 10^5)$ $(4 \div 8) \times (10^2 \div 10^5)$ $0.5 \times 10^{2-5}$ 0.5×10^{-3} Not in standard form as 0.5 is smaller than 1. 5×10^{-4}
Below is Higher Tier ONLY		
Adding and Subtracting Standard Form	- Both numbers need to be written to the same power of 10. - Either can be chosen but choosing the larger of the two will mean it is less likely you will need to rewrite in standard form. - Once both written as the same of 10 add/subtract the numbers.	Calculate $3 \times 10^5 + 4 \times 10^7$ $0.03 \times 10^7 + 4 \times 10^7$ 4.03×10^7 Calculate $5 \times 10^5 - 2 \times 10^2$ $5 \times 10^5 - 0.002 \times 10^5$ 4.998×10^5

Year 10 Maths: Standard form

Key Skill	Thinking Point	WAGOLL
Multiplying Standard form	- What do we do with the powers when multiplying in standard form? - At the end we must check the number is written in _____	Calculate $(5 \times 10^2) \times (7 \times 10^6)$
Dividing Standard Form	- What do we do with the powers when dividing in standard form? - At the end we must check the number is written in _____	Calculate $(2 \times 10^3) \div (4 \times 10^8)$
Below is Higher Tier ONLY		
Adding and Subtracting Standard Form	- What is the first step? - Why do we use the larger power of 10?	Calculate $5 \times 10^5 + 2 \times 10^3$ Calculate $7 \times 10^8 - 3 \times 10^5$

Year 10 Maths: Percentages

Key Skill	Thinking Point	WAGOLL
Percentage of an Amount	50% is the same as $\frac{1}{2}$, so I can find 50% by dividing by 2 10% is the same as $\frac{1}{10}$, so I can find 10% by dividing by 10 5% is half of 10%, so I can find 5% by halving my 10%.	Find 65% of 64 $50\% \text{ of } 64 = 64 \div 2 = 32$ $10\% \text{ of } 64 = 64 \div 10 = 6.4$ $5\% \text{ of } 64 = 6.4 \div 2 = 3.2$ $65\% = 50\% + 10\% + 5\%$ $65\% = 32 + 6.4 + 3.2 = 41.6$
Increase/Decrease by a percentage	- Increase, growth, extend, rise, inflate are some often used key words meaning to get bigger. - Decrease, devalue, reduce, decline, discount are some often used key words meaning to get smaller	Sam earns £25000 a year. He received a bonus of 20% last year. Calculate his total income for last year. $10\% = £25000 \div 10 = £2500$ $20\% = 10\% + 10\%$ $20\% = £2500 + £2500 = £5000$ $\text{Total income} = £25000 + £5000 = £30000$
Single Multipliers	We can increase or decrease an amount using a calculator, using single multipliers.	Find the single multiplier to increase by 20% $100\% + 20\% = 120\%$ $120\% \div 100 = 1.2$ Find the single multiplier to decrease by 20% $100\% - 20\% = 80\%$ $80\% \div 100 = 0.8$

Year 10 Maths: Percentages

Key Skill	Thinking Point	WAGOLL
Percentage of an Amount	- To find 50% what do you divide by? - To find 10% what do you divide by? - What do you do to find 5%?	Find 45% of 64 Find 85% of 86
Increase/Decrease by a percentage	- What are the other words that could be used for increase? - What are the other words that could be used for decrease?	a) Increase \$220 by 40% b) Reduce £45 by 20%
Single Multipliers	When do we use single multipliers?	Find the single multiplier to increase by 30% Find the single multiplier to decrease by 15%

Year 10 Maths: Percentages

Key Skill	Thinking Point	WAGOLL
Using Single Multipliers	We can increase or decrease an amount using a calculator, using single multipliers.	Use single multipliers to increase 324 by 20% $100\% + 20\% = 120\%$ $120\% \div 100 = 1.2$ $324 \times 1.2 = 388.8$ Use single multiplier to decrease 546 by 20% $100\% - 20\% = 80\%$ $80\% \div 100 = 0.8$ $546 \times 0.8 = 436.8$
Compound Interest	- Compound interest takes into account the new amount including the interest each year. - We use single multipliers to do this in the quickest and most efficient way. - The formula is: $\text{original amount} \times \text{single multiplier}^{\text{number of years}}$	James invests £300 into an account with 2% per annum for 5 years. Single Multiplier $100\% + 2\% = 102\%$ $102\% \div 100 = 1.02$ $300 \times 1.02^5 = 331.22424\dots = \text{£}331.22$
Compound Depreciation	- Depreciation means decrease or reduce - We use single multipliers to do this in the quickest and most efficient way. - The formula is: $\text{original amount} \times \text{single multiplier}^{\text{number of years}}$	A car is bought for £20, 000. The value of the car depreciates by 3% each year. What is the value of the car 5 years later? Single Multiplier $100\% - 3\% = 97\%$ $97\% \div 100 = 0.97$ $20000 \times 0.97^5 = 17174.6805\dots = \text{£}17174.68\dots$

Year 10 Maths: Percentages

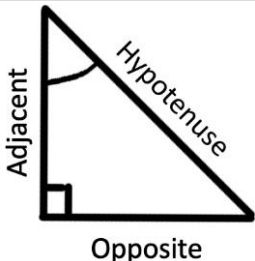
Key Skill	Thinking Point	WAGOLL
Using Single Multipliers	When do we use single multipliers?	Use single multipliers to increase 540 by 30% Use single multiplier to decrease 540 by 30%
Compound Interest	What is the formula for compound interest?	James invests £400 into an account with 3% per annum for 7 years.
Compound Depreciation	What does depreciation mean?	A car is bought for £30, 000. The value of the car depreciates by 4% each year. What is the value of the car 8 years later?

Year 10 Maths: Formula

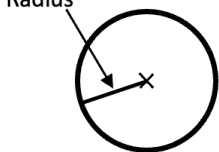
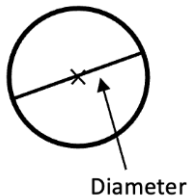
Percentages:

1	• Percentage Change	$\frac{\text{Difference}}{\text{Original}} \times 100$
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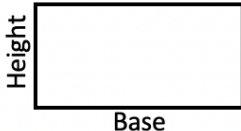
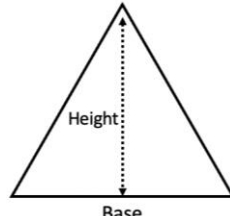
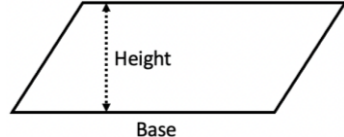
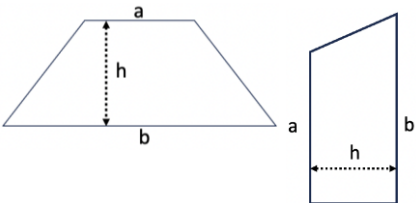
Trigonometry – SOHCAHTOA:

2	• Sin	$\sin(\theta) = \frac{o}{h}$	
3	• Cos	$\cos(\theta) = \frac{a}{h}$	
4	• Tan	$\tan(\theta) = \frac{o}{a}$	

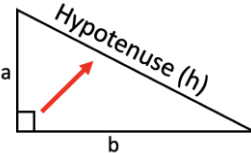
Circles:

5	• Area of a Circle $\pi \times r^2$	
6	• Circumference of a Circle $\pi \times d$	

Area of Shapes:

7	• Rectangle $\text{Base} \times \text{Height}$	
8	• Triangle $\frac{\text{Base} \times \text{Height}}{2}$	
9	• Parallelogram $\text{Base} \times \text{Height}$	
10	• Trapezium $\frac{(a + b) \times h}{2}$	

Pythagoras:

11	• $a^2 + b^2 = h^2$	
----	---------------------	---

Year 10 Maths: Formula

Percentages:

- | | |
|---|--|
| 1 | <ul style="list-style-type: none">What is the formula for percentage change? |
|---|--|

Trigonometry – SOHCAHTOA:

- | | |
|---|--|
| 2 | <ul style="list-style-type: none">What is the formula for $\sin$? |
|---|--|

- | | |
|---|--|
| 3 | <ul style="list-style-type: none">What is the formula for $\cos$? |
|---|--|

- | | |
|---|--|
| 4 | <ul style="list-style-type: none">What is the formula for $\tan$? |
|---|--|

Circles:

- | | |
|---|---|
| 5 | <ul style="list-style-type: none">What is the formula for the area of a circle? |
|---|---|

- | | |
|---|--|
| 6 | <ul style="list-style-type: none">What is the formula for the circumference of a circle? |
|---|--|

Area of Shapes:

- | | |
|---|--|
| 7 | <ul style="list-style-type: none">What is the formula for the area of a rectangle? |
|---|--|

- | | |
|---|--|
| 8 | <ul style="list-style-type: none">What is the formula for the area of a triangle |
|---|--|

- | | |
|---|---|
| 9 | <ul style="list-style-type: none">What is the formula for the area of a parallelogram |
|---|---|

- | | |
|----|---|
| 10 | <ul style="list-style-type: none">What is the formula for the area of a trapezium |
|----|---|

Pythagoras:

- | | |
|----|--|
| 11 | <ul style="list-style-type: none">What is Pythagoras' Theorem? |
|----|--|

Year 10 Maths: Higher Formula

These formulae will only be assessed on the Higher tier Mathematics GCSE.

Quadratic Formula:

1	To solve quadratic equations of the form $ax^2 + bx + c = 0$ where $a \neq 0$	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
---	---	--

Sine Rule:

2	To calculate missing sides	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
3	To calculate missing angles	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

Cosine Rule:

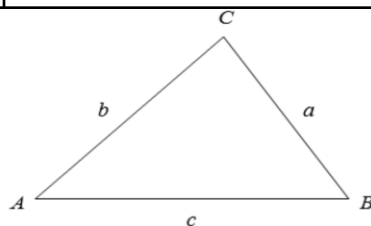
4	To calculate missing sides	$a^2 = b^2 + c^2 - 2bc \cos A$
5	To calculate missing angles	$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

Area of any

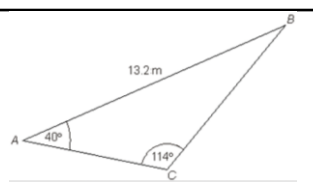
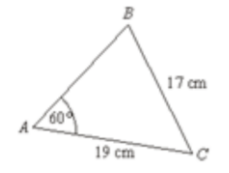
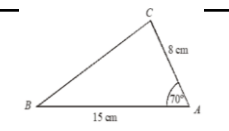
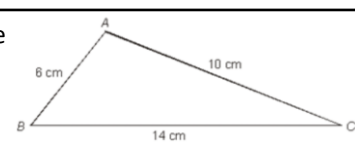
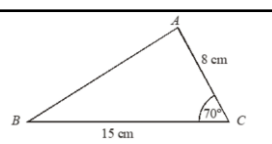
Triangle:
 of any triangle

$$\text{Area} = \frac{1}{2} ab \sin C$$

The **sine rule**, **cosine rule** and **area of any triangle** formula can be used in any triangle ABC where a , b and c are lengths of sides:



Using the Formulae

7	Use the quadratic formula to solve: $3x^2 + 7x - 5 = 0$ $a = 3, b = 7, c = -5$	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $x = \frac{-(7) \pm \sqrt{(7)^2 - (4) \times (3) \times (-5)}}{(2) \times (3)}$ $x = 0.573 \text{ or } x = -2.907$
8	Use the sine rule to calculate the length BC. 	$\frac{a}{\sin A} = \frac{c}{\sin C}$ $\frac{13.2}{\sin(40)} = \frac{c}{\sin(114)}$ $a = \frac{13.2}{\sin(114)} \times \sin(40) = 9.3m$
9	Used the sine rule to calculate the angle ABC. 	$\frac{\sin A}{a} = \frac{\sin B}{b}$ $\frac{\sin(60)}{17} = \frac{\sin B}{19}$ $\sin B = \frac{\sin(60)}{17} \times 19$ $B = \sin^{-1}\left(\frac{\sin(60)}{17} \times 19\right) = 75.4^\circ$
10	Use the cosine rule to calculate the length CB. 	$a^2 = b^2 + c^2 - 2bc \cos A$ $a^2 = 8^2 + 15^2 - 2 \times 8 \times 15 \times \cos(70)$ $a^2 = 206.915 \dots$ $a = \sqrt{Ans} = 14.4cm$
11	Use the cosine 	$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$ $\cos A = \frac{10^2 + 8^2 - 14^2}{2 \times 10 \times 8}$ $\cos A = -0.2$ $A = \cos^{-1}(-0.2) = 101.5^\circ$
12	Calculate the area of this triangle. 	$\text{Area} = \frac{1}{2} ab \sin C$ $\text{Area} = \frac{1}{2} \times 15 \times 8 \times \sin(70)$ $\text{Area} = 56.4cm^2$

Year 10 Maths: Higher Formula

These formulae will only be assessed on the Higher tier Mathematics GCSE.

Quadratic Formula:

1 What is the quadratic formula?

Sine Rule:

2 What is the sine rule to calculate missing sides?

3 What is the sine rule to calculate missing angles?

Cosine Rule:

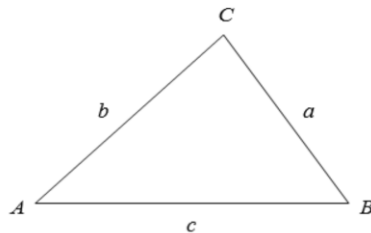
4 What is the cosine rule to calculate missing sides?

5 What is the cosine rule to calculate missing angles?

Area of any Triangle:

What can be used to calculate the area of any triangle?

The **sine rule**, **cosine rule** and **area of any triangle** formula can be used in any triangle ABC where a , b and c are lengths of sides:



Using the Formulae

7 How would you use the quadratic formula to solve:
 $3x^2 + 7x - 5 = 0$

8 How would you use the sine rule to calculate a length?

9 How would you use the sine rule to calculate an angle?

10 How would you use the cosine rule to calculate a length?

11 How would you use the cosine rule to calculate an angle?

12 How would you use the area sine rule to calculate the area of a non-right angled triangle?

Modern Foreign Languages



Helping every person achieve things they never thought they could.

Year 10 French: Recap

To have... (Verb)

Avoir	To have
J'ai	I have...
Tu as	You have...
Il a	He has...
Elle a	She has...
On a	One has (We have)
Nous avons	We have...
Vous avez	You have (formal/plural)
Ils ont	They have... (Masculine/mixed)
Elles ont	They have... (feminine)

To live... (Verb)

Habiter	To live
J'habite	I live...
Tu habites	You live...
Il habite	He lives...
Elle habite	She lives...
On habite	One lives (We live)
Nous habitons	We live...



To be... (Verb)

Être	To be
Je suis	I am...
Tu es	You are...
Il est	He is...
Elle est	She is...
On est	One is (We are)
Nous sommes	We are...
Vous êtes	You are... (formal/plural)
Ils sont	They are... (Masculine/mixed)
Elles sont	They are... (feminine)

Year 10 French: Recap

To have... (Verb) Complete below:

To have

I have...

You have...

He has...

She has...

One has
(We have)

We have...

You have
(formal/plural)

They have...
(Masculine/mixed)

They have...
(feminine)

To live... (Verb) Complete below:

To live

I live...

You live...

He lives...

She lives...

One lives
(We live)

We live...



To be... (Verb) Complete below:

To be

I am...

You are...

He is...

She is...

One is (We are)

We are...

You are...
(formal/plural)

They are...
(Masculine/mixed)

They are...
(feminine)

Year 10 French:

Grammar Explanation

Immediate Future Tense

To use the immediate future tense, take the appropriate form of the verb **aller** (to go) and add the infinitive verb.

For example:

Je vais + manger = je vais manger

= I am going to eat.

Nous allons + voyager = nous allons voyager

= we are going to travel.

Below are some high frequency infinitives for you to practise with:

Aller = to go

Jouer = to play

Regarder = to watch

Visiter = to visit

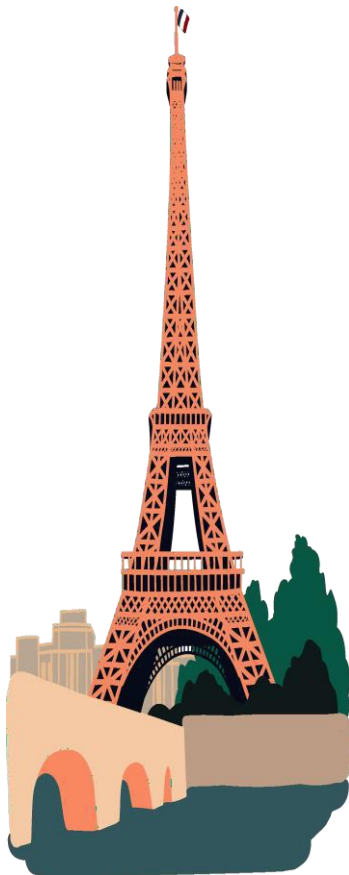
Faire = to do

Manger = to eat

Avoir = to have

Être = to be

Prendre = to take



Grammar Explanation

Perfect (past) Tense

When forming the perfect tense, you take the correct form of **avoir** and add the past participle. For most **-er** verbs, you form the past participle by taking the ER off the infinitive verb and adding an **é**. For example, **manger = mangé**. You then use the appropriate form of **avoir**, such as **j'ai mangé** = I have eaten, **il a mangé** = he has eaten

Voyager (to travel) = **voyagé** (travelled)

Manger (to eat) = **mangé** (eaten)

Loger (to stay - somewhere you have paid for) = **logé**

Forming the past participle is different for -re verbs and -ir verbs but we will learn these at a later stage.

Some verbs have irregular stems, such as:

Faire (to do) = **fait** (did). For example, **j'ai fait** = I did

However, some verbs use **être** instead of **avoir** when forming the perfect tense. One of these verbs is **aller**. For **aller**, you form the stem by taking the **er** off and adding **é**. You then use **être** to form the past tense, for example, **je suis allé** (masculine) or **je suis allée** (feminine).

The verb rester (to stay) also takes être.

Year 10 French:

Grammar Explanation

How do we use the Immediate Future Tense?
For example:

Je vais + manger = _____

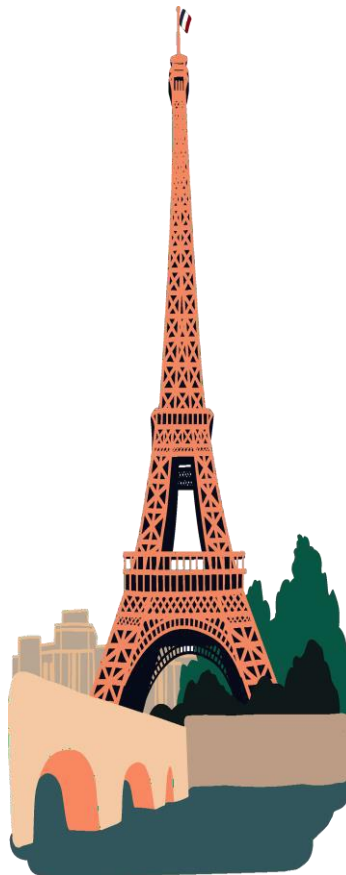
= I am going to eat.

Nous allons + voyager = _____

= we are going to travel.

Below are some high frequency infinitives for
you to practise with:

- _____ = to go
- _____ = to play
- _____ = to watch
- _____ = to visit
- _____ = to do
- _____ = to eat
- _____ = to have
- _____ = to be
- _____ = to take



Grammar Explanation

How do we form the **Perfect (past) Tense**?

Voyager (to travel) = _____ (travelled)

Manger (to eat) = _____ (eaten)

Loger (to stay - somewhere you have paid for) = _____

Forming the past participle is different for -re verbs and -ir verbs but we
will learn these at a later stage.

Some verbs have irregular stems, such as:

Faire (to do) = _____ (did). For example, _____ = I did

However, some verbs use **être** instead of **avoir** when forming the
perfect tense. One of these verbs is..

Talk about a past holiday

Forming the perfect tense (passé composé)

The perfect tense is how you say that you have done something in the past. For example, 'I have eaten' or 'I have played'.

To form the perfect tense, usually you use an auxiliary verb. To do this, take the correct form of the verb avoir (to have) and add a past participle (reference to the past).

For example, to say 'I have eaten' you use **j'ai** for 'I have' and add **mangé** for eaten. So it is **j'ai mangé**.

Mangé (ate) is the past participle of manger (to eat).

J'ai	I have
Tu as	You have (singular/informal)
Il a	He has
Elle a	She has
On a	One has(we have)
Nous avons	We have
Vous avez	You have(formal/plural)
Ils ont	They have (masculine/mixed)
Elles ont	They have (feminine)

Forming a past participle:

Regular ER verbs	Take the ER ending off, and add é. For example MANGER changes to mangé.	J'ai mangé = I have eaten
Regular IR verbs	Take the IR ending off and add i. For example, FINIR (to finish) changes to fini.	J'ai fini = I have finished
Regular RE verbs	Take the RE ending off and add u. For example RÉPONDRE (to respond) changes to répondu	J'ai répondu = I have responded
Note: there are some verbs that do not follow the above rule. These are called 'irregular verbs'. One example is BOIRE (to drink) which changes to bu. J'ai bu = I drank		

When forming the perfect tense for some verbs, you need to use **ÊTRE** as the auxiliary verb instead of **AVOIR**

Examples of verbs that take être are aller (to go), sortir (to go out).

RECAP of the auxiliary verb Être = to be

Je suis	I am
Tu es	You are(singular/informal)
Il est	He is
Elle est	She is
On est	One is (we are)
Nous sommes	We are
Vous êtes	You are (formal/plural)
Ils sont	They are (masculine/mixed)
Elles sont	They are (feminine)

Forming the perfect tense (passé _____)

To form the _____ tense, usually you use an auxiliary verb. To do this, take the correct form of the verb avoir (to have) and add a past participle (reference to the past).

Mangé (____) is the past participle of manger (____).

[illegible]

Regular ER verbs	.	
Regular IR verbs		
Regular RE verbs		
Note: there are some verbs that do not follow the above rule. These are called 'irregular verbs'. One example is BOIRE (to drink) which changes to bu. J'ai bu = _ _____		

Examples of verbs that take être are aller (to go), sortir (to go out).

[illegible]

Year 10 French:

In French you do not say “I went” instead you say “I am gone”.

Je suis allé

I am gone (e.g. I went)

Il est allé

He is gone (e.g. he went)

To make it even trickier, the past participle agrees with the person using it.

Verb	Masculine	Feminine
ALLER (to go)	Je suis allé (I am gone) Ils sont allés (they are gone)	Je suis allée (I am gone) Elles sont allées (they are gone)
SORTIR (to go out)	Je suis sorti (I am went out)	Je suis sortie (I am went out)

Countries:

Allemagne - Germany

Angleterre - England

Écosse - Scotland

Espagne - Spain

États-Unis - USA

France - France

Grèce - Greece

Italie - Italy

Irlande - Ireland

Pays de Galles - Wales



Describe Francophone festivals and traditions

Here are some useful verbs to use when talking about celebrations:

fêter / célébrer - to celebrate

décorer - to decorate

s'habiller - to dress up

offrir un cadeau - to give a present

recevoir un cadeau - to receive a present

As in the UK, Christmas and New Year are big celebrations for many people.

Here is some useful vocabulary to get started talking about them:

Nouvelle année - New Year

le Jour de l'An - New Year's Day

Le sapin - Christmas tree

la coutume - custom/tradition

Les feux d'artifice - fireworks

le jour férié - public holiday/bank holiday

la fête - party/festival

Noël - Christmas

la veille de Noël - Christmas Eve

le réveillon du nouvel an - New Year's Eve

père Noël - Father Christmas

la tradition - tradition

Le chant de Noël - Christmas carol

Festivals in France

La Saint-Valentin - Valentine's Day

Pâques - Easter

La fête des Mères - Mothers Day

14 Juillet / la fête nationale française - Bastille Day

Le poisson d'avril - April Fool's Day

In French you do not say “I went” instead you say “I am gone”.

Je suis allé

— (e.g. I went)

Il est allé

He is gone (e.g. he went)

To make it even trickier, the past participle agrees with the person using it.

Verb	Masculine	Feminine

Countries:



Describe Francophone festivals and traditions

Here are some useful verbs to use when talking about celebrations:

Festivals in France

Forming the perfect tense of reflexive verbs

Use a reflexive verb to describe an action that you do to yourself, or that 'reflects back' to yourself. They must include a **reflexive pronoun**, which changes depending on who is the subject of the verb. In the perfect tense, **all reflexive verbs take the auxiliary verb être** and the past participle must agree with the subject of the verb. Here is an example of a reflexive verb in the perfect tense:

Here is an example of a reflexive verb in the perfect tense:

se laver	to wash (yourself)
je me suis lavé(e)	I washed (myself)
tu t'es lavé(e)	you washed (yourself)
il/elle/on s'est lavé(e)(s)	he/she/one washed (himself/herself/oneself)
nous nous sommes lavé(e)s	we washed (ourselves)
vous vous êtes lavé(e)(s)	you washed (yourself)
ils/elles se sont lavé(e)s	they washed (themselves)

Remember When using être as an auxiliary verb, the past participle agrees with the subject.
Elle est allée à la banque. - She went to the bank.
Ils sont allés à la banque. - They went to the bank.

Describe a future visit to a Francophone festival

Using the verb aller (to go) to describe a future event

You can use the verb **aller** to describe what you are going to do in the future.

To do this, use the correct part of **aller** plus an **infinitive verb**.

For example, je vais manger = I am going to eat. This is because **je vais** means I am going and **manger** means to eat.

Another example is je vais aller = I am going to go

Aller (to go) in the present tense

Je vais = I am going
Tu vas = You (informal) are going
Il va = He is going
Elle va = She is going
On va = On is (we are) going

Nous allons = We are going
Vous allez = You plural/polite are going
Ils vont = They are going (m)
Elles vont = They are going (f)

Infinitive

aller - to go
Visiter / rendre visite - to visit
fêter - to celebrate
décorer - to decorate
s'habiller - to dress up
offrir un cadeau - to give a present
recevoir un cadeau - to receive a present

Forming the perfect tense of reflexive verbs

Use a reflexive verb to describe an action that you do to _____, or that 'reflects back' to yourself. They must include a **reflexive** _____, which changes depending on who is the subject of the _____. In the perfect tense, **all reflexive verbs take the** _____ **verb être** and the past participle must agree with the subject of the verb.

Here is an example of a _____ verb in the perfect tense:

Here is an example of a reflexive verb in the perfect tense:

se laver	to wash (yourself)

Remember When using être as an auxiliary verb, the past participle agrees with the subject.

Describe a future visit to a Francophone festival

Using the verb aller (to go) to describe a future event

You can use the verb _____ to describe what you are going to do in the future.

To do this, use the correct part of **aller** plus an **infinitive verb**.

For example, je vais manger = _____. This is because **je vais** means I am going and _____ means to eat.

Another example is je vais aller = _____

Aller (to go) in the present tense		Infinitive
	+	

Year 10 French:

Describe where I live now and the house of my dreams

Rooms of the house

Dans ma maison il y a = in my house there is

Dans la maison de mes rêves il y aurait = In my dream house there would be

Une cuisine = a kitchen

Une a manger = a dining room

un grenier = an attic

Une salle de jeux = a games room

un salon = a living room

Une cave = a basement

Une chambre = a bedroom

Une salle de bain = a bathroom

un garage = a garage

Un jardin = a garden

RECAP: Adjectival agreement and placement

confortable = cosy

Vieux / vieille = old

Joli(e) = beautiful/pretty

bien éclairé(e) = well lit

grand(e) = big

petit(e) = small

In French adjectives usually come **after the noun**.

For example:

Un canapé **confortable**

A **comfortable** sofa

However there are some exceptions to the rule. Learn this acronym to help you remember:

Beauty (beau/belle, joli(e))

Age (vieux / vieille)

Grandness (super, grand, superbe)

Size (grand(e), petit(e))

Any adjectives that are BAGS go **before** the noun.

For example:

Une **petite** maison

A **little** house

Adjectives also change based on the **gender** of the noun:

Masculine:

Un canapé **vert**

A **green** sofa

Feminine:

Une commode **verte**

A **green** chest of draws

Plural:

Les canapé **verts**.

The **green** sofas



Describe where I live now and the house of my dreams

Rooms of the house

Dans ma maison il y a = in my house there is

Dans la maison de mes rêves il y aurait = In my dream house there would be

However there are some exceptions to the rule. Learn this acronym to help you remember:

For example:

A **little** house

RECAP: Adjectival agreement and placement

In French adjectives usually come **after the noun**.

For example:

Un canapé **confortable**

A **comfortable** sofa

Adjectives also change based on the **gender** of the noun:



Year 10 French:

A **noun** refers to a person, a thing or a concept. Unlike in English, all French nouns have a gender. This means that each noun is **masculine** or **feminine**, and any **article** accompanying it has to be masculine or feminine too. In English, these articles are 'the', 'a' (or 'an') and 'some'.

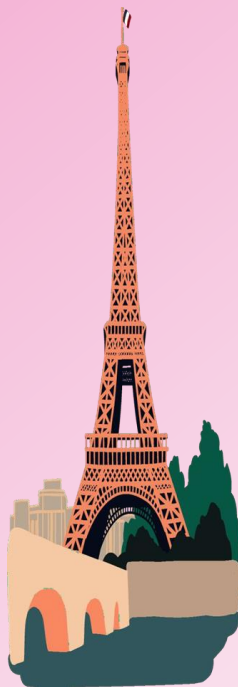
	masculine	feminine	plural
the	le	la	les
a (or an), some	un	une	des

There are some rules that help work out the gender. Masculine nouns often end in:

- eau, eg le château – castle
- isme, eg le racisme – racism
- ment, eg le médicament – medicine

Feminine nouns often end in:

- ade, eg la promenade – walk
- ode, eg la mode – fashion
- ude, eg l'habitude – habit
- ance, eg la confiance – confidence
- ence, eg la licence – degree
- ette, eg la vedette – film star
- sion, eg la télévision – television
- tion, eg la natation – swimming
- ure, eg la nourriture – food



Masculine and feminine nouns

All female family members are feminine and all male family members are masculine. For example:

- la tante - aunt
- la sœur - sister
- le grand-père - grandfather
- le frère – brother



- For job titles, the gender depends on whether it is a man or a woman doing the job. Sometimes the word for the job changes depending on the gender. For example:

Masculine	Feminine	English
le directeur	la directrice	headteacher, director
le coiffeur	la coiffeuse	hairdresser
l'infirmier	l'infirmière	nurse

Units of measurement, languages and meals are masculine. For example:

- le litre - litre
- le français - French
- le petit déjeuner - breakfast

Year 10 French:

A noun refers to a person, a thing or a concept. Unlike in English, all French nouns have a gender. This means that each noun is masculine or feminine, and any article accompanying it has to be masculine or feminine too. In English, these articles are 'the', 'a' (or 'an') and 'some'.

	masculine	feminine	plural
the			
a (or an), some			

There are some rules that help work out the gender. Masculine nouns often end in:

Feminine nouns often end in:



Masculine and feminine nouns

All female family members are feminine and all male family members are masculine. For example:



For job titles, the gender depends on whether it's a man or a woman doing the job. Sometimes the word for the job changes depending on the gender. For example:

Units of measurement, languages and meals are masculine. For example:

Describe my dream house.

The conditional tense is used to describe what someone would do or what would happen in the future. It can also be used to express ambitions and intentions. For example:

Si c'était possible je voudrais habiter dans une grande maison et il y aurait une piscine.

If it were possible I would live in a big house and there would be a swimming pool.

How to form the conditional tense.

To conjugate verbs in the conditional tense follow these simple steps.

1. Take an infinitive. Your infinitive is the stem.

(Remember infinitives end in er, re or ir.)

2. Add the conditional tense endings. Note: these are the same endings as the imperfect tense

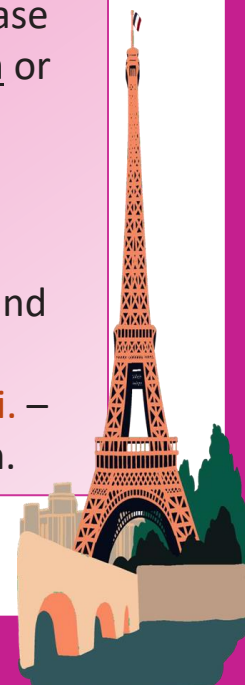
	Stem	Conditional endings	Example	English
je	regarder	-ais	je regarderais	I would watch
tu	manger	-ais	tu mangerais	you would eat
il/elle/on	jouer	-ait	il/elle/on jouerait	he/she/it would play
nous	finir	-ions	nous finirions	we would finish
vous	partir	-iez	vous partiriez	you would leave
ils/elles	vendr	-aient	ils/elles vendraient	they would sell

The same verbs that have irregular stems in the simple future have irregular stems in the conditional:

Infinitive	Future stem	Example	English
avoir (to have)	aur-	j'aurais	I would have
être (to be)	ser-	tu serais	you would be
faire (to do)	fer-	il ferait	he would do
aller (to go)	ir-	elle irait	she would go
devoir (to have to)	devr-	nous devrions	we would have to/we should
pouvoir (to be able to)	pour-	vous pourriez	you would be able to/you could
vouloir (to want to)	voudr-	ils voudraient	they would want to
voir (to see)	verr-	elles verraient	they would see

The conditional of **vouloir** means 'would like'. **Je voudrais** is a very common phrase and it can be followed by either a noun or another verb (in the infinitive). For example:

- **Je voudrais une baguette et deux croissants.** – I would like a baguette and two croissants.
- **Nous voudrions partir cet après-midi.** – We would like to leave this afternoon.



Describe my dream house.

The conditional tense is used to describe what someone would do or what would happen in the future. It can also be used to express ambitions and intentions. For example:

If it were possible I would live in a big house and there would be a swimming pool.

How to form the conditional tense.

To conjugate verbs in the conditional tense follow these simple steps.

1. Take an infinitive.

(Remember infinitives end in *er, re or ir.*)

	Stem	Conditional endings	Example	English

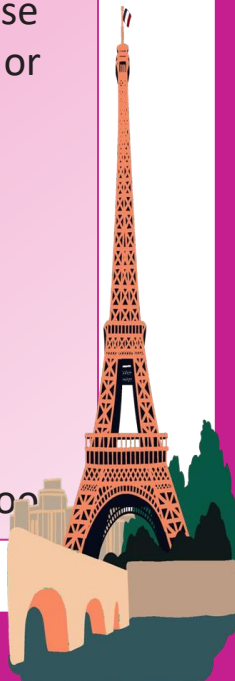
The same verbs that have irregular stems in the simple future have irregular stems in the conditional:

Infinitive	Future stem	Example	English

The conditional of **vouloir** means 'would like'. **Je voudrais** is a very common phrase and it can be followed by either a noun or another verb (in the infinitive). For example:

– I would like a baguette and two croissants.

• – We would like to leave this afternoon



Talk about my town.

You can use both the present tense and the imperfect tense to talk about your town.

Dans ma ville il y a = In my town there is

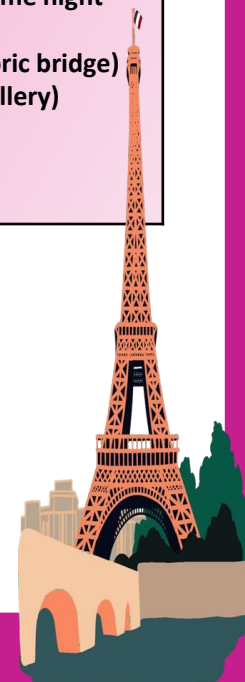
Dans ma ville il y avait = In my town there used to be

c'est = it is

C'était = it was / used to be

Positives about your town	Negatives about your town
c'est un endroit intéressant (it's an interesting place) On peut se promener/balader (you can walk around) il y a beaucoup de magasins à l'intérieur (there are lots of shops inside) ça m'intéresse (it interests me) il y a beaucoup de choses à faire (there are lots of things to do) c'est divertissant (it's entertaining) les gens sont gentils (the people are nice) il y a beaucoup de bars et de restaurants (there are lots of bars and restaurants)	c'est ennuyeux (it's boring) il n'y a rien à voir (there is nothing to see) Ça ne m'intéresse pas du tout (it doesn't interest me at all) il n'y a pas de bons magasins (there's no good shops) c'est sale (it's dirty) c'est pollué (it's polluted) es bondé (it's crowded) c'est bruyant (it's noisy) c'est trop cher (it's too expensive)

Location	Verb	Place in town
Où j'habite (where I live) Dans ma ville (dans ma ville)	il y a (there is) il y avait (there used to be)	un bâtiment célèbre (a famous building) une mosquée (a mosque) une église (church) un marché aux puces (a flea market) un quartier historique (a historic neighbourhood) un aquarium
Près de ma ville (près de ma ville)		un parc d'attraction (a theme park) une fête foraine (a fun fair) un club de jeunes (a youth club) un centre sportif (a sports centre) une route piétonne (a pedestrian road) un lac (a lake) une rivière (a river) une forêt (a forest)
Dans les banlieues Dans ma ville (dans ma ville)		quelques discothèques (some night clubs) un pont historique (a historic bridge) une galerie d'art (an art gallery)
Dans le centre ville		
Dans mon quartier (In my neighbourhood)		
Dans ma rue (On my street)		
Près de ma maison (Near to my house)		
Pas loin de chez moi (Not far from my house)		
Sur la côte (on the coast)		



Year 10 French:

Talk about my town.

You can use both the present tense and the imperfect tense to talk about your town.

Dans ma ville il y a =

Dans ma ville il y avait =

c'est =

C'était =

Positives about your town	Negatives about your town

Location	Verb	Place in town



Year 10 Spanish:

Grammar Explanation

Tener (To have)

There is a three-step method that will make conjugating regular Spanish verbs very easy for you.

In order to conjugate verbs that end with **-ar** in the preterite tense you:

- Find the infinitive (full verb)
- Cut off the **-ar**
- Add the new ending (**é, aste, ó, amos, asteis, aron**)

- |  | | English subject pronoun | Spanish subject pronoun | ar ending | Viajar (to travel) |
|--|----------|-------------------------|-------------------------|-----------|--------------------|
| | | I | yo | é | viajé |
| | | you | tú | aste | viajaste |
| | | he/she | él/ella | ó | viajó |
| | | we | nosotros/nosotras | amos | viajamos |
| Fui | I went | you (plural) | vosotros/vosotras | Asteis | viajasteis |
| Fuiste | You went | they | ellos/ellas | aron | viajaron |

I have

You have

He/She/It has

We have

You (plural) have

They have

Ser (To be)

I am

You are

He/She/It is

We are

You (plural) are

They are

Ir (To go) Present tense

I went

You went

He/She/It wet

We went

You (plural) went

They went



Year 10 Spanish:

Grammar Explanation

Tener (To have)

I have

You have

He/She/It has

We have

You (plural) have

They have

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I am

You are

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- Add the new ending (**é, aste, ó, amos, asteis, aron**)

- 
- The flag of Spain is shown waving on a silver flagpole. It features three horizontal stripes of red, yellow, and red, with the national coat of arms centered on the yellow stripe.

English subject pronoun	Spanish subject pronoun Complete below:	ar ending	Viajar (to travel)
I	-	-	-
you	-	-	-
he/she	-	-	-
we	-	-	-
you (plural)	-	-	-
they	-	-	-

Ir (To go) Present tense

I went

You went

He/She/It wet

We went

You (plural) went

They went



Year 10 Spanish:

How to form the immediate future tense:

To say what you are going to do, you can use the near immediate future tense.

This is formed by using the correct part of the verb **ir** (to go), plus the infinitive of another verb.

Voy a ir al cine

I am going to go to the cinema

Va a jugar al fútbol

He is going to play football

Ir (to go)	Preposition	Infinitive
Voy (I am going) Vas (you are going) Va (he/she is going) Vamos a (we are going) Van a (they are going)	a	Jugar - to play Ver - to see Hacer - to do Montar - to ride Ser - to be Tener - to have

Grammar Explanation

There is a three-step method that will make conjugating regular Spanish verbs very easy for you.

For **ER** and **IR** verbs you:

- Find the infinitive (full verb)
- Cut off the **-er** or **-ir**
- Add the new ending (**í, iste, ió, imos, isteis, ieron**)

English subject pronoun	Spanish subject pronoun	ar ending	Comer (to eat)
I	yo	í	comí
you	tú	iste	comiste
he/she	él/ella	ió	comió
we	nosotros/nosotras	imos	comimos
you (plural)	vosotros/vosotras	isteis	comisteis
they	ellos/ellas	ieron	comieron

Year 10 Spanish:



How do we form the immediate future tense?

I am going to go to the cinema

He is going to play football

Ir (to go)	Preposition	Infinitive
(I am going) (you are going) (he/she is going) (we are going) (we are going)	a	- to play - to see - to do - to ride - to be - to have

Grammar Explanation

There is a three-step method that will make conjugating regular Spanish verbs very easy for you.

For **ER** and **IR** verbs you:

-
-
-

English subject pronoun	Spanish subject pronoun	ar ending	Comer (to eat)
I	-	-	-
you	-	-	-
he/she	-	-	-
we	-	-	-
you (plural)	-	-	-
they	-	-	-





Talk about a past holiday

RECAP: Ir (to go) in the preterite tense

Remember in Spanish the **ending** of a verb tells you who you are talking about and what the tense is.

Examples:

¿**Fuiste** a España?

You went to Spain?

Mis primos **fueron** a Italia

*My cousins **went** to Italy*

Countries:

Alemania - Germany

Escocia - Scotland

España - Spain

Estados Unidos - USA

Francia - France

Gales - Wales

Grecia - Greece

Italia - Italy

Irlanda - Ireland

Inglaterra - England



Remember in Spanish it is the **end of the verb** that tells you the tense and who you are talking about.
For example:

We know that 'bailé' is in the preterite past tense and it is the "I" form as it ends in 'é'

Grammar explanation - the preterite tense

The Spanish **preterite tense** is used to describe **completed actions in the past**. For example:

- **Fui al cine ayer** (I went to the cinema yesterday).
- **Viajamos en tren** (We travelled by train).
- **Mi hermana hizo sus deberes** (My sister did her homework).

In order to conjugate verbs in the preterite tense you:

1. Take an infinitive.

(Remember infinitives end in ar, er or ir.)

2. Remove the ar, er or ir to form the stem

For example the stem of **hablar** would be **habl**

3. Add correct ending to the stem

	AR verbs	ER / IR verbs
yo (I)	é	í
tú (you)	aste	iste
él/ella (he/she)	ó	ió
nosotros (we)	amos	imos
vosotros (you plural)	astais	isteis
ellos/ellas (they masculine / they feminine)	aron	ieron

Year 10 Spanish:



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Examples:

¿**Fuiste** a España?

Mis primos **fueron** a Italia

Countries:



Remember in Spanish it is the ____ that tells you the tense and who you are talking about.

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We know that '____' is in the preterite past tense and it is the "I" form as it ends in 'é'

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- Fui al cine ayer
- Viajamos en tren
- Mi hermana hizo sus deberes

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(Remember infinitives end in ar, er or ir.)

2.Remove the ar, er or ir to form the stem

For example the stem of _____ would be habl

3.Add correct ending to the ____

	AR verbs	ER / IR verbs
yo (I)		
tú (you)		
él/ella (he/she)		
nosotros (we)		
vosotros (you plural)		
ellos/ellas (they masculine / they feminine)		



Describe a visit to a Hispanic festival

Here are some useful verbs to use when talking about celebrations:

brindar - to toast

celebrar - to celebrate

decorar - to decorate

disfrazarse - to dress up

regalar - to give a present

recibir un regalo - to receive a present

As in the UK, Christmas and New Year are big celebrations for many people. Here is some useful vocabulary to get started talking about them:

el Año Nuevo - New Year

el árbol de Navidad - Christmas tree

la costumbre - custom/tradition

los fuegos artificiales - fireworks

el día festivo - public holiday/bank holiday

la fiesta - party/festival

la Navidad - Christmas

la Nochebuena - Christmas Eve

la Nochevieja - New Year's Eve

Papá Noel - Father Christmas

la tradición - tradition

el villancico - Christmas carol

Hispanic festivals

La Tomatina - La Tomatina is a festival that is held in the Valencian town of Buñol, in the east of Spain, in which participants throw tomatoes and get involved in a tomato fight purely for entertainment purposes.

Las Fallas - Las Fallas de Valencia is an annual celebration of the coming of spring, celebrated by burning artistic monuments and setting off fireworks.

Semana Santa (Holy Week) - Holy Week in Spain is the annual tribute of the Passion of Jesus Christ celebrated by Catholic religious brotherhoods (Spanish: hermandad) and fraternities that perform penance processions on the streets of almost every Spanish city and town during the Holy Week –the last week of Lent, immediately before Easter

El Día de los Muertos (The Day of the Dead) - a Mexican holiday where families welcome back the souls of their deceased relatives for a brief reunion that includes food, drink and celebration.





Describe a visit to a Hispanic festival

Here are some useful verbs to use when talking about celebrations:

Hispanic festivals





Describe a future to a Hispanic festival

Using the verb IR (to go) to describe a future event

You can use the verb **ir** to describe what you are going to do in the future.

To do this, use the correct part of **ir** plus an **infinitive verb**.

For example, voy a comer = I am going to eat. This is because **voy a** means I am going and **comer** means to eat.

Another example is voy a ir = I am going to go

Ir (to go) in the present tense

Ir (to go) in the present tense		Infinitive
Voy a = I am going Vas a = You are going Va a = He/she is going Vamos a = We are going Vais = You plural go Van a = They are going	+	ir- to go visitar - to visit brindar - to toast celebrar - to celebrate decorar - to decorate disfrazarme - to dress up regalar - to give a present recibir un regalo - to receive a present

Describing location

You can give more details about where you live by using **está** (is).

For example:

- Vivo en una ciudad pequeña. Está en la costa y está cerca de Aberdeen - I live in a town. *It is* on the coast and *is* near to Aberdeen.
- Vivo en un pueblo en la montaña. Está lejos de la capital - I live in a village in the mountains. *It is* far from the capital.

Use the table below to give more detail about where you live.

Spanish	English
está	it is
cerca de	near to
lejos de	far from
en la costa	on the coast
en la montaña	in the mountains
en el campo	in the countryside
en el centro	in the centre
en el norte/sur/este/oeste	in the north/south/east/west

Ir (to go) in the present tense		Infinitive
	+	

Use the table below to give more detail about where you live.

[illegible]

Year 10 Spanish:

Describe where I live now and the house of my dreams

Rooms of the house

En mi casa hay = in my house there is

En la casa de mis sueños habría = In my dream house there would be

Una cocina = a kitchen

Un comedor = a dining room

Un desván = an attic

Una sala de juegos = a games room

Un salón = a living room

Un sótano = a basement

Un dormitorio = a bedroom

Un cuarto de baño = a bathroom

Un garaje = a garage

Un jardín = a garden



RECAP: Adjectival agreement and placement

acogedor/a = cosy

antiguo/a = old

bonito/a = beautiful/pretty

luminoso/a = well lit

grande = big

pequeño/a = small

In Spanish adjectives usually come **after the noun**. Adjectives also change based on the **gender** of the noun:

Masculine:

Un piso pequeño

A small flat

Feminine:

Una casa pequeña

A small house

Remember in Spanish all nouns have a gender. A noun is a person, place or thing.

All nouns in Spanish have a gender. That means they are either masculine or feminine.

Although it might seem strange at first that nouns have a gender in Spanish, there are luckily lots of patterns and clues to help you to remember if a noun is masculine or feminine.

Masculine nouns

Most nouns that end in -o are masculine.

For example:

el teléfono - telephone

el perro - dog

Male family members are always masculine.

For example:

hermano - brother

padre - father

Days of the week and months are also masculine.

For example:

lunes - Monday

diciembre - December

Feminine nouns

Most nouns that end in -a are feminine.

For example:

la casa - house

la pierna - leg

Female family members are always feminine.

For example:

hermana - sister

madre - mother

There are also some groups of endings that are always feminine.

For example:

-ión - estación - station

-dad - universidad - university

-tad - dificultad - difficulty

Another way to tell the gender of a noun is to look at its article.

The words "a" and "the" are articles in English.

Year 10 Spanish:

Describe where I live now and the house of my dreams

Rooms of the house



RECAP: Adjectival agreement and placement

Remember in Spanish all nouns have a gender. A noun is a person, place or thing. All nouns in Spanish have a gender. That means they are either masculine or feminine. Although it might seem strange at first that nouns have a gender in Spanish, there are luckily lots of patterns and clues to help you to remember if a noun is masculine or feminine.

Masculine nouns

Most nouns that end in -o are masculine.

For example:

Male family members are always masculine.

For example:

Days of the week and months are also masculine.

For example:

Feminine nouns

Most nouns that end in -a are feminine.

For example:

There are also some groups of endings that are always feminine.

For example:

Another way to tell the gender of a noun is to look at its article. The words “a” and “the” are articles in English.

Year 10 Spanish:



Articles in Spanish

	A	The	My
Masculine	Un	El	Mi
Feminine	Una	La	Mi
Masculine Plural	Unos	Los	Mis
Feminine Plural	Unas	Las	Mis

Ser (to be)

Spanish	English
Soy Eres Es	I am You are He/she/it is
Somos Sois Son	We are You (plural) are They are



When to use SER or ESTAR

There are two verbs for '**to be**' in Spanish, **ser** and **estar** that you can use to talk about where you live.

Ser is used for **permanent qualities**, like your **name**, your **place of origin**, and your **physical appearance**.

Estar is used to talk about **temporary situations**, such as **how you're feeling** right now or **location**.

For example:

•Ser

- **Mi pueblo es grande** - My town *is* big. This is a **description**.

•Estar

- **Mi pueblo está lejos de Mánchester** - My town *is* far from Manchester. This is a **location**.

Estar (to be)

Spanish	English
Estoy Estás Está	I am You are He/she/it is
Estamos Estáis Están	We are You (plural) are They are



Articles in Spanish

	A	The	My
Masculine			
Feminine			
Masculine Plural			
Feminine Plural			

Ser (to be)

Spanish	English



When to use SER or ESTAR

There are two verbs for 'to be' in Spanish, **ser** and **estar** that you can use to talk about where you live.

 is used for **permanent qualities**, like your **name**, your **place of origin**, and your **physical appearance**.

 is used to talk about **temporary situations**, such as **how you're feeling** right now or **location**.

For example:

- **Ser**
 - My town *is* big. This is a **description**.
- **Estar**
 - My town *is* far from Manchester. This is a **location**.

Estar (to be)

Spanish	English



Describe my dream house.

The conditional tense is used to describe what someone would do or what would happen in the future. It can also be used to express ambitions and intentions. For example:

Si fuera posible viviría en una casa grande y la casa tendría una piscina.
If it were possible I would live in a big house and the house would have a swimming pool.

How to form the conditional tense.

To conjugate verbs in the conditional tense follow these simple steps.

1.

Take an infinitive.

(Remember infinitives end in ar, er or ir.)

2. Add the conditional tense endings. The endings are the same for -ar, -er and -ir verbs.

	ending	vivir (to live)	meaning
yo (I)	ía	viviría	I would live
tú (you)	ías	vivirías	You would live
él/ella (he/she)	ía	viviría	He/she would live
nosotros (we)	íamos	viviríamos	We would live
vosotros (you plural)	íais	viviríais	You (plural) would live
ellos/ellas (they masculine / they feminine)	ían	vivirían	They would live

Some verbs like tener (to have) are irregular verbs. This means they don't always follow the same pattern as other verbs. To change tener (to have) to the conditional tense you use the irregular stem **tendr** plus the endings above.

For example -

I would have = **tendría**





Describe my dream house.

The conditional tense is used to describe what someone would do or what would happen in the future. It can also be used to express ambitions and intentions. For example:

If it were possible I would live in a big house and the house would have a swimming pool.

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	ending	vivir (to live)	meaning

Some verbs like tener (to have) are irregular verbs. This means they don't always follow the same pattern as other verbs. To change tener (to have) to the conditional tense you use the irregular stem **tendr** plus the endings above.

For example -

I would have =



Year 10 Spanish:



Talk about my town.

You can use both the present tense and the imperfect tense to talk about your town.

En mi pueblo hay = In my town there is

En mi pueblo había = In my town there used to be

Es = it is

Era = it used to be

Positives about your town	Negatives about your town
es un lugar interesante (it's an interesting place)	es aburrido (it's boring)
se puede caminar (you can walk around)	no hay nada que ver (there's nothing to see)
hay muchas tiendas adentro (there are lots of shops inside)	no me interesa nada (it doesn't interest me at all)
me interesa (it interests me)	no hay buenas tiendas (there aren't any good shops)
hay muchas cosas que hacer (there's lots of things to do)	es sucio (it's dirty)
es entretenido (it's entertaining)	es contaminado (it's polluted)
la gente es simpática (the people are nice)	es abarrato (it's crowded)
hay muchos bares y restaurantes (there are a lot of bars and restaurants)	es ruidoso (it's crowded)
	es demasiado caro (it's too expensive)



Location	Verb	Place in town
Donde vivo (Where I live)	hay (there is)	un edificio famoso (a famous building)
En mi pueblo (in my town)	había (there used to be)	una mezquita (a mosque)
Cerca de mi pueblo (near my town)		una iglesia (a church)
En las afueras (on the outskirts)		un mercado de pulgas (flea market)
En mi ciudad (in my city)		un barrio histórico (a historic neighbourhood)
En el centro de la ciudad (In the city centre)		un acuario (an aquarium)
En mi barrio (in my neighbourhood)		un parque de atracciones (a theme park)
En mi calle (on my street)		una feria (funfair)
Cerca de mi casa (near my house)		un club juvenil (a youth club)
No muy lejos de mi casa (not far from my house)		un polideportivo (a sports centre)
Por la costa (by the coast)		un camino peatonal (pedestrian road)
		un lago (a lake)
		un río (a river)
		un bosque (wood)
		unas discotecas (night clubs)
		un puente histórico (historic bridge)
		una galería de arte (an art gallery)

Year 10 Spanish:



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You can use both the present tense and the imperfect tense to talk about your town.

Positives about your town	Negatives about your town



Location	Verb	Place in town

Music and Performing Arts



Helping every person achieve things they never thought they could.

Year 10 Music: Areas of Study

Ternary

Section A	Section B	Section A
The initial ideas are introduced. This section usually ends with a perfect cadence in the tonic key.	A contrasting section that is sometimes known as an episode.	Either an exact repeat or slightly altered version of the first section.

Variation

Theme	Variation 1	Variation 2	Variation 3
This could be in a certain structure- perhaps binary or ternary.	Some ways in which the theme could be transformed are: • Decoration and embellishment • A change of instrumentation, temp, key, harmony, metre or rhythm • Developing the theme using a variety of devices such as imitation, inversion, sequence, diminution or augmentation • Presentation the theme at a different pitch • Developing harmonies and rhythms with a tune • Introducing additional or new melodies • Varying the style		

Binary

Section A	Section B
Starts in the tonic key but modulates to a related key at the end of the section. This section is usually unfinished when played on its own.	Starts in the same key as the end of section A but the music works it way back to the tonic. It is usually longer than the A section but balances the piece.

Baroque

Simple melodies, ornaments, terraced dynamics, energetic and relentless rhythmic movement, major/minor, keys mainly string instruments with some woodwind, use of the harpsichord, basso continuo.

Bach, Handel, Vivaldi, Corelli, Lully,

Classical

Balanced, regular phrases, functional harmony, wider range of dynamics, focus on piano, elegant and graceful 'symmetrical' style, frequent changes of mood and timbre, alberti bass.

Haydn, Mozart, Beethoven

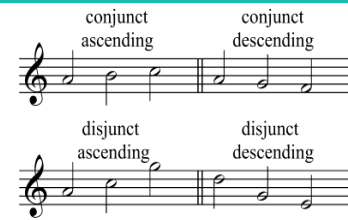
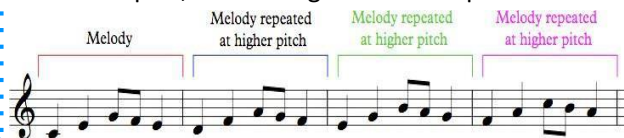
Romantic

Melodies were lyrical, distinct thematic ideas, leitmotifs, expressive, richer harmonies with chromaticism, more variation in dynamics, rhythms and creative freedom, programmatic music, larger brass section.

Schubert, Mendelssohn, Chopin, Schumann, Wagner

Sequence

Repetition of a melodic or harmonic phrase in the same part, but at a higher or lower pitch



Imitation

A contrapuntal device, when a melodic idea is copied in another part



Arpeggio/Broken Chord

When the notes of a chord are played separately in succession



Motif

A short, musical idea, melodic or rhythmic

Repetition

When sounds, sequences, melodies or rhythms are repeated



Ornamentation

Decorate or embellish the music. Popular examples of ornaments are trill, mordents and turns.

Forms

Devices

AoS1

Musical Forms & Devices

Year 10 Music: Areas of Study

Ternary

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Variation

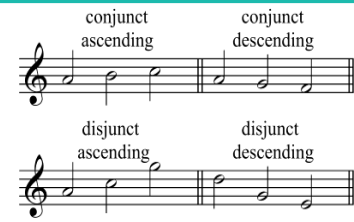
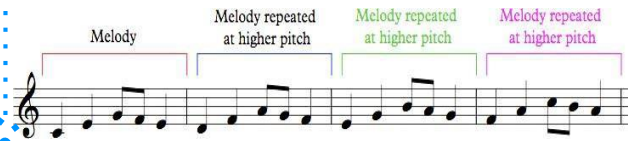
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Repetition of a melodic or harmonic phrase in the same part, but at a _____ or _____ pitch



Imitation

A contrapuntal device, when a melodic idea is _____ in another part



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Devices

AoS1

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Bach, Handel, Vivaldi, Corelli, Lully,

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Schubert, _____, Chopin, Schumann, Wagner

Year 10 Music: Areas of Study

Baroque

Basso Continuo

Double bass and harpsichord providing harmony



Classical

String Quartet

2 Violina, a viola & cello. 4 movements.

Romantic

String Quartets with a piano. Experimentation with different combinations of instruments to improve tone quality and overall sound.



A small group of classical musicians.

Sonority
Individual tone colour or tone quality. The tone colour of different combinations of instruments can result in very different effects. It is its relative loudness and 'feel' compared with other sounds.

Jazz & Blues

12-bar blues

Head arrangement



Classic Blues band

Key features in most jazz bands are: the instruments, use of improvisation, the pentatonic scale, head arrangement, melodic riffs, blues notes, use of the blues scale, call and response and jazz virtuoso with solo sections.

Musicals use various vocal ensembles which

are known as the chorus. This features multiple vocal parts like **Soprano, Alto, Tenor and Bass.**



Modern Jazz band

There are various instrumental ensembles that accompany the singers onstage.



Large-scale musicals can use a full orchestra of musicians, but smaller shows may only use a small rock band.



AoS2

Music for Ensemble

Chamber Ensemble

Musical Theatre

Texture

Monophonic

Single melodic line or parts together in unison

Homophonic

One melody heard with an accompaniment of chords

Polyphonic

A number of melodies heard at one, like imitation and counterpoint

Ensemble

A group of performers, usually between 2 and 8. Examples include: basso continuo, string quartet, jazz and blues trios, a rhythm section and vocal ensembles (duets, trios, backing vocals).

Year 10 Music: Areas of Study complete the missing knowledge

In Jazz & Blues, the drummer keeps a steady _____. The bass player lays down a '_____' and supports the improvisation sections. The keyboard player comps and improvises the chords whilst the other instruments improvise virtuosic solos.

Baroque

Basso Continuo
Double bass and _____ providing harmony



Classical

String Quartet
2 Violina, a viola & cello. 4 movements.

Romantic

String Quartets with a piano.
Experimentation with different combinations of _____ to improve tone quality and overall sound.



A small group of classical musicians.

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Individual tone colour or tone quality. The tone colour of different combinations of instruments can result in very different effects. It is its relative loudness and 'feel' compared with other sounds.

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12-bar blues

Head arrangement



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AoS2

Music for Ensemble

Chamber Ensemble

Musical Theatre

Texture

Monophonic

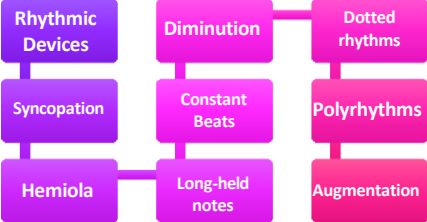
Homophonic

Polyphonic

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A group of performers, usually between 2 and 8. Examples include: basso continuo, string quartet, jazz and blues trios, a rhythm section and vocal ensembles (duets, trios, backing vocals).

Year 10 Music: Areas of Study



Tempo

Allegro – fast/lively
 Andante – walking pace
 Adagio – slowly
 Accelerando – gradually getting faster
 Ritardando – gradually getting slower
 Rubato – not sticking to time, free

Use of dynamics
 Different timbres
 Vary textures
 Tonality

Harmony

Diatonic – chords that relate to specific keys.

Chromatic – chords that are not in the key.

Dissonant – chords that clash causing tension and conflict.

Melody

Balance between steps and leaps

Balanced phrases

Climactic Point

A strong sense of key

Use of repetition

Duple Time: Two beats in each bar	Triple Time: Three beats in each bar	Quadruple Time: Four beats in each bar
2 4	3 4	4 4

Simple Time

The main beat is a crochet beat

Duple Time: Two beats in each bar	Triple Time: Three beats in each bar	Quadruple Time: Four beats in each bar
6 8	9 8	12 8

Compound Time

Silent movies were accompanied by pianists or small orchestras in the theatres. This was normally music written specifically for the film, existing classical music or popular music of the time. Sound with pictures was developed in 1927 with the film 'The Jazz Singer'.

Origins

Function

To create atmosphere; to underscore the dialogue; for scene changes or montages; to set the era, time or period; to correspond with the visuals (mickey-mousing); to arouse a collective emotion from the audience; to build tension and suspense.

Music for Film

Diegetic: music contained within the action e.g. a club singer performing on stage

Non-Diegetic: the background music supporting the on-screen action. This is not heard by the on-screen actors but the audience.

Leitmotif

A short musical theme or idea linked with a character, object, place or idea.



Thematic Transformation

- Add or subtract from the idea
- Change the instrumentation
- Change the pitch, dynamics, tempo or note-values
- Use inversion, augmentation or diminution
- Alter some of the musical characteristics
- Vary the texture
- Change the key

Minimalism

Small cells of music gradually evolving to create a hypnotic effect.



Pedal notes

A harmonic device where the same note is sustained or repeated.

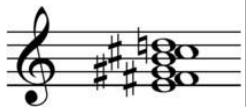
Ostinato

Melodic, rhythmic or harmonic patterns



Cluster chords

Clashing notes together to build suspense.

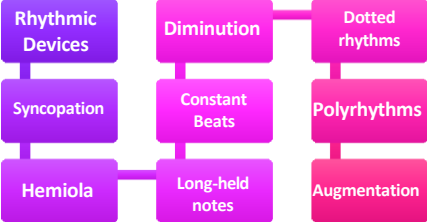


Layering

Building up musical ideas to fill out the texture

AoS3
 Film Music

Year 10 Music: Areas of Study



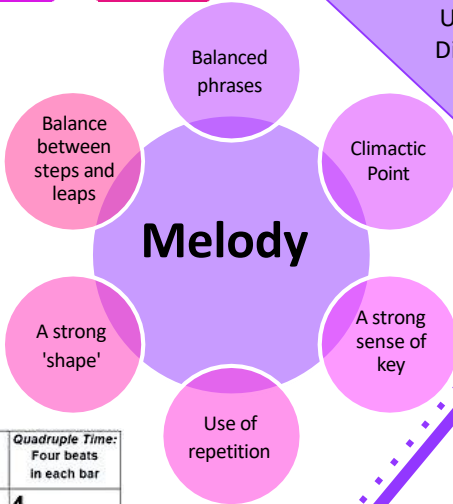
Tempo

Allegro – _____
 Andante – _____
 Adagio – _____
 Accelerando – _____
 Ritardando – _____
 Rubato – _____

Harmony

_____ – chords that relate to specific keys.
 _____ – chords that are not in the key.
 _____ – chords that clash causing tension and conflict.

Melody



Duple Time: Two beats in each bar	Triple Time: Three beats in each bar	Quadruple Time: Four beats in each bar
2 4	3 4	4 4

Simple Time

The main beat is a _____

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Use of dynamics
 Different timbres
 Vary textures
 Tonality

Elements

Devices

AoS3 Film Music

Origins

Function

To create _____; to underscore the dialogue; for scene changes or montages; to set the era, time or period; to correspond with the visuals (mickey-mousing); to arouse a collective emotion from the audience; to build _____ and _____.

Music for Film

_____ : music contained within the action e.g. a club singer performing on stage
 _____ : the background music supporting the on-screen action. This is not heard by the on-screen actors but the audience.

Leitmotif

A short musical theme or idea linked with a _____, _____, place or idea.



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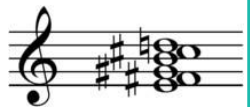


Melodic, rhythmic or harmonic patterns



Cluster chords

Clashing notes together to build suspense.



Layering

Building up musical ideas to fill out the texture

Year 10 Music: Areas of Study

Pop

Commercial genre which has mass audience appeal.



Electric Guitar

Supports the rhythm by strumming the chords

Rock & Pop



Drum kit

A collection of different sized drums and cymbals. Drummers keep the beat and add fills to add interest.

Structure

Most rock & pop structures are in verse- chorus form or 32-bar song form.

Melody

Hooks – catchy & memorable
Repetition and symmetry

Harmony

Most chords are in **root position**.
There is **parallel movement** towards the tonic. The chords stick to the key using mainly (I, ii, IV, V, vi and sometimes vii°).

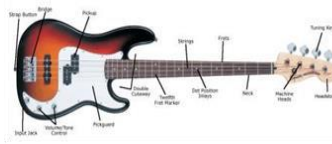


Digital Electronic Rock

A genre of rock music that relies on electronic and digital instruments: synths, moogs and drum machines. These genres are: House, Techno, Trance, Dubstep, Indietronica. The reproduction of acoustic sounds can also be edited: remixing, panning, delay, reverb, phasing and looping.

Rock

Harsher and more serious form of popular music.



Bass Guitar

Strings are plucked or 'slapped'. Bass holds the low notes in a bass line.

Bhangra emerged in the UK as a type of fusion which features music from the Punjab region of India combined with other popular styles.

Bhangra

Traditional Punjab music used the folk instruments of the country, with the main emphasis on percussion and string instruments.



Tempo

Fast/moderate, lively, upbeat.

Melody

Quite repetitive, simple, limited in range, uses embellishments to decorate, often dips at the end of phrases, uses microtonal intervals. Ideas are sung or played. Shouted phrases of 'Hoi!'

Structure

Traditional verse-chorus

Rhythm

Chaal rhythm, syncopation, 4 beats in a bar.

Technology

Uses drum machines, synths, samples, mixing and scratching.

Lyrics

Punjabi language, often mixed with English covering social subjects.



AoS4

Popular Music

Fusion

Fusion is what happens when two or more different musical styles or genres are blended. Ray Charles combined musical elements of gospel and jazz-influenced blues. The Pogues combines Celtic music with punk by playing with traditional Irish instruments. Afro Celt Sound System combine African, Celtic and Dance Music through instrumentation and elements.

Year 10 Music: Areas of Study complete the missing words below

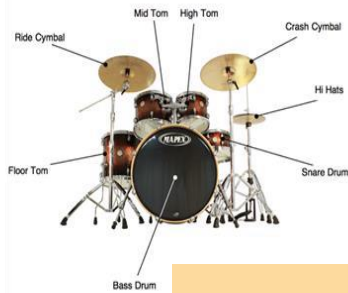
Pop

Commercial genre which has mass audience appeal.



Supports the rhythm by strumming the chords

Rock & Pop



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Fast/moderate, lively, upbeat.

The chaal rhythm is played by the dhol in a kind of swing

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AoS4
Popular Music

Year 10 Music: Areas of Study

1738-39

The Baroque period

- Complex melodic lines with ornamentation
- Terraced dynamics
- Polyphonic texture
- Harpsichord and strings
- Basso Continuo

Instrumentation

Instrumentation: (Transverse)
Flute String Orchestra
Harpsichord (Basso Continuo).

Tonality

Section A begins in **B minor** and ends in **F# minor**
Section B: the opposite, beginning in **F# minor** and ending in **B minor**.

Dynamics

Mostly **forte**
Use of **terraced dynamics**



Melody

The movement is based on two short musical **ideas** (X and Y).

The flute part has a two-octave pitch **range**.

The movement includes **ornaments** and **compositional devices** typical of the Baroque era:

Trills: Bars 8¹, 10¹, 15², 27², 30¹ and 32¹

Appoggiaturas: Bars 33¹ and 40¹

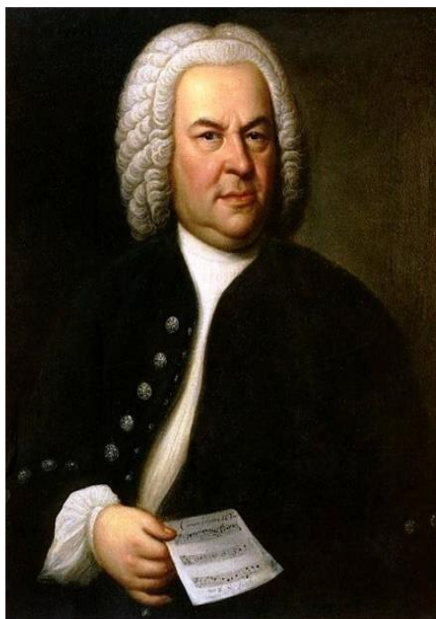
Sequences: 6²– 10¹ and bars 28²– 32¹.

Badinerie BACH

Rhythm

Simple ostinato rhythms, forming the basis of the two short musical ideas (X and Y)
Consist almost totally of **quavers** and **semi-quavers**.

The time signature is 2/4 throughout



Tempo
Allegro

Texture

Homophonic (**melody and accompaniment**).
Flute and the cello provide the main musical material

1st violin participates occasionally
2nd violin and viola provide harmony with less busy musical lines.

Structure

Binary form (AB),
with each section repeated once (AABB)

Section A	Bars 0 ² – 16 ¹	16 bars
Section B	Bars 16 ² – 40 ¹	24 bars

Harmony

Diatonic throughout.

Section A **modulates** from the **tonic** to the **dominant minor** and Section B does the opposite.

Imperfect and **perfect cadences** are clearly presented throughout.

Chords frequently occur in **inversion** with occasional use of **V7** in third inversion.

A **Neapolitan sixth chord** is used in bar 35.

Suspensions also occur in bars 8¹, 10¹ and 32¹.

Year 10 Music: Areas of Study complete the missing words below

1738-39

The Baroque period

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- Terraced dynamics
- Polyphonic texture
- Harpsichord and strings
- Basso Continuo

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Flute String Orchestra
Harpsichord (Basso Continuo).

Tonality

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Section B: the opposite, beginning in **F# minor** and ending in **B minor**.

Dynamics

Mostly []
Use of **terraced dynamics**



Melody

The movement is based on two short musical **ideas** (X and Y).

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The movement includes [] and **compositional devices** typical of the Baroque era:

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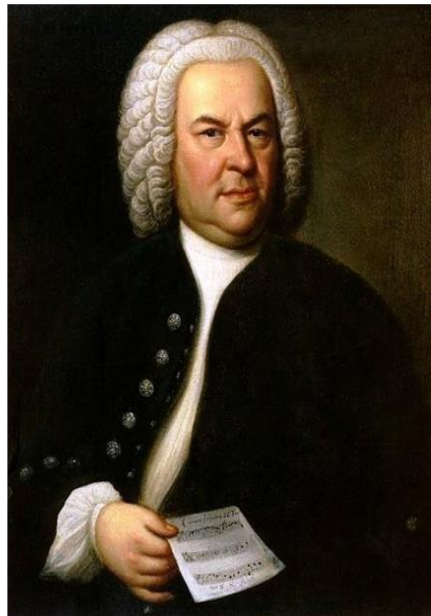
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The time signature is []



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Allegro

Texture

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A [] **sixth chord** is used in bar 35.
Suspensions also occur in bars 8¹, 10¹ and 32¹.

Year 10 Music: Areas of Study

1981
Toto IV
David Paich & Jess Porcaro

Africa
TOTO

Texture
Homophonic: melody and accompaniment

Melody
Mostly conjunct (moving in step) and includes occasional use of the pentatonic scale. The pitch range of the vocal line is just less than two octaves on the printed score, but it is wider on the recording with the vocal improvisations towards the end of the song.

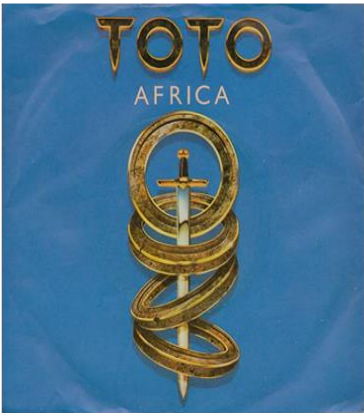
Tempo
Moderately fast

Dynamics
Mainly mezzo forte, choruses are forte

Instrumentation
Rock Band: drum kit (keeps the groove) with additional percussion, lead guitar (plays solos and chords), bass guitar (holds the bassline), synthesizers (emphasizes the chords and leads the solo instrumental section), lead singer (sings the lyrics and melody). And male backing vocals (harmonies).

Harmony
The harmony is **diatonic**, the chords used are based on the key of the piece. Power chords and inversions.

Rhythm
Ostinato rhythms, consisting almost totally of quavers, with constant use of syncopation. The time signature is 2/2 (split common time) throughout.



Intro	Verse 1/2	Chorus 1/2	Link	Instrumental	Chorus 3	Outro
Bars 1-4	Bars 5-39 Bars 14-39	Bars 40-57	58-65	66-82	Bars 40-92	Bars 93-96
B major	B major	A major	B major	B major	A major	B major
Syncopated chordal riff A running into ostinato riff B based on E pentatonic scale.	Mostly syllabic, syncopated rhythms that are conjunct. Final chord is sustained for drum fill.	Vocal texture builds on each line, mostly syllabic with melisma on the final melody.	Same as intro but only repeated once instead of three times.	Chords based on the verse but with instrumental melody based on riff B.	New e. guitar riff, lyrics are repeated with solo vocal improvisation	Same as intro, texture gradually decreases as the music repeats to fade out.

Year 10 Music: Areas of Study complete the missing words below

1981
Toto IV

& Jess Porcaro

Africa
TOTO

Texture

_____ :: melody
and accompaniment

Melody

Mostly _____ (moving in step) and includes occasional use of the pentatonic scale. The pitch range of the vocal line is just less than two octaves on the printed score, but it is wider on the recording with the vocal improvisations towards the end of the song.

Tempo

Moderately fast

Dynamics

Mainly _____
forte, choruses are
forte

Instrumentation

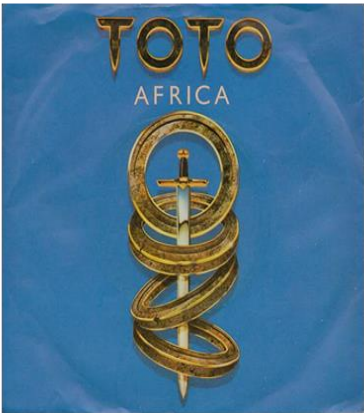
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Harmony

The harmony is _____ the chords used are based on the key of the piece. Power chords and inversions.

Rhythm

_____ rhythms, consisting almost totally of quavers, with constant use of syncopation. The time signature is 2/2 (split common time) throughout.



Intro	Verse 1/2	Chorus 1/2	Link	Instrumental	Chorus 3	Outro
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Year 10 Music: Areas of Study

Direction Rising Falling



Repetition Doing the same thing again, without any changes.



Contrast Doing something completely different.



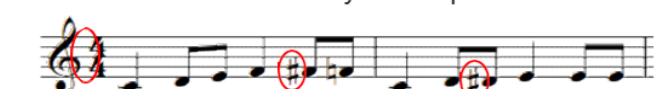
Imitation Doing the same thing again, with some changes (similar).



Ostinato A short repeated idea.



Chromatic The melody uses notes that aren't in the scale / key of the piece.



MELODY

High or low.



Big or Small.



Interval The distance between two notes



Conjunct (Moving In Step)

Type of movement



Disjunct (Moving In Leaps)



Sequence Doing the same shape idea but at a different pitch.

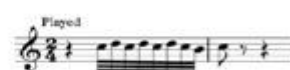
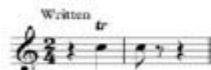


Triadic The tune is based on notes from the chords / triads.

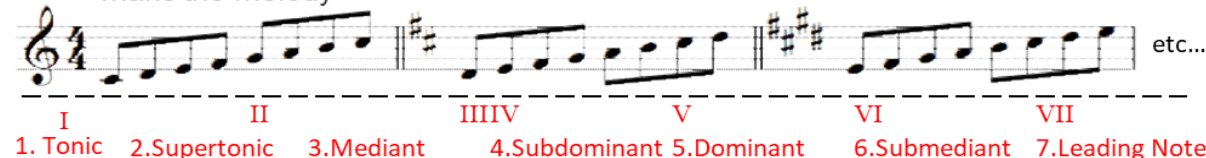


Ornaments Trills

Mordents



Scale The series of notes in a key that are used to make the melody



Year 10 Music: Areas of Study **complete the missing words**

Rising Falling

Doing the same thing again, without any changes.

Doing something completely different.

Doing the same thing again, with some changes (similar).

A short repeated idea.

The melody uses notes that aren't in the scale / key of the piece.

MELODY

High or low. Range

Big or Small.

The distance between two notes

Trills Mordents

Written Performed

The series of notes in a key that are used to make the melody

I 1.Tonic II 2.Supertonic III 3.Mediant IIII 4.Subdominant V 5.Dominant VI 6.Submediant VII 7.Learning Note

Type of movement

Doing the same shape idea but at a different pitch.

The tune is based on notes from the chords / triads.

Year 10 Music: MAD T-SHIRTS

Not Dynamics...

Articulation is **the way** the performer plays / sings the note, not how loud they do it. That would be Dynamics instead.

ARTICULATION

(How the notes are played)

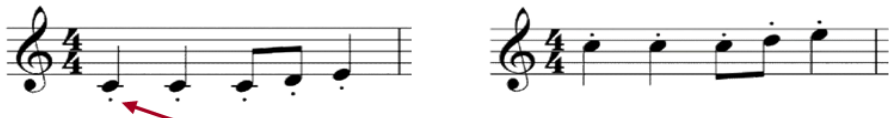
More Than One...

You can write more than one type of articulation for the same note. For example:



Staccato

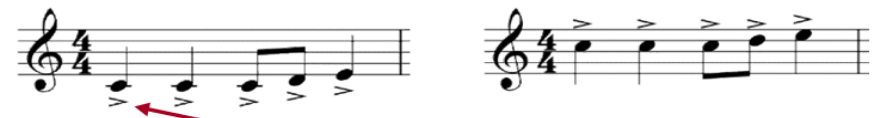
Staccato means short and detached /seperated. **You will likely hear a gap between each note.*



Shown by writing a **dot** just above/below the head of the note.

Accented

Give extra emphasis or force to the marked notes.



Shown by writing an **accent** above/below the head of the note.

Legato

To play the music smoothly, without breaks between notes.

Slurred

Playing the notes in a legato style, without breaks between notes.



Shown with a **slur** on the score.

How? Some examples:

String Instruments - Play the notes without changing the direction of the bow.



**Don't change direction until you've finished the slurred notes*



Brass & Wind Instruments - Only tongue the first note, not the others.

Glissando

**You can glissando upwards or downwards*

A slide between two notes.

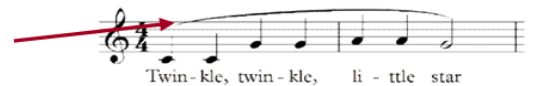
Marked with a **glissando** on the score.



Some Associated Markings On Vocal Music...

Phrase markings

Slurs drawn onto the score to show singers what to sing in one breath.



Syllabic

Where the music is written with one note per syllable.



Melismatic

Where the music is written with more than one note per syllable.



**A slur is used to show the notes on one syllable*

Year 10 Music: MAD T-SHIRTS complete the missing words

ARTICULATION

(How the notes are played)

More Than One...

You can write more than one type of articulation for the same note. For example:



Articulation is **the way** the performer plays / sings the note, not how loud they do it. That would be Dynamics instead.

Staccato means short and detached /seperated. **You will likely hear a gap between each note.*



Shown by writing a **dot** just above/below the head of the note.

Give extra emphasis or force to the marked notes.



Shown by writing an **accent** above/below the head of the note.

To play the music smoothly, without breaks between notes.

Playing the notes in a legato style, without breaks between notes.



Shown with a **slur** on the score.

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String Instruments - Play the notes without changing the direction of the bow.



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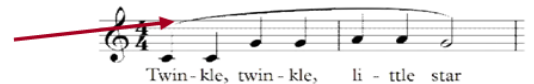
Marked with a **glissando** on the score.



**You can glissando upwards or downwards*

Some Associated Markings On Vocal Music...

Slurs drawn onto the score to show singers what to sing in one breath.



Where the music is written with one note per syllable.



Where the music is written with more than one note per syllable.



**A slur is used to show the notes on one syllable*

Year 10 Music: MAD T-SHIRTS

Describing What You Hear

Comment on any changes - don't sum up the whole example with one word (unless it doesn't change!)

The music starts... then... the music ends...

On The Score

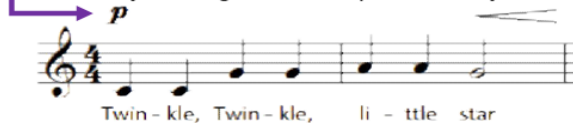
Dynamics are marked underneath the music, to show the instrument how loudly it should play:



If it is a piano, the dynamics usually go in-between the two staves:



For singers, dynamics usually go above the staff, so that they don't get mixed up with the lyrics:



DYNAMICS

(The volume of the music)

Writing Dynamics

Dynamics can create contrast in music.

Dynamics can add expression to the music.

Dynamics can allow the listener to hear the most important lines in the music.

Marking	Italian Term	Meaning
pp	Pianissimo	Very Quiet
P	Piano	Quiet
mp	Mezzo Piano	Moderately Quiet
mf	Mezzo Forte	Moderately Loud
f	Forte	Loud
ff	Fortissimo	Very Loud
	Crescendo	Getting Louder
	Diminuendo	Getting Quieter
sfz	Sforzando	Sudden Accent

Shh



Change gradually

Baroque Period:

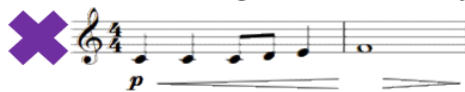
Dynamics were rarely used (no crescendos and diminuendos). Use of Terraced Dynamics.

Classical Period: Some dynamics, to add contrast.

Romantic Period: Lots of crescendos & diminuendos and a large range of dynamics to add expression.

Writing Your Own Dynamics

If using crescendos and diminuendos, make sure you say how loud/quiet you want the music to get. This will clearly show what you want.



Year 10 Music: MAD T-SHIRTS complete the missing words

Describing What You Hear

Comment on any changes - don't sum up the whole example with one word (unless it doesn't change!)

The music starts... then... the music ends...

On The Score

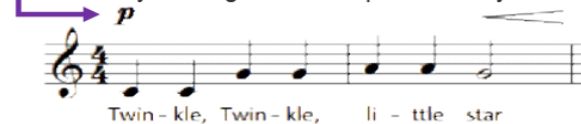
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f		
ff		
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	Diminuendo	Getting Quieter
	Sforzando	Sudden Accent

Shh



Change gradually

Period:

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Period:

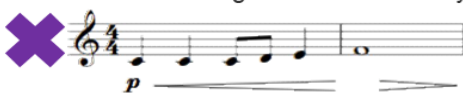
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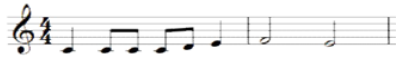


Year 10 Music: MAD T-SHIRTS

TEXTURE

Monophonic

Music with only one part (one note at a time).



*You can have as many players or singers as you want on the same part so long as it is the only part. No chords!

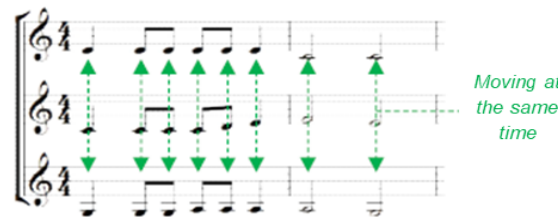
Melody & Accompaniment

A melody (tune) plus some accompanying chords or ideas.



Homophonic

All parts move in chords at the same time.



*Homo-phonics = same-sound... they have the same rhythm

Antiphonal

Two groups of musicians play/respond to each other from two different performing positions.



Polyphonic

Several (2 or more) independent lines of music.



*Poly-phonics = many-sounds... several (two or more) different tunes.

Call And Response

One idea played/sung and then another performer(s) responding.



Octaves

When parts move together, an octave apart.



*Same note name but different pitch.

Pedal

A long or repeated note – usually in the bass.



Drone

Long or repeated notes – usually a 5th apart.



Alberti Bass

Accompaniment found mainly in the left hand part of piano music.

Don't play all three notes of the triad together; break them up into four equal notes. Usually lowest, highest, middle, highest.



Why doesn't Mr Edwards like playing an Alberti Bass? It gives him the EBGBs.

What Is The Instrument's Role

Melody – The tune.

Accompaniment – The parts supporting the tune.

Counter melody – A second melody that fits with the main tune.

Bass Line – The lowest sounding part.

Basso Continuo

The part given to instruments in The Baroque Period that played the bass line and chords, accompanying the melody, using **figured bass**.

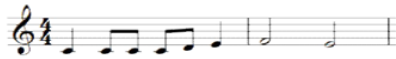


*Harpichord, bass viol, organ, lute...

Year 10 Music: MAD T-SHIRTS complete the missing words

TEXTURE

Music with only one part (one note at a time).

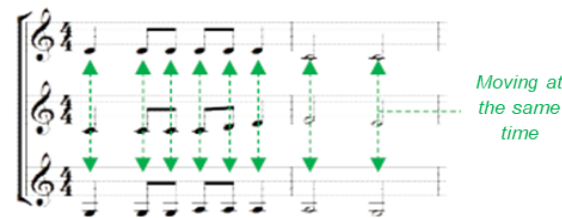


*You can have as many players or singers as you want on the same part so long as it is the only part. No chords!

A melody (tune) plus some accompanying chords or ideas.



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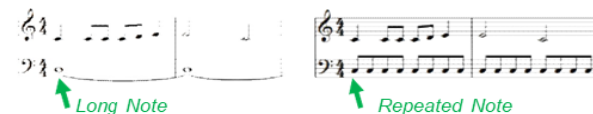
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Several (2 or more) independent lines of music.



*Poly-phonic = many-sounds... several (two or more) different tunes.

One idea played/sung and then another performer(s) responding.



Accompaniment found mainly in the left hand part of piano music.

Don't play all three notes of the triad together; break them up into four equal notes. Usually lowest, highest, middle, highest.



Why doesn't Mr Edwards like playing an Alberti Bass? It gives him the EBGBs.

– The tune.

– The parts supporting the tune.

– A second melody that fits with the main tune.

– The lowest sounding part.

The part given to instruments in The Baroque Period that played the bass line and chords, accompanying the melody, using **figured bass**.



*Harpsichord, bass viol, organ, lute...

Year 10 Music: MAD T-SHIRTS

Structure – The order that things happen in.

First... then... this is followed by... at the end.

STRUCTURE

Song Form

Intro Verse Chorus Middle 8 Bridge Outro

Binary Form - Music in two parts

Section A and Section B.



Section B contrasts Section A in some way. Usually both sections are repeated.

Rondo Form – The opening section keeps returning, with contrasting sections in between.

Section A, Section B, Section A, Section C, Section A.

A – First section / idea



B – Contrasting section / idea



A – First section / idea



C – New contrasting section / idea



A – First section / idea



* The contrasting sections are called 'episodes'.

Ternary Form - Music in three parts

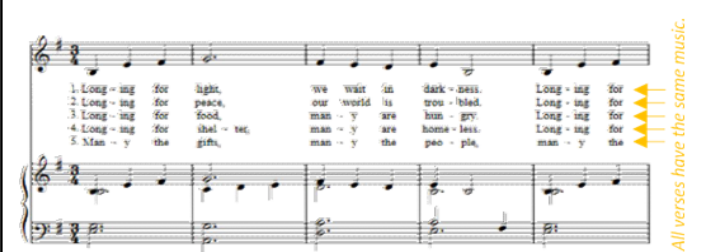
Section A, Section B, Section A.



The 2nd Section A can be an exact repeat of the 1st Section A, or a slightly altered version.

Strophic Form - Same music repeated each section.

Section A, Section A, Section A.



e.g. Hymns, Folk Songs...

All verses have the same music.

Minuet & Trio – Dance founded in 17th-18th Century Europe. In Triple time and moderato. Both are in binary form. Trio is like a second Minuet but contrasting in some way.

Minuet		Trio		Minuet	
Section A (Repeated)	Section B (Repeated)	Section A (Repeated)	Section B (Repeated)	Section A (No Repeat)	Section B (No Repeat)
In tonic key. Ends with key change.	In related key. Ends with change back to tonic key.	More contrast – new key or change of instruments. Ends with key change.	In related key. Ends with key change back to starting key of trio.	Keys are same as first time playing Minuet.	

Variation Form – A theme / section is then followed by other sections (variations), changing and developing the first theme / section in different and imaginative ways.

Theme	Variation 1	Variation 2	Variation 3
The original idea / section	There are many ways you can transform the theme: Change the instrumentation, tempo, key, harmony, metre, rhythm... Use imitation, inversion, sequence, diminution, augmentation... Developing harmonies without the tune... Introducing new tunes... Varying the style...		

Year 10 Music: MAD T-SHIRTS complete the missing words

Form – The order that things happen in.
First... then... this is followed by... at the end.

STRUCTURE

Form
Intro Verse Chorus Middle 8 Bridge Outro

Form – Music in two parts
Section A and Section B.



Section B contrasts Section A in some way. Usually both sections are repeated.

Form – The opening section keeps returning, with contrasting sections in between.

Section A, Section B, Section A, Section C, Section A.

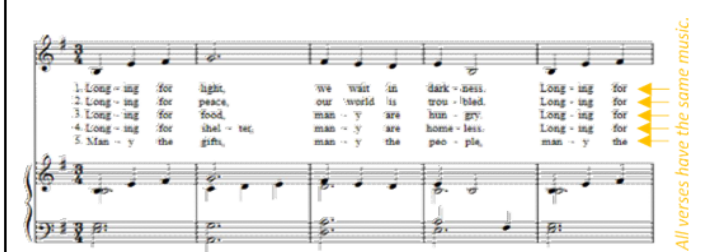


* The contrasting sections are called 'episodes'.

Form – Music in three parts
Section A, Section B, Section A.



Form – Same music repeated each section.
Section A, Section A, Section A.



e.g. Hymns, Folk Songs...

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The original idea / section	There are many ways you can transform the theme: Change the instrumentation, tempo, key, harmony, metre, rhythm... Use imitation, inversion, sequence, diminution, augmentation... Developing harmonies without the tune... Introducing new tunes... Varying the style...		

Key Signature

The sharps or flats at the start of a piece of music, showing what key the music is in.

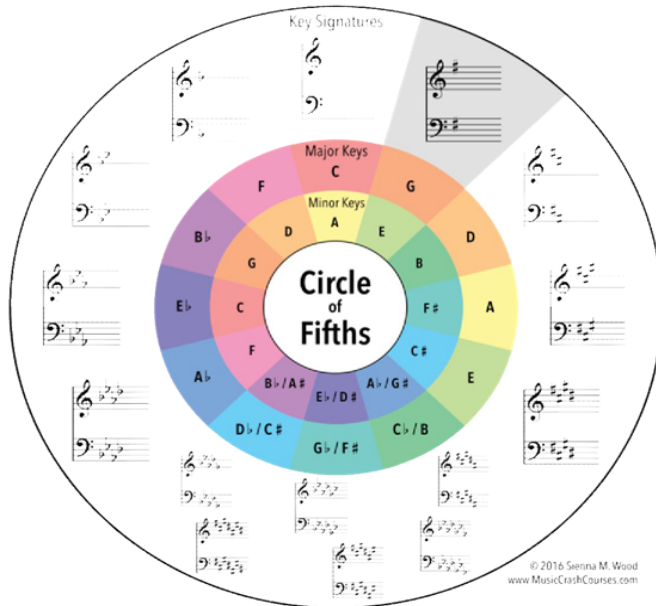
HARMONY & TONALITY

(The chords and keys used in the music)

Modulation

Musical word for key change. Most common changes: to **Dominant** or **relative Major/Minor**.

Major and Minor Key Signatures



*When you write music in a minor key you also need to raise the 7th note (leading note) up one small step - e.g. A minor uses G[♯]s, not Gs.

Identifying The Tonality...

- Tonal** - In a major or Minor Key
- Atonal** - There is no sense of key
- Modal** - Uses 'old-fashioned' scales called modes
- Pentatonic** - The music only uses 5 notes

Chords

- Triad** - A chord with three notes (See below)
- Power Chord** - Only playing the Root and Fifth of a triad (used in Rock music)
- Dissonance** - Clashing notes played together
- Consonance** - Notes that fit / sound nice together
- Primary Chords** - The three most commonly used chords used in music: I, IV, V
- Secondary Chords** - The other chords: II, III, VI, VII
- Chord Sequence** - The order the chords in a piece of music follow (containing cadences at the ends of phrases)

Cadences

The last two chords in a phrase. Only sounds 'complete' if ends on chord I.

Sounds Complete		
Perfect Cadence	V Dominant	I Tonic
Plagal Cadence	IV Subdominant	I Tonic
Sounds Incomplete		
Imperfect Cadence	I Tonic	V Dominant
Interrupted Cadence	V Dominant	*Not chord I Minor Chord

*Sometimes the final cadence of a piece in a minor key ends with a major chord instead of the expected minor chord. This effect is known as a **Tierce de Picardie**.

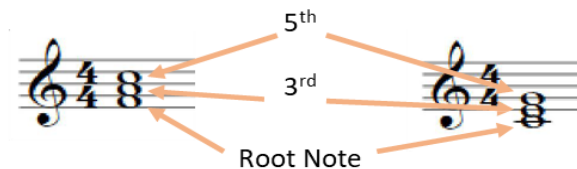
Diatonic

Music only uses notes that are found in the key signature of the piece

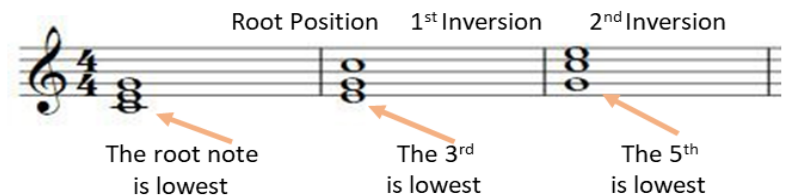
Chromatic

Music uses the notes found in the key of the piece but also adds in extra accidentals (# / b)

Triad A Chord with three notes:



Inversions Changing which note of a chord is the lowest sounding:



Year 10 Music: MAD T-SHIRTS complete the missing words

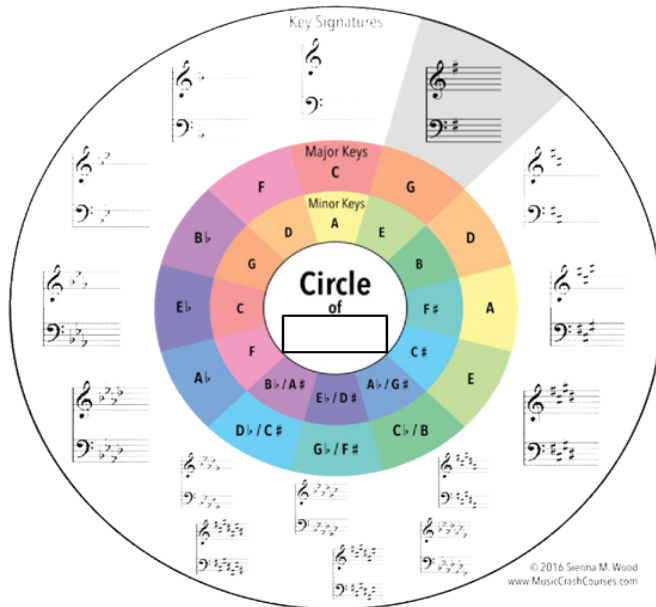
HARMONY & TONALITY

(The chords and keys used in the music)

The sharps or flats at the start of a piece of music, showing what key the music is in.

Musical word for key change. Most common changes: to **Dominant** or **relative Major/Minor**.

Major and Minor Key Signatures



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In a major or Minor Key
There is no sense of key
Uses 'old-fashioned' scales called modes
The music only uses 5 notes

- A chord with three notes (See below)

- Only playing the Root and Fifth of a triad (used in Rock music)

- Clashing notes played together

Notes that fit / sound nice together

- The three most commonly used chords used in music: I, IV, V

- The other chords: II, III, VI, VII

The order the chords in a piece of music follow (containing cadences at the ends of phrases)

The last two chords in a phrase.
Only sounds 'complete' if ends on chord I.

Sounds Complete

Cadence	V Dominant	I Tonic
Cadence	IV Subdominant	I Tonic

Sounds Incomplete

Cadence	I Tonic	V Dominant
Cadence	V Dominant	*Not chord I Minor Chord

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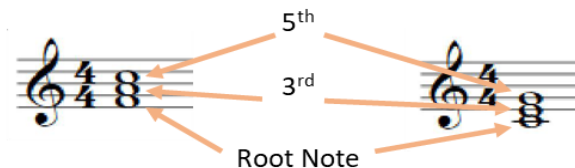
Diatonic

Music only uses notes that are found in the key signature of the piece

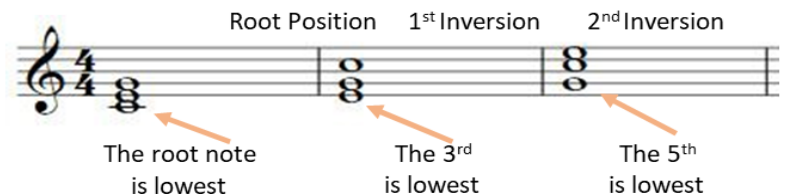
Chromatic

Music uses the notes found in the key of the piece but also adds in extra accidentals (# / b)

Triad A Chord with three notes:



Inversions Changing which note of a chord is the lowest sounding:



Year 10 Music: MAD T-SHIRTS

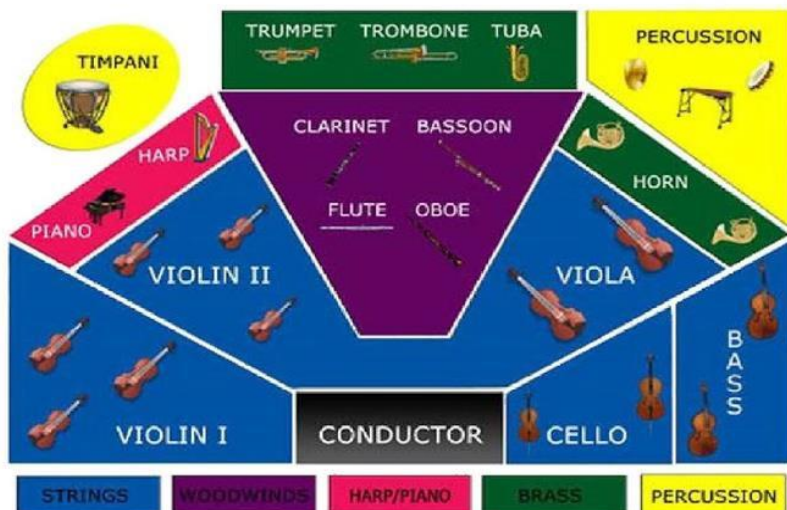
Instrumental Ensembles

- Solo - 1 performer
- Duet - 2 performers
- Trio - 3 performers
- Quartet - 4 performers

INSTRUMENTATION

(The instruments you can hear and what they are doing – sometimes called 'orchestration')

Instruments Of The Orchestra



Rock & Pop Instruments



Types Of Voices

Soprano	(Female)	HIGH
Treble	(Boy)	...
Alto	(Female)	...
Countertenor	(Male Alto)	...
Tenor	(Male)	...
Bass	(Male)	LOW

*SATB Choir: Soprano, Alto, Tenor & Bass

Jazz Instruments

Rhythm Section

Backup / Accompaniment for the melody. Sometimes still improvise and get solos.

- *The Groove: Double Bass
- *The Beat: Drum Kit
- *The Chords: Piano (Sometimes Guitar)

Front Line Instruments

Instruments that play melodies / improvise. Stand in front of the rhythm section.

- *Trombone
- *Saxophone



Musical Periods

Baroque Period (1600-1750)

- *Small orchestra - Mostly Strings + Basso Continuo
- *Basso Continuo - The part given to instruments playing the bass line & chords accompanying the melody. (Harpsichord, bass viol, organ, lute...)

Classical Period (1750-1810)

- *Basso Continuo gradually stopped being used
- *Pianoforte introduced & Clarinet invented
- *String Quartet very popular (Violin x2, Viola, Cello)

Romantic Period (1810-1910)

- *Piano music very popular (Instrument further improved)
- *Large Orchestra
- *Tone / construction of instruments improved

Instrumental Techniques - The way you play / use an instrument.

String Instruments

- *Pizzicato (Pizz.) - Plucking the strings
- *Arco / Bowed - Using a bow on the strings
- *Double Stopping - Playing two strings at the same time

String & Brass Instruments

- *Con Sordino (Con Sord.) - Playing with a mute (changes the sound produced)
- *Tremolo - Quickly repeating the same note ('trembling')

Voices

- *Falsetto - A technique used by men to sing at a much higher pitch

Voices, Brass, Woodwind and String Instruments

- *Vibrato - Make the note waver up and down to add expression

Some Examples

Other Vocal Terms

Acapella

Singing without any accompanying instruments.

Chorus

Music written for a choir.

Backing Vocals

Sing harmonies / support the lead singer.

Year 10 Music: MAD T-SHIRTS complete the missing words

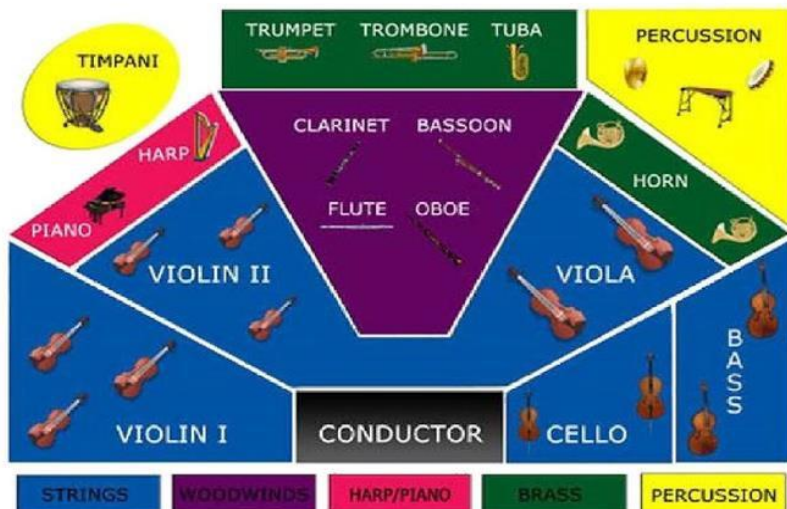
Instrumental Ensembles

- 1 performer
- 2 performers
- 3 performers
- 4 performers

INSTRUMENTATION

(The instruments you can hear and what they are doing – sometimes called 'orchestration')

Instruments Of The Orchestra



Rock & Pop Instruments

Electric Guitar

Singers



Bass Guitar



Keyboard / Synthesizer



Drum Kit



*Lead instrument = Often an electric guitar ('lead guitar').
Plays melody or harmonises with the singer & often has a solo.

Types Of Voices

- (Female) HIGH
- (Boy)
- (Female)
- (Male Alto)
- (Male)
- (Male) LOW

*SATB Choir: Soprano, Alto, Tenor & Bass

Jazz Instruments

Rhythm Section

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Chorus

Music written for a choir.

Backing Vocals

Year 10 Music: MAD T-SHIRTS

Reading Rhythms

You need to be able to read all the different note lengths if you want to pass GCSE music. If you keep forgetting, look over them again!

RHYTHM & TEMPO

(The Patterns Of Note Lengths & Silences)

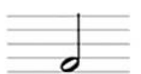
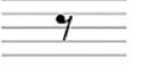
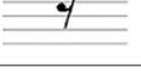
(The Speed Of The Music)

Working Out The Tempo

Tap your toe to the pulse of the music and think, 'how fast am I tapping'.

**If you tap your whole foot you might put off other pupils.*

Durations

Beats	Note	Rest	Name
4			Semibreve
2			Minim
1			Crotchet
1/2			Quaver
1/4			Semiquaver

Dotted Notes

If a dot is added to a note (or rest), add on half of what the note is already worth:



Pause

If this symbol is written, stop the pulse of the music & pause on the note.



Tempo Markings

Marking	Meaning
Allegro / Vivace	Fast or Lively
Allegretto	Quite Fast (Not as fast as Allegro)
Moderato / Andante	Moderate / A Walking Pace
Adagio / Lento	Slowly
Accelerando	Gradually Speed Up
Ritardando / Rallentando rit. rall.	Gradually Slow Down
 = 60	*60bpm 60 beats per minute (One every second)
 = 120	*120bpm 120 beats per minute (Two every second)

Syncopation

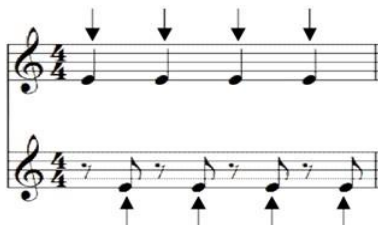
Playing off (or in-between) the beat / pulse

On The Beat

Playing on one of the beats that you would 'tap your toe' to

Off-beat

Playing in-between the beats you would 'tap your toe' to



Triplet

Three notes played evenly in the space of two notes:



Swung Rhythms

**A main feature of Jazz*

Written rhythms are played differently to give a swing feeling.



Rubato

**Translates as 'to steal time'*

Not sticking strictly to the tempo - to add feeling (Romantic Period!)

Year 10 Music: MAD T-SHIRTS complete the missing knowledge

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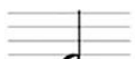
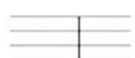
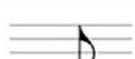
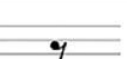
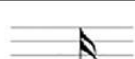
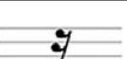
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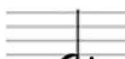
**If you tap your whole foot you might put off other pupils.*

Durations

Beats	Note	Rest	Name
4			
2			
1			
1/2			
1/4			

Dotted Notes

If a dot is added to a note (or rest), add on half of what the note is already worth:

 3 beats *2 (+1)

 1 ½ beats *1 (+ 1/2)

 ¾ beat *1/2 (+ 1/4)

Pause

If this symbol is written, stop the pulse of the music & pause on the note.



Tempo Markings

Marking	Meaning
Allegro / Vivace	
Allegretto	
Moderato / Andante	
Adagio / Lento	

	Gradually Speed Up
	Gradually Slow Down

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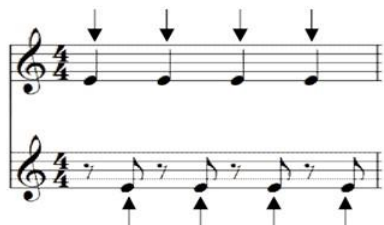
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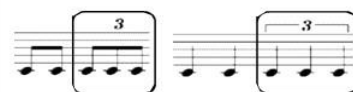
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Year 10 Music: MAD T-SHIRTS

Common Time

4/4 is also known as common time. Instead of 4/4 you can write:



TIME SIGNATURE / METRE

(How the pulse is grouped into bars)

Cut Common Time

2/4 is also known as cut-common time. Instead of 2/4 you can write:



Time Signatures

Written at the start of the music (and anywhere it changes) to show how many beats there are per bar, plus what type of beat

Simple Time Signatures **Each beat can be divided into two equal halves*

4 crotchet beats per bar

3 crotchet beats per bar

2 crotchet beats per bar

Compound Time Signatures **Each beat is dotted and can't be divided into two equal halves*

4 dotted crotchet beats per bar (12 quavers)

3 dotted crotchet beats per bar (9 quavers)

2 dotted crotchet beats per bar (6 quavers)

Listening Examples Go to Youtube to hear some examples of different metres:

2/4	Slaidburn March	<i>*A march is usually in 2/4 (Left, Right, Left, Right... = 1, 2, 1, 2...)</i>
3/4	Shostakovich's Waltz No.2	<i>*A waltz is a dance, usually in 3/4</i>
4/4	All That Jazz (from Chicago)	<i>*Chicago is a Musical</i>
5/4	Take Five (By Dave Brubeck)	<i>*Listen out for the jazz style</i>
7/4	The start of Money (By Pink Floyd)	<i>*Listen out for the opening bass riff</i>
6/8	We Are The Champions (By Queen)	<i>*Queen are a famous British Rock Band</i>
12/8	The Way You Make Me Feel (By Michael Jackson)	<i>*Count 1&a 2&a 3&a 4&a</i>

Irregular Time Signatures

Time signatures that can't be divided into equal groups of 2 or 3.

NOT EQUAL LENGTHS

Regular Time Signatures

Time signatures that can be divided into equal groups of 2 or 3.

EQUAL LENGTHS

Writing Your Own Music

You must make sure every bar adds up to the correct number of beats. Changing metre is a good way to create contrast in your work.

Year 10 Music: MAD T-SHIRTS complete the missing words

Time
4/4 is also known as common time. Instead of 4/4 you can write:



TIME SIGNATURE / METRE

(How the pulse is grouped into bars)

Cut Common Time
2/4 is also known as cut-common time. Instead of 2/4 you can write:



Time Signatures

Written at the start of the music (and anywhere it changes) to show how many beats there are per bar, plus what type of beat

Time Signatures *Each beat can be divided into two equal halves



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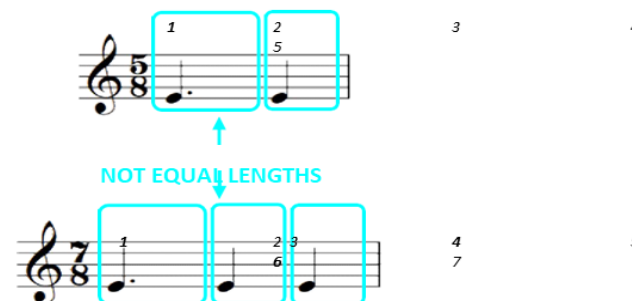


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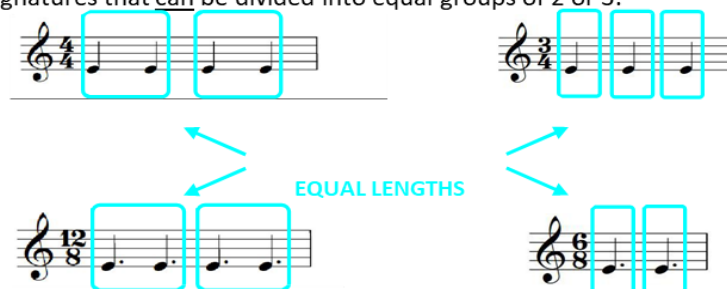
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Year 10 Music: MAD T-SHIRTS

Western Classical Music

Baroque Period 1600-1750	Classical Period 1750-1810	Romantic Period 1810-1910
Bach, Vivaldi, Handel	Mozart, Haydn, Beethoven	Chopin, Schubert, Wagner
Ornaments	Balanced, regular phrases	Use of the leitmotif
Terraced Dynamics	Alberti Bass	Music more expressive
Major & Minor Keys	Wider range of dynamics	Huge range of dynamics
Harpsichord	Pianoforte introduced	Use of chromatic chords
Small Orchestra (Mostly Strings)	Wider range of mood	Unusual Key Changes
Basso Continuo	Orchestra got bigger	Large Orchestra
	Elegant/Graceful style	Use of Rubato

STYLE

Minimalism

- *Started in 20th Century
- *Composers - Philip Glass...
- *Based upon **Repetition**
- *Uses small motifs that **gradually change**
- ***Slow changing harmony**

Jazz & Blues

*The 12 Bar Blues

I	I	I	I
IV	IV	I	I
V	IV	I	I/V

- ***Improvisation** - Performers make up music in the performance
- ***Rhythm Section** - Drums, Double Bass, Piano/Guitar
- ***Front Line Instruments** - Saxophones, Trumpets, Trombones
- ***Walking Bass** - The bass plays a steady rhythm & walks up/down the notes of the chord or scale.

*Swung rhythms

*Extended chords: 7th, 9th...

*Blue notes – 'bending' some notes by a semitone



Fusion -Mixing more than one style of music together

For example...

Bhangra - Came to UK in 1980s. Mixing traditional Indian music & pop music.

Tempo	Structure	Melody
Lively and Upbeat	Verse / Chorus structure	Quite repetitive. Simple. Decorated.
Rhythm	Instruments	Technology
Syncopation. 4 beats per bar.	Indian instruments (e.g. Dhol, Tabla, Sitar) & Pop Instruments	Drum machines. Synths. Scratching.

Pop & Rock Music

- ***Pop** - Commercial music which appeals to lots of people
- ***Rock** - Generally 'more aggressive' but also includes rock-ballads.
- ***Instruments** - (See instruments sheet!)

Intro	The beginning. Sets the mood & style. Usually just instruments.
Verse	Tells the story. Lyrics change each time but tune stays the same.
Chorus	The main message of the song. Same words and tune each time.
Bridge	A section that links two other sections.
Middle 8	A contrasting section of new ideas – usually 8 bars long.
Outro	Extra bit of music to finish off the song.

- ***Riff** - A repeated pattern. Can help make the song memorable.

*Examples:

The Who Jimmy Hendrix The Beatles
Pink Floyd The Sex Pistols The Clash
AC/DC David Bowie Queen

Film Music

***Genre** - Action, Adventure, Horror, Romance, War, Sci-fi, Western...

*Composers - John Williams, James Horner, Jerry Goldsmith

*Think, how do the **musical features represent what is happening on-screen?** e.g.

Car Chase: Fast tempo, loud dynamics, sudden changes in melody direction...

WWII Film: Military instruments, fanfare, monophonic to represent isolation...

Large Theme Park Scene: Big Orchestra, Loud Dynamics, Fast/exciting rhythms...

Horror Scene: Dissonant chords and use of repeated pattern to build tension...

***Leitmotif** - A short musical idea linked to a specific character / thing



Musical Theatre

*A theatrical story told through music, singing, acting and dance

*Types: Jukebox, Film-to-stage, Sung-through (no speaking), Disney...

*Composers - Andrew Lloyd Webber, Leonard Bernstein, Stephen Sondheim...

***Overture** - The music played before the musical begins, usually featuring the musical's main themes.

***Solo** - Song for one character ***Duet** - Song for two characters

***Chorus** - Song for usually the whole 'company' to sing

***Recitative** - A song which does not have a memorable tune (more speech-like), often used to fill in the story if the show is all sung.



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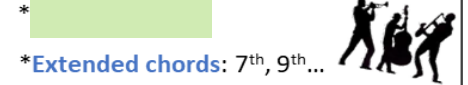
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- ***Slow** []

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***Riff** - []

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Year 10 Music: Areas of Study

Ternary

Section A	Section B	Section A
The initial ideas are introduced. This section usually ends with a perfect cadence in the tonic key.	A contrasting section that is sometimes known as an episode.	Either an exact repeat or slightly altered version of the first section.

Variation

Theme	Variation 1	Variation 2	Variation 3
This could be in a certain structure- perhaps binary or ternary.	Some ways in which the theme could be transformed are: • Decoration and embellishment • A change of instrumentation, temp, key, harmony, metre or rhythm • Developing the theme using a variety of devices such as imitation, inversion, sequence, diminution or augmentation • Presentation the theme at a different pitch • Developing harmonies and rhythms with a tune • Introducing additional or new melodies • Varying the style		

Binary

Section A	Section B
Starts in the tonic key but modulates to a related key at the end of the section. This section is usually unfinished when played on its own.	Starts in the same key as the end of section A but the music works it way back to the tonic. It is usually longer than the A section but balances the piece.

Baroque

Simple melodies, ornaments, terraced dynamics, energetic and relentless rhythmic movement, major/minor, keys mainly string instruments with some woodwind, use of the harpsichord, basso continuo.

Bach, Handel, Vivaldi, Corelli, Lully,

Classical

Balanced, regular phrases, functional harmony, wider range of dynamics, focus on piano, elegant and graceful 'symmetrical' style, frequent changes of mood and timbre, alberti bass.

Haydn, Mozart, Beethoven

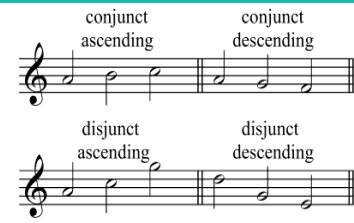
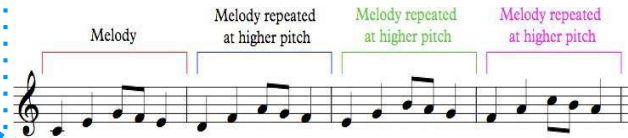
Romantic

Melodies were lyrical, distinct thematic ideas, leitmotifs, expressive, richer harmonies with chromaticism, more variation in dynamics, rhythms and creative freedom, programmatic music, larger brass section.

Schubert, Mendelssohn, Chopin, Schumann, Wagner

Sequence

Repetition of a melodic or harmonic phrase in the same part, but at a higher or lower pitch



Imitation

A contrapuntal device, when a melodic idea is copied in another part



Arpeggio/Broken Chord

When the notes of a chord are played separately in succession



Motif

A short, musical idea, melodic or rhythmic

Repetition

When sounds, sequences, melodies or rhythms are repeated



Ornamentation

Decorate or embellish the music. Popular examples of ornaments are trill, mordents and turns.

Forms

Devices

AoS1

Musical Forms & Devices

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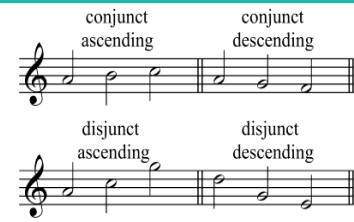
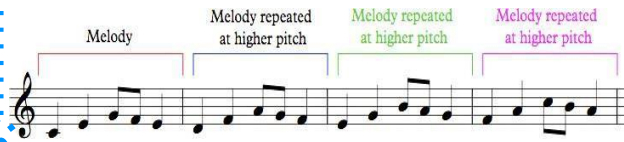
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Sequence

Repetition of a melodic or harmonic phrase in the same part, but at a _____ or _____ pitch



Imitation

A contrapuntal device, when a melodic idea is _____ in another part



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A _____, musical idea, melodic or rhythmic

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Baroque

Simple _____, ornaments, terraced dynamics, energetic and relentless rhythmic movement, major/minor, keys mainly string instruments with some woodwind, use of the _____, basso continuo.

Bach, Handel, Vivaldi, Corelli, Lully,

Classical

Balanced, _____ phrases, functional harmony, wider range of dynamics, focus on piano, elegant and graceful 'symmetrical' style, frequent changes of mood and timbre, alberti bass.

Haydn, _____, Beethoven

Romantic

Melodies were _____, distinct thematic ideas, leitmotifs, expressive, richer harmonies with chromaticism, more variation in dynamics, rhythms and creative freedom, programmatic music, larger brass section.

Schubert, _____, Chopin, Schumann, Wagner

Year 10 Music: Areas of Study

Baroque

Basso Continuo

Double bass and harpsichord providing harmony



Classical

String Quartet

2 Violina, a viola & cello. 4 movements.

Romantic

String Quartets with a piano. Experimentation with different combinations of instruments to improve tone quality and overall sound.



A small group of classical musicians.

Sonority
Individual tone colour or tone quality. The tone colour of different combinations of instruments can result in very different effects. It is its relative loudness and 'feel' compared with other sounds.

Jazz & Blues

12-bar blues

Head arrangement



Classic Blues band

Key features in most jazz bands are: the instruments, use of improvisation, the pentatonic scale, head arrangement, melodic riffs, blues notes, use of the blues scale, call and response and jazz virtuoso with solo sections.

Musicals use various vocal ensembles which

are known as the chorus. This features multiple vocal parts like **Soprano, Alto, Tenor and Bass.**



Modern Jazz band

There are various instrumental ensembles that accompany the singers onstage.



Large-scale musicals can use a full orchestra of musicians, but smaller shows may only use a small rock band.



AoS2

Music for Ensemble

Chamber Ensemble

Musical Theatre

Texture

Monophonic

Single melodic line or parts together in unison

Homophonic

One melody heard with an accompaniment of chords

Polyphonic

A number of melodies heard at one, like imitation and counterpoint

Ensemble

A group of performers, usually between 2 and 8. Examples include: basso continuo, string quartet, jazz and blues trios, a rhythm section and vocal ensembles (duets, trios, backing vocals).

Year 10 Music: Areas of Study

In Jazz & Blues, the drummer keeps a steady _____. The bass player lays down a '_____' and supports the improvisation sections. The keyboard player comps and improvises the chords whilst the other instruments improvise virtuosic solos.

Baroque

Basso Continuo
Double bass and _____ providing harmony



Classical

String Quartet
2 Violina, a viola & cello. 4 movements.

Romantic

String Quartets with a piano.
Experimentation with different combinations of _____ to improve tone quality and overall sound.



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Homophonic

Polyphonic

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Year 10 Music: Areas of Study



Tempo

Allegro – fast/lively
 Andante – walking pace
 Adagio – slowly
 Accelerando – gradually getting faster
 Ritardando – gradually getting slower
 Rubato – not sticking to time, free

Use of dynamics
 Different timbres
 Vary textures
 Tonality

Harmony

Diatonic – chords that relate to specific keys.

Chromatic – chords that are not in the key.

Dissonant – chords that clash causing tension and conflict.

Melody

Balance between steps and leaps

Balanced phrases

Climactic Point

A strong sense of key

Use of repetition

Duple Time: Two beats in each bar	Triple Time: Three beats in each bar	Quadruple Time: Four beats in each bar
2 4	3 4	4 4

Simple Time

The main beat is a crochet beat

Duple Time: Two beats in each bar	Triple Time: Three beats in each bar	Quadruple Time: Four beats in each bar
6 8	9 8	12 8

Compound Time

Silent movies were accompanied by pianists or small orchestras in the theatres. This was normally music written specifically for the film, existing classical music or popular music of the time. Sound with pictures was developed in 1927 with the film 'The Jazz Singer'.

Elements

Devices

AoS3

Film Music

Origins

Function

To create atmosphere; to underscore the dialogue; for scene changes or montages; to set the era, time or period; to correspond with the visuals (mickey-mousing); to arouse a collective emotion from the audience; to build tension and suspense.

Music for Film

Diegetic: music contained within the action e.g. a club singer performing on stage

Non-Diegetic: the background music supporting the on-screen action. This is not heard by the on-screen actors but the audience.

Leitmotif

A short musical theme or idea linked with a character, object, place or idea.



Thematic Transformation

- Add or subtract from the idea
- Change the instrumentation
- Change the pitch, dynamics, tempo or note-values
- Use inversion, augmentation or diminution
- Alter some of the musical characteristics
- Vary the texture
- Change the key



Minimalism

Small cells of music gradually evolving to create a hypnotic effect.



Pedal notes

A harmonic device where the same note is sustained or repeated.



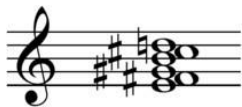
Ostinato

Melodic, rhythmic or harmonic patterns



Cluster chords

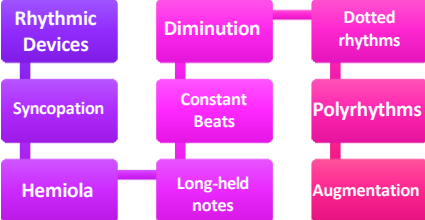
Clashing notes together to build suspense.



Layering

Building up musical ideas to fill out the texture

Year 10 Music: Areas of Study



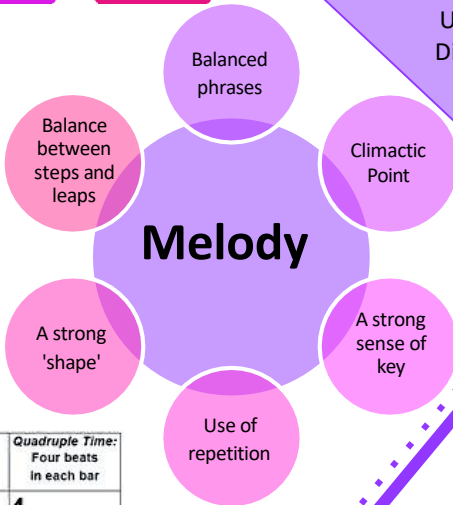
Tempo

Allegro – _____
 Andante – _____
 Adagio – _____
 Accelerando – _____
 Ritardando – _____
 Rubato – _____

Harmony

_____ – chords that relate to specific keys.
 _____ – chords that are not in the key.
 _____ – chords that clash causing tension and conflict.

Melody



Duple Time: Two beats in each bar	Triple Time: Three beats in each bar	Quadruple Time: Four beats in each bar
2 4	3 4	4 4

Simple Time

The main beat is a _____

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Use of dynamics
 Different timbres
 Vary textures
 Tonality

Elements

Devices

AoS3 Film Music

Origins

Function

To create _____; to underscore the dialogue; for scene changes or montages; to set the era, time or period; to correspond with the visuals (mickey-mousing); to arouse a collective emotion from the audience; to build _____ and _____.

Music for Film

_____ : music contained within the action e.g. a club singer performing on stage
 _____ : the background music supporting the on-screen action. This is not heard by the on-screen actors but the audience.

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A short musical theme or idea linked with a _____, _____, place or idea.



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A harmonic device where the same note is _____ or _____.

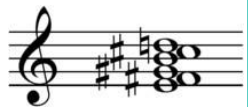


Melodic, rhythmic or harmonic patterns



Cluster chords

Clashing notes together to build suspense.



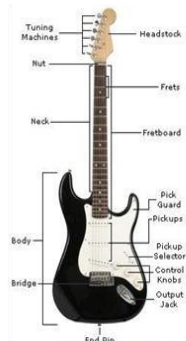
Layering

Building up musical ideas to fill out the texture

Year 10 Music: Areas of Study

Pop

Commercial genre which has mass audience appeal.



Electric Guitar

Supports the rhythm by strumming the chords

Rock & Pop



Drum kit

A collection of different sized drums and cymbals. Drummers keep the beat and add fills to add interest.

Structure

Most rock & pop structures are in verse- chorus form or 32-bar song form.

Melody

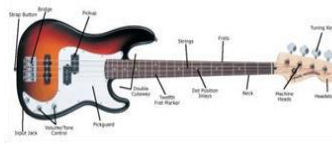
Hooks – catchy & memorable
Repetition and symmetry

Harmony

Most chords are in **root position**.
There is **parallel movement** towards the tonic. The chords stick to the key using mainly (I, ii, IV, V, vi and sometimes vii°).



Rock
Harsher and more serious form of popular music.



Bass Guitar

Strings are plucked or 'slapped'. Bass holds the low notes in a bass line.

Digital Electronic Rock

A genre of rock music that relies on electronic and digital instruments: synths, moogs and drum machines. These genres are: House, Techno, Trance, Dubstep, Indietronica. The reproduction of acoustic sounds can also be edited: remixing, panning, delay, reverb, phasing and looping.

Fusion

Fusion is what happens when two or more different musical styles or genres are blended. Ray Charles combined musical elements of gospel and jazz-influenced blues. The Pogues combines Celtic music with punk by playing with traditional Irish instruments. Afro Celt Sound System combine African, Celtic and Dance Music through instrumentation and elements.

Bhangra

Bhangra emerged in the UK as a type of fusion which features music from the Punjab region of India combined with other popular styles.



Tempo

Fast/moderate, lively, upbeat.

Melody

Quite repetitive, simple, limited in range, uses embellishments to decorate, often dips at the end of phrases, uses microtonal intervals. Ideas are sung or played. Shouted phrases of 'Hoi!'

Chaal

The chaal rhythm is played by the dhol in a kind of swing rhythm.

Structure

Traditional verse-chorus

Rhythm

Chaal rhythm, syncopation, 4 beats in a bar.

Technology

Uses drum machines, synths, samples, mixing and scratching.

Lyrics

Punjabi language, often mixed with English covering social subjects.



AoS4

Popular Music

Year 10 Music: Areas of Study

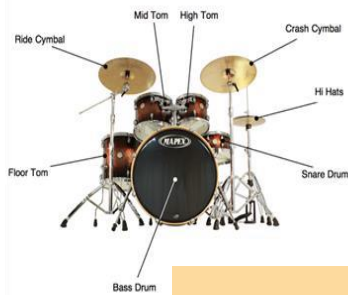
Pop

Commercial genre which has mass audience appeal.



Supports the rhythm by strumming the chords

Rock & Pop



A collection of different sized drums and cymbals. Drummers keep the beat and add fills to add interest.

Structure

Most rock & pop structures are in verse- chorus form or 32-bar song form.

Melody

Hooks – catchy & memorable
Repetition and symmetry

Harmony

Most chords are in **root position**.
There is **parallel movement** towards the tonic. The chords stick to the key using mainly (I, ii, IV, V, vi and sometimes vii°).



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Strings are plucked or 'slapped'. Bass holds the low notes in a bass line.

Rock

Bhangra emerged in the UK as a type of fusion which features music from the Punjab region of India combined with other popular styles.

Bhangra

Traditional Punjab music used the folk instruments of the country, with the main emphasis on percussion and string instruments.



Fast/moderate, lively, upbeat.

The chaal rhythm is played by the dhol in a kind of swing

rhythm.

Quite repetitive, simple, limited in range, uses embellishments to decorate, often dips at the end of phrases, uses microtonal intervals. Ideas are sung or played. Shouted phrases of 'Hoi!'

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Uses drum machines, synths, samples, mixing and scratching.

Punjabi language, often mixed with English covering social subjects.



AoS4

Popular Music

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Year 10 Music: Areas of Study

1738-39

The Baroque period

- Complex melodic lines with ornamentation
- Terraced dynamics
- Polyphonic texture
- Harpsichord and strings
- Basso Continuo

Instrumentation

Instrumentation: (Transverse)
Flute String Orchestra
Harpsichord (Basso Continuo).

Tonality

Section A begins in **B minor** and ends in **F# minor**
Section B: the opposite, beginning in **F# minor** and ending in **B minor**.

Dynamics

Mostly **forte**
Use of **terraced dynamics**



Melody

The movement is based on two short musical **ideas** (X and Y).

The flute part has a two-octave pitch **range**.

The movement includes **ornaments** and **compositional devices** typical of the Baroque era:

Trills: Bars 8¹, 10¹, 15², 27², 30¹ and 32¹

Appoggiaturas: Bars 33¹ and 40¹

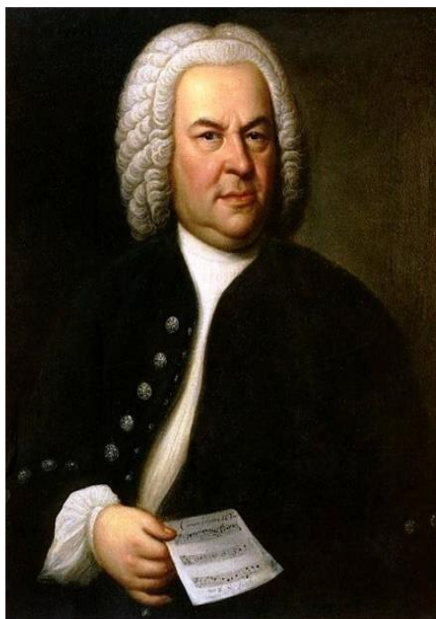
Sequences: 6²– 10¹ and bars 28²– 32¹.

Badinerie BACH

Rhythm

Simple ostinato rhythms, forming the basis of the two short musical ideas (X and Y)
Consist almost totally of **quavers** and **semi-quavers**.

The time signature is 2/4 throughout



Tempo
Allegro

Texture

Homophonic (**melody and accompaniment**).
Flute and the cello provide the main musical material

1st violin participates occasionally
2nd violin and viola provide harmony with less busy musical lines.

Structure

Binary form (AB),
with each section repeated once (AABB)

Section A	Bars 0 ² – 16 ¹	16 bars
Section B	Bars 16 ² – 40 ¹	24 bars

Harmony

Diatonic throughout.

Section A **modulates** from the **tonic** to the **dominant minor** and Section B does the opposite.

Imperfect and **perfect cadences** are clearly presented throughout.

Chords frequently occur in **inversion** with occasional use of **V7** in third inversion.

A **Neapolitan sixth chord** is used in bar 35.

Suspensions also occur in bars 8¹, 10¹ and 32¹.

Year 10 Music: Areas of Study

1738-39

The Baroque period

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- Terraced dynamics
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Instrumentation

Instrumentation: (Transverse)
Flute String Orchestra
Harpsichord (Basso Continuo).

Tonality

Section A begins in **B minor** and ends in [redacted]
Section B: the opposite, beginning in **F# minor** and ending in **B minor**.

Dynamics

Mostly [redacted]
Use of **terraced dynamics**



Melody

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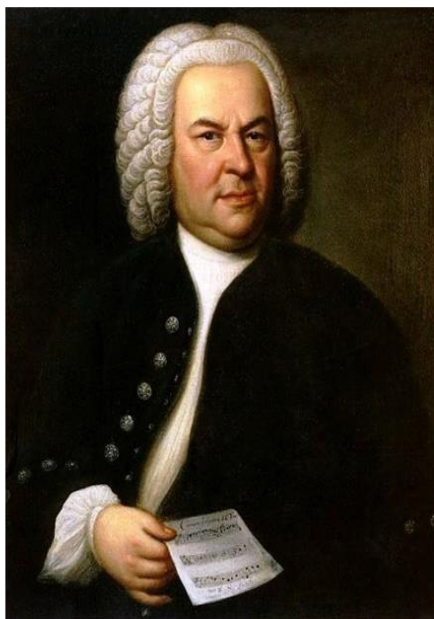
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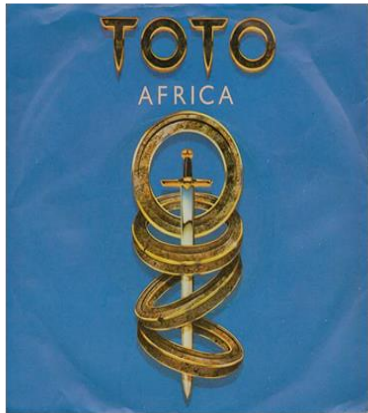
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A [redacted] **sixth chord** is used in bar 35.

Suspensions also occur in bars 8¹, 10¹ and 32¹.

1981
Toto IV
David Paich & Jess Porcaro

Africa
TOTO



Instrumentation

Rock Band: drum kit (keeps the groove) with additional percussion, lead guitar (plays solos and chords), bass guitar (holds the bassline), synthesizers (emphasizes the chords and leads the solo instrumental section), lead singer (sings the lyrics and melody). And male backing vocals (harmonies).

Texture

Homophonic: melody and accompaniment

Melody

Mostly conjunct (moving in step) and includes occasional use of the pentatonic scale. The pitch range of the vocal line is just less than two octaves on the printed score, but it is wider on the recording with the vocal improvisations towards the end of the song.

Tempo

Moderately fast

Dynamics

Mainly mezzo forte, choruses are forte

Harmony

The harmony is **diatonic**, the chords used are based on the key of the piece. Power chords and inversions.

Rhythm

Ostinato rhythms, consisting almost totally of quavers, with constant use of syncopation. The time signature is 2/2 (split common time) throughout.

Intro	Verse 1/2	Chorus 1/2	Link	Instrumental	Chorus 3	Outro
Bars 1-4	Bars 5-39 Bars 14-39	Bars 40-57	58-65	66-82	Bars 40-92	Bars 93-96
B major	B major	A major	B major	B major	A major	B major
Syncopated chordal riff A running into ostinato riff B based on E pentatonic scale.	Mostly syllabic, syncopated rhythms that are conjunct. Final chord is sustained for drum fill.	Vocal texture builds on each line, mostly syllabic with melisma on the final melody.	Same as intro but only repeated once instead of three times.	Chords based on the verse but with instrumental melody based on riff B.	New e. guitar riff, lyrics are repeated with solo vocal improvisation	Same as intro, texture gradually decreases as the music repeats to fade out.

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Toto IV

& Jess Porcaro

Africa
TOTO

Texture

melody and accompaniment

Melody

Mostly (moving in step) and includes occasional use of the pentatonic scale. The pitch range of the vocal line is just less than two octaves on the printed score, but it is wider on the recording with the vocal improvisations towards the end of the song.

Tempo

Moderately fast

Dynamics

Mainly forte, choruses are forte

Instrumentation

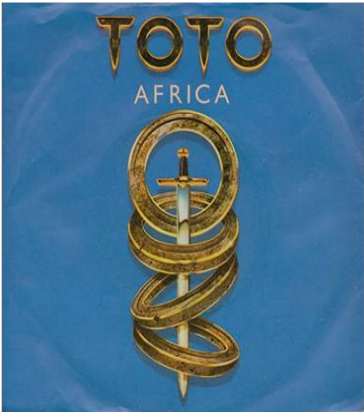
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Year 10 Music: Areas of Study

Direction Rising Falling



Repetition Doing the same thing again, without any changes.



Contrast Doing something completely different.



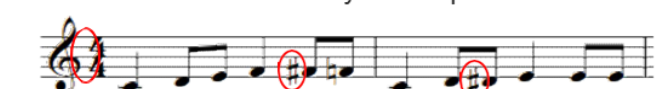
Imitation Doing the same thing again, with some changes (similar).



Ostinato A short repeated idea.



Chromatic The melody uses notes that aren't in the scale / key of the piece.



MELODY

High or low.



Big or Small.



Interval The distance between two notes



Conjunct (Moving In Step)

Type of movement



Disjunct (Moving In Leaps)



Sequence Doing the same shape idea but at a different pitch.

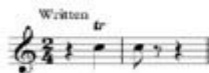


Triadic The tune is based on notes from the chords / triads.



Ornaments Trills

Mordents



Scale The series of notes in a key that are used to make the melody



Year 10 Music: Areas of Study

Rising **Falling**

Doing the same thing again, without any changes.

Doing something completely different.

Doing the same thing again, with some changes (similar).

A short repeated idea.

The melody uses notes that aren't in the scale / key of the piece.

MELODY

High or low. **Range**

Big or Small.

The distance between two notes

Trills **Mordents**

Written *tr* Played *tr*

Written *tr* Performed *tr*

The series of notes in a key that are used to make the melody

I 1.Tonic II 2.Supertonic III 3.Mediant IIII 4.Subdominant V 5.Dominant VI 6.Submediant VII 7.Leading Note

Type of movement

Doing the same shape idea but at a different pitch.

The tune is based on notes from the chords / triads.

Year 10 Music:

Not Dynamics...

Articulation is **the way** the performer plays / sings the note, not how loud they do it. That would be Dynamics instead.

ARTICULATION

(How the notes are played)

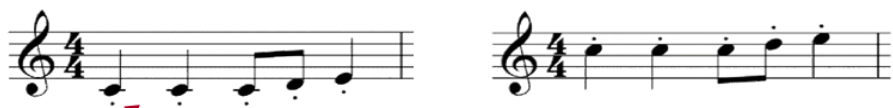
More Than One...

You can write more than one type of articulation for the same note. For example:



Staccato

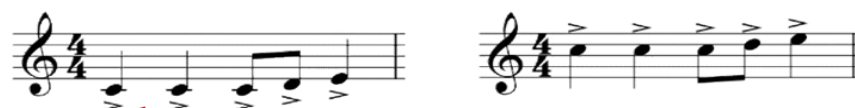
Staccato means short and detached /seperated. **You will likely hear a gap between each note.*



Shown by writing a **dot** just above/below the head of the note.

Accented

Give extra emphasis or force to the marked notes.



Shown by writing an **accent** above/below the head of the note.

Legato

To play the music smoothly, without breaks between notes.

Slurred

Playing the notes in a legato style, without breaks between notes.



Shown with a **slur** on the score.

How? Some examples:

String Instruments - Play the notes without changing the direction of the bow.



**Don't change direction until you've finished the slurred notes*



Brass & Wind Instruments - Only tongue the first note, not the others.

Glissando

**You can glissando upwards or downwards*

A slide between two notes.

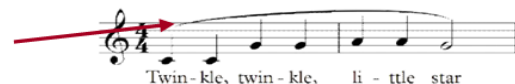
Marked with a **glissando** on the score.



Some Associated Markings On Vocal Music...

Phrase markings

Slurs drawn onto the score to show singers what to sing in one breath.



Syllabic

Where the music is written with one note per syllable.



Melismatic

Where the music is written with more than one note per syllable.



**A slur is used to show the notes on one syllable*

Year 10 Music:

ARTICULATION

(How the notes are played)

More Than One...

You can write more than one type of articulation for the same note. For example:



Articulation is **the way** the performer plays / sings the note, not how loud they do it. That would be Dynamics instead.

Staccato means short and detached /seperated. **You will likely hear a gap between each note.*



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Give extra emphasis or force to the marked notes.



Shown by writing an **accent** above/below the head of the note.

To play the music smoothly, without breaks between notes.

Playing the notes in a legato style, without breaks between notes.



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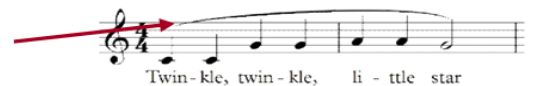
Marked with a **glissando** on the score.



**You can glissando upwards or downwards*

Some Associated Markings On Vocal Music...

Slurs drawn onto the score to show singers what to sing in one breath.



Where the music is written with one note per syllable.



Where the music is written with more than one note per syllable.



**A slur is used to show the notes on one syllable*

Year 10 Music:

Describing What You Hear

Comment on any changes - don't sum up the whole example with one word (unless it doesn't change!)

The music starts... then... the music ends...

On The Score

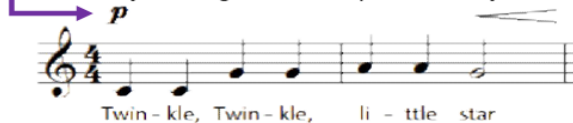
Dynamics are marked underneath the music, to show the instrument how loudly it should play:



If it is a piano, the dynamics usually go in-between the two staves:



For singers, dynamics usually go above the staff, so that they don't get mixed up with the lyrics:



DYNAMICS

(The volume of the music)

Writing Dynamics

Dynamics can create contrast in music.

Dynamics can add expression to the music.

Dynamics can allow the listener to hear the most important lines in the music.

Marking	Italian Term	Meaning
pp	Pianissimo	Very Quiet
P	Piano	Quiet
mp	Mezzo Piano	Moderately Quiet
mf	Mezzo Forte	Moderately Loud
f	Forte	Loud
ff	Fortissimo	Very Loud
	Crescendo	Getting Louder
	Diminuendo	Getting Quieter
sfz	Sforzando	Sudden Accent

Shh



Change gradually

Baroque Period:

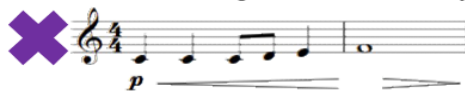
Dynamics were rarely used (no crescendos and diminuendos). Use of Terraced Dynamics.

Classical Period: Some dynamics, to add contrast.

Romantic Period: Lots of crescendos & diminuendos and a large range of dynamics to add expression.

Writing Your Own Dynamics

If using crescendos and diminuendos, make sure you say how loud/quiet you want the music to get. This will clearly show what you want.



Year 10 Music:

Describing What You Hear

Comment on any changes - don't sum up the whole example with one word (unless it doesn't change!)

The music starts... then... the music ends...

On The Score

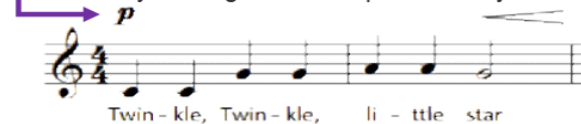
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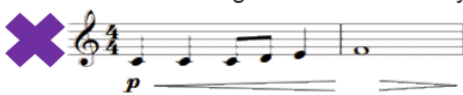
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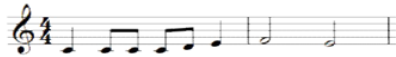
If using crescendos and diminuendos, make sure you say how loud/quiet you want the music to get. This will clearly show what you want.



Year 10 Music:

Monophonic

Music with only one part (one note at a time).



*You can have as many players or singers as you want on the same part so long as it is the only part. No chords!

TEXTURE

Antiphonal

Two groups of musicians play/respond to each other from two different performing positions.



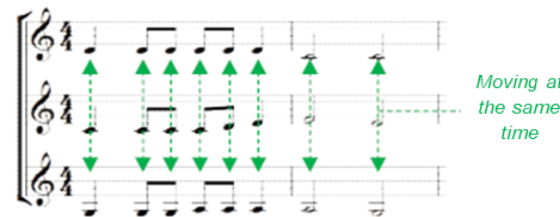
Melody & Accompaniment

A melody (tune) plus some accompanying chords or ideas.



Homophonic

All parts move in chords at the same time.



*Homo-phonics = same-sound... they have the same rhythm

Polyphonic

Several (2 or more) independent lines of music.



*Poly-phonics = many-sounds... several (two or more) different tunes.

Call And Response

One idea played/sung and then another performer(s) responding.



Octaves

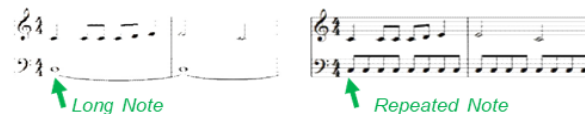
When parts move together, an octave apart.



*Same note name but different pitch.

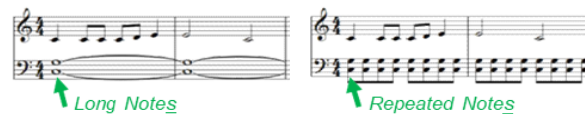
Pedal

A long or repeated note – usually in the bass.



Drone

Long or repeated notes – usually a 5th apart.



What Is The Instrument's Role

Melody – The tune.

Accompaniment – The parts supporting the tune.

Counter melody – A second melody that fits with the main tune.

Bass Line – The lowest sounding part.

Alberti Bass

Accompaniment found mainly in the left hand part of piano music.

Don't play all three notes of the triad together; break them up into four equal notes. Usually lowest, highest, middle, highest.



Why doesn't Mr Edwards like playing an Alberti Bass? It gives him the EBGBs.

Basso Continuo

The part given to instruments in The Baroque Period that played the bass line and chords, accompanying the melody, using **figured bass**.

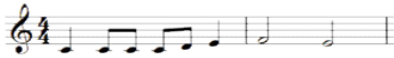


*Harpsichord, bass viol, organ, lute...

Year 10 Music:

TEXTURE

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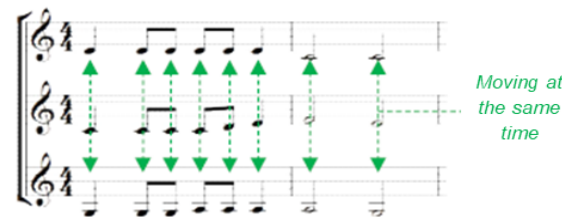
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– The tune.

– The parts supporting the tune.

– A second melody that fits with the main tune.

– The lowest sounding part.

The part given to instruments in The Baroque Period that played the bass line and chords, accompanying the melody, using **figured bass**.



*Harpisichord, bass viol, organ, lute...

Year 10 Music:

Structure – The order that things happen in.

First... then... this is followed by... at the end.

STRUCTURE

Song Form

Intro Verse Chorus Middle 8 Bridge Outro

Binary Form - Music in two parts

Section A and Section B.



Section B contrasts Section A in some way. Usually both sections are repeated.

Rondo Form – The opening section keeps returning, with contrasting sections in between.

Section A, Section B, Section A, Section C, Section A.

A – First section / idea



B – Contrasting section / idea



A – First section / idea



C – New contrasting section / idea



A – First section / idea



* The contrasting sections are called 'episodes'.

Ternary Form - Music in three parts

Section A, Section B, Section A.



The 2nd Section A can be an exact repeat of the 1st Section A, or a slightly altered version.

Strophic Form - Same music repeated each section.

Section A, Section A, Section A.



All verses have the same music.

e.g. Hymns, Folk Songs...

Minuet & Trio – Dance founded in 17th-18th Century Europe. In Triple time and moderato. Both are in binary form. Trio is like a second Minuet but contrasting in some way.

Minuet		Trio		Minuet	
Section A (Repeated)	Section B (Repeated)	Section A (Repeated)	Section B (Repeated)	Section A (No Repeat)	Section B (No Repeat)
In tonic key. Ends with key change.	In related key. Ends with change back to tonic key.	More contrast – new key or change of instruments. Ends with key change.	In related key. Ends with key change back to starting key of trio.	Keys are same as first time playing Minuet.	

Variation Form – A theme / section is then followed by other sections (variations), changing and developing the first theme / section in different and imaginative ways.

Theme	Variation 1	Variation 2	Variation 3
The original idea / section	There are many ways you can transform the theme: Change the instrumentation, tempo, key, harmony, metre, rhythm... Use imitation, inversion, sequence, diminution, augmentation... Developing harmonies without the tune... Introducing new tunes... Varying the style...		

Year 10 Music:

Form – The order that things happen in.
First... then... this is followed by... at the end.

Form – Music in two parts
 Section A and Section B.



Section B contrasts Section A in some way. Usually both sections are repeated.

Form – The opening section keeps returning, with contrasting sections in between.

Section A, Section B, Section A, Section C, Section A.



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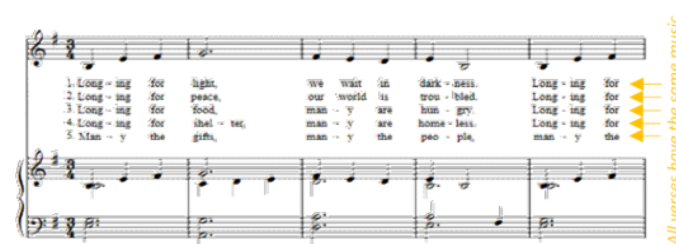
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 Intro Verse Chorus Middle 8 Bridge Outro

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Key Signature

The sharps or flats at the start of a piece of music, showing what key the music is in.

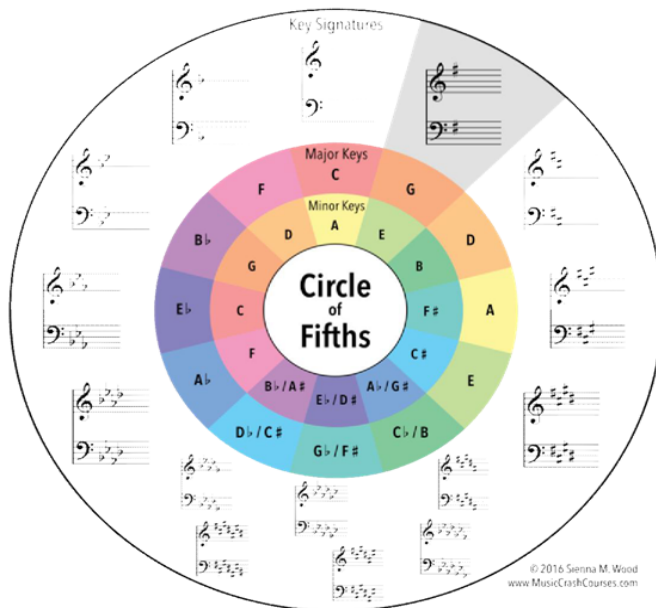
HARMONY & TONALITY

(The chords and keys used in the music)

Modulation

Musical word for key change. Most common changes: to **Dominant** or **relative Major/Minor**.

Major and Minor Key Signatures



*When you write music in a minor key you also need to raise the 7th note (leading note) up one small step - e.g. A minor uses G[#]s, not Gs.

Identifying The Tonality...

- Tonal** - In a major or Minor Key
- Atonal** - There is no sense of key
- Modal** - Uses 'old-fashioned' scales called modes
- Pentatonic** - The music only uses 5 notes

Chords

- Triad** - A chord with three notes (See below)
- Power Chord** - Only playing the Root and Fifth of a triad (used in Rock music)
- Dissonance** - Clashing notes played together
- Consonance** - Notes that fit / sound nice together
- Primary Chords** - The three most commonly used chords used in music: I, IV, V
- Secondary Chords** - The other chords: II, III, VI, VII
- Chord Sequence** - The order the chords in a piece of music follow (containing cadences at the ends of phrases)

Cadences

The last two chords in a phrase. Only sounds 'complete' if ends on chord I.

Sounds Complete		
Perfect Cadence	V Dominant	I Tonic
Plagal Cadence	IV Subdominant	I Tonic
Sounds Incomplete		
Imperfect Cadence	I Tonic	V Dominant
Interrupted Cadence	V Dominant	*Not chord I Minor Chord

*Sometimes the final cadence of a piece in a minor key ends with a major chord instead of the expected minor chord. This effect is known as a **Tierce de Picardie**.

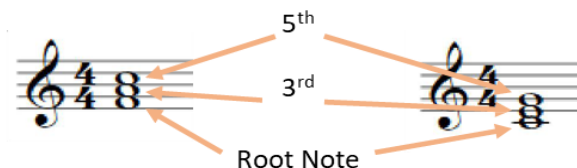
Diatonic

Music only uses notes that are found in the key signature of the piece

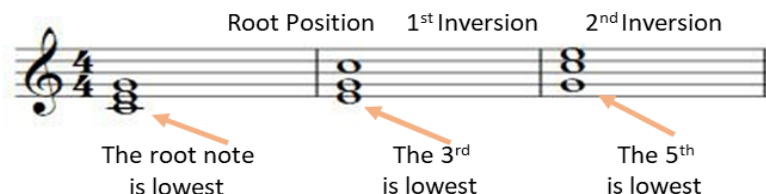
Chromatic

Music uses the notes found in the key of the piece but also adds in extra accidentals (# / b)

Triad A Chord with three notes:



Inversions Changing which note of a chord is the lowest sounding:



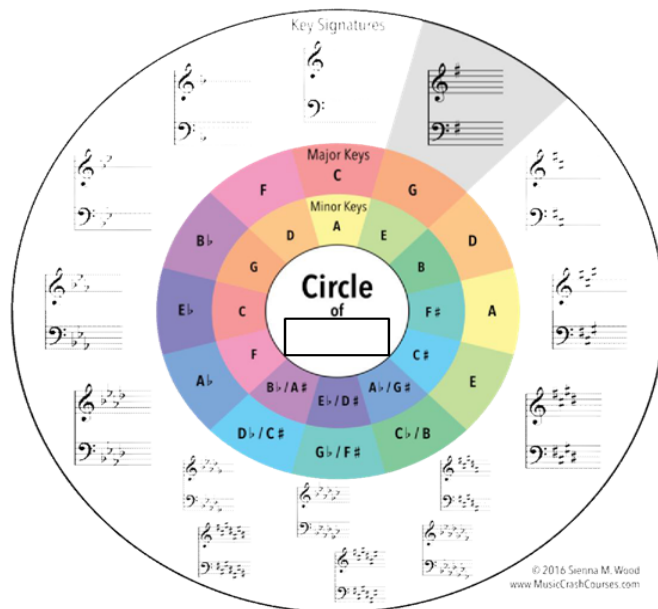
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- Uses 'old-fashioned' scales called modes
- The music only uses 5 notes

 - A chord with three notes (See below)

 – Only playing the Root and Fifth of a triad (used in Rock music)

- Clashing notes played together

Notes that fit / sound nice together

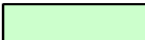
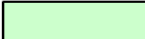
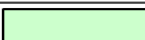
QUESTION - The three most commonly used chords used in music: I, IV, V

- The other chords: II, III, VI, VII

Chord Progression The order the chords in a piece of music follow (containing cadences at the ends of phrases)

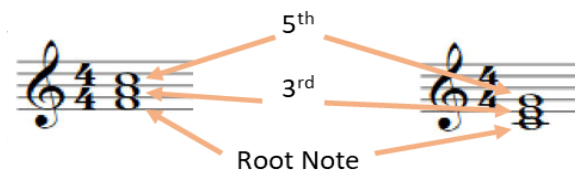
The last two chords in a phrase.
Only sounds 'complete' if ends on chord I.

Sounds Complete

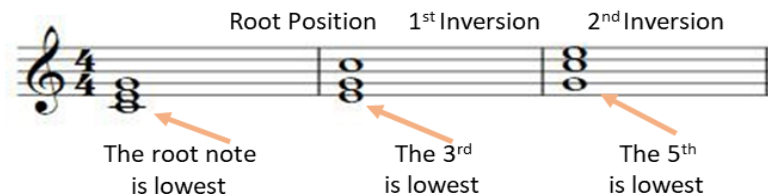
 Cadence	V <i>Dominant</i>	I <i>Tonic</i>
 Cadence	IV <i>Subdominant</i>	I <i>Tonic</i>
Sounds Incomplete		
 Cadence	<i>*Can be other</i> I <i>Tonic</i>	V <i>Dominant</i>
 Cadence	V <i>Dominant</i>	<i>*Not chord I</i> <i>Minor Chord</i>

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Year 10 Music:

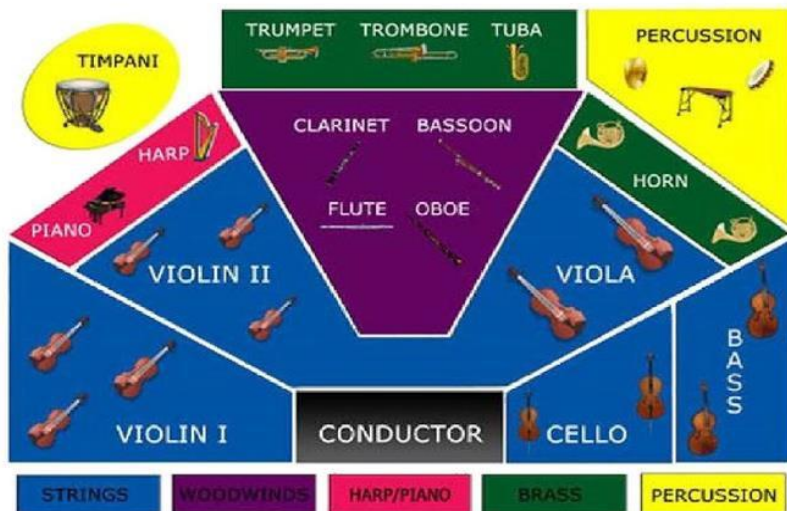
Instrumental Ensembles

- Solo - 1 performer
- Duet - 2 performers
- Trio - 3 performers
- Quartet - 4 performers

INSTRUMENTATION

(The instruments you can hear and what they are doing – sometimes called 'orchestration')

Instruments Of The Orchestra



Musical Periods

Baroque Period (1600-1750)

- *Small orchestra - Mostly Strings + Basso Continuo
- *Basso Continuo - The part given to instruments playing the bass line & chords accompanying the melody. (Harp, lute, organ, etc.)

Classical Period (1750-1810)

- *Basso Continuo gradually stopped being used
- *Pianoforte introduced & Clarinet invented
- *String Quartet very popular (Violin x2, Viola, Cello)

Romantic Period (1810-1910)

- *Piano music very popular (Instrument further improved)
- *Large Orchestra
- *Tone / construction of instruments improved

Rock & Pop Instruments



*Lead instrument = Often an electric guitar ('lead guitar').
Plays melody or harmonises with the singer & often has a solo.

Types Of Voices

Soprano	(Female)	HIGH
Treble	(Boy)	...
Alto	(Female)	...
Countertenor	(Male Alto)	...
Tenor	(Male)	...
Bass	(Male)	LOW

*SATB Choir: Soprano, Alto, Tenor & Bass

Jazz Instruments

Rhythm Section

Backup / Accompaniment for the melody. Sometimes still improvise and get solos.

- *The Groove: Double Bass
- *The Beat: Drum Kit
- *The Chords: Piano (Sometimes Guitar)

Front Line Instruments

Instruments that play melodies / improvise. Stand in front of the rhythm section.

- *Trombone
- *Saxophone



Instrumental Techniques - The way you play / use an instrument.

String Instruments

- *Pizzicato (Pizz.) - Plucking the strings
- *Arco / Bowed - Using a bow on the strings
- *Double Stopping - Playing two strings at the same time

String & Brass Instruments

- *Con Sordino (Con Sord.) - Playing with a mute (changes the sound produced)
- *Tremolo - Quickly repeating the same note ('trembling')

Voices

- *Falsetto - A technique used by men to sing at a much higher pitch

Voices, Brass, Woodwind and String Instruments

- *Vibrato - Make the note waver up and down to add expression

Other Vocal Terms

Acapella

Singing without any accompanying instruments.

Chorus

Music written for a choir.

Backing Vocals

Sing harmonies / support the lead singer.

Year 10 Music:

Instrumental Ensembles

- 1 performer
- 2 performers
- 3 performers
- 4 performers

INSTRUMENTATION

(The instruments you can hear and what they are doing – sometimes called 'orchestration')

Instruments Of The Orchestra



Rock & Pop Instruments

Electric Guitar

Singers



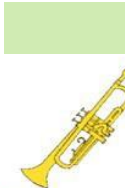
Bass Guitar



Keyboard / Synthesizer



Drum Kit



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Types Of Voices

- (Female) HIGH
- (Boy)
- (Female)
- (Male Alto)
- (Male)
- (Male) LOW

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Some Examples

Other Vocal Terms

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Chorus

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Backing Vocals

Year 10 Music:

Reading Rhythms

You need to be able to read all the different note lengths if you want to pass GCSE music. If you keep forgetting, look over them again!

RHYTHM & TEMPO

(The Patterns Of Note Lengths & Silences)

(The Speed Of The Music)

Working Out The Tempo

Tap your toe to the pulse of the music and think, 'how fast am I tapping'.

**If you tap your whole foot you might put off other pupils.*

Durations

Beats	Note	Rest	Name
4			Semibreve
2			Minim
1			Crotchet
1/2			Quaver
1/4			Semiquaver

Dotted Notes

If a dot is added to a note (or rest), add on half of what the note is already worth:



Pause

If this symbol is written, stop the pulse of the music & pause on the note.



Tempo Markings

Marking	Meaning
Allegro / Vivace	Fast or Lively
Allegretto	Quite Fast (Not as fast as Allegro)
Moderato / Andante	Moderate / A Walking Pace
Adagio / Lento	Slowly
Accelerando	Gradually Speed Up
Ritardando / Rallentando rit. rall.	Gradually Slow Down
= 60	*60bpm 60 beats per minute (One every second)
= 120	*120bpm 120 beats per minute (Two every second)

Syncopation

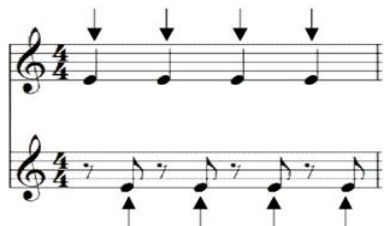
Playing off (or in-between) the beat / pulse

On The Beat

Playing on one of the beats that you would 'tap your toe' to

Off-beat

Playing in-between the beats you would 'tap your toe' to



Triplet

Three notes played evenly in the space of two notes:



Swung Rhythms

**A main feature of Jazz*

Written rhythms are played differently to give a swing feeling.



Rubato

**Translates as 'to steal time'*

Not sticking strictly to the tempo - to add feeling (Romantic Period!)

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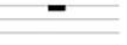
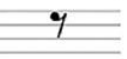
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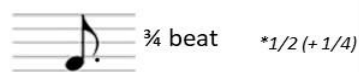
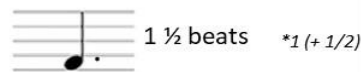
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Tempo Markings

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Moderato / Andante	
Adagio / Lento	

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	Gradually Slow Down

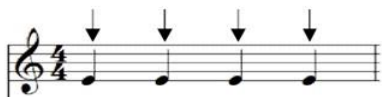
 = 60	^{*60bpm} 60 beats per minute (One every second)
 = 120	^{*120bpm} 120 beats per minute (Two every second)

Syncopation

Playing off (or in-between) the beat / pulse

On The Beat

Playing on one of the beats that you would 'tap your toe' to



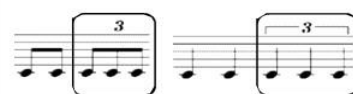
Off-beat

Playing in-between the beats you would 'tap your toe' to



Triplet

Three notes played evenly in the space of two notes:



Swung Rhythms

**A main feature of Jazz*

Written rhythms are played differently to give a swing feeling.



Rubato

**Translates as 'to steal time'*

Not sticking strictly to the tempo - to add feeling (Romanic Period!)

Year 10 Music:

Common Time

4/4 is also known as common time. Instead of 4/4 you can write:



TIME SIGNATURE / METRE

(How the pulse is grouped into bars)

Cut Common Time

2/4 is also known as cut-common time. Instead of 2/4 you can write:



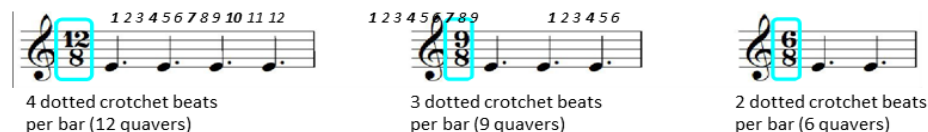
Time Signatures

Written at the start of the music (and anywhere it changes) to show how many beats there are per bar, plus what type of beat

Simple Time Signatures *Each beat can be divided into two equal halves



Compound Time Signatures *Each beat is dotted and can't be divided into two equal halves

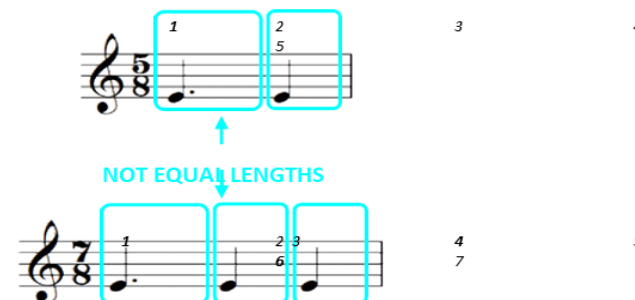


Listening Examples Go to Youtube to hear some examples of different metres:

2/4	Slaidburn March	*A march is usually in 2/4 (Left, Right, Left, Right... = 1, 2, 1, 2...)
3/4	Shostakovich's Waltz No.2	*A waltz is a dance, usually in 3/4
4/4	All That Jazz (from Chicago)	*Chicago is a Musical
5/4	Take Five (By Dave Brubeck)	*Listen out for the jazz style
7/4	The start of Money (By Pink Floyd)	*Listen out for the opening bass riff
6/8	We Are The Champions (By Queen)	*Queen are a famous British Rock Band
12/8	The Way You Make Me Feel (By Michael Jackson)	*Count 1&a 2&a 3&a 4&a

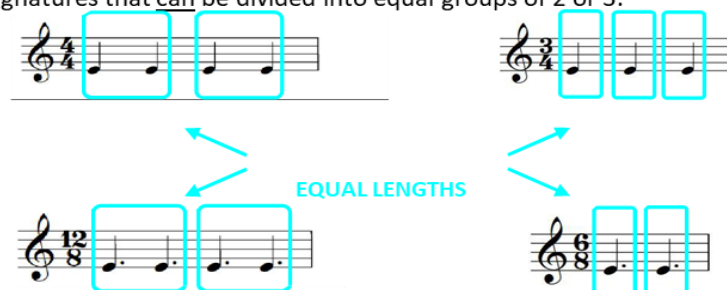
Irregular Time Signatures

Time signatures that can't be divided into equal groups of 2 or 3.



Regular Time Signatures

Time signatures that can be divided into equal groups of 2 or 3.



Writing Your Own Music

You must make sure every bar adds up to the correct number of beats. Changing metre is a good way to create contrast in your work.

Time
4/4 is also known as common time. Instead of 4/4 you can write:



TIME SIGNATURE / METRE

(How the pulse is grouped into bars)

Cut Common Time
2/4 is also known as cut-common time. Instead of 2/4 you can write:



Time Signatures

Written at the start of the music (and anywhere it changes) to show how many beats there are per bar, plus what type of beat

Time Signatures *Each beat can be divided into two equal halves



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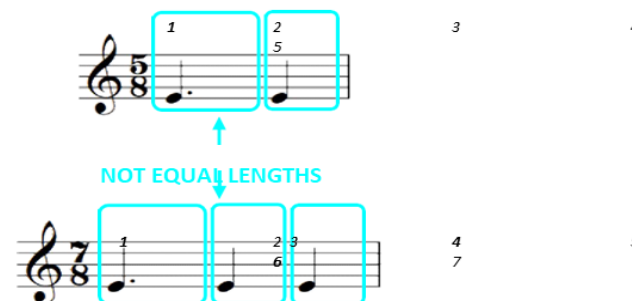


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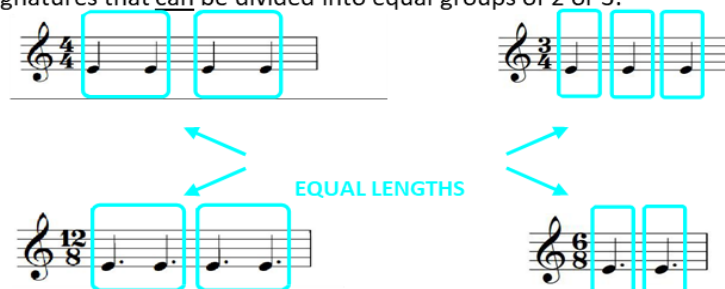
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Year 10 Music:

Western Classical Music

Baroque Period 1600-1750	Classical Period 1750-1810	Romantic Period 1810-1910
Bach, Vivaldi, Handel	Mozart, Haydn, Beethoven	Chopin, Schubert, Wagner
Ornaments	Balanced, regular phrases	Use of the leitmotif
Terraced Dynamics	Alberti Bass	Music more expressive
Major & Minor Keys	Wider range of dynamics	Huge range of dynamics
Harpischord	Pianoforte introduced	Use of chromatic chords
Small Orchestra (Mostly Strings)	Wider range of mood	Unusual Key Changes
Basso Continuo	Orchestra got bigger	Large Orchestra
	Elegant/Graceful style	Use of Rubato

STYLE

Minimalism

- *Started in 20th Century
- *Composers - Philip Glass...
- *Based upon **Repetition**
- *Uses small motifs that **gradually change**
- ***Slow changing harmony**

Jazz & Blues

*The 12 Bar Blues

I	I	I	I
IV	IV	I	I
V	IV	I	I/V

- ***Improvisation** - Performers make up music in the performance
- ***Rhythm Section** - Drums, Double Bass, Piano/Guitar
- ***Front Line Instruments** - Saxophones, Trumpets, Trombones
- ***Walking Bass** - The bass plays a steady rhythm & walks up/down the notes of the chord or scale.

*Swung rhythms

*Extended chords: 7th, 9th...

*Blue notes – 'bending' some notes by a semitone



Fusion -Mixing more than one style of music together

For example...

Bhangra - Came to UK in 1980s. Mixing traditional Indian music & pop music.

Tempo	Structure	Melody
Lively and Upbeat	Verse / Chorus structure	Quite repetitive. Simple. Decorated.
Rhythm	Instruments	Technology
Syncopation. 4 beats per bar.	Indian instruments (e.g. Dhol, Tabla, Sitar) & Pop Instruments	Drum machines. Synths. Scratching.

Pop & Rock Music

- ***Pop** - Commercial music which appeals to lots of people
- ***Rock** - Generally 'more aggressive' but also includes rock-ballads.
- ***Instruments** - (See instruments sheet!)

Intro	The beginning. Sets the mood & style. Usually just instruments.
Verse	Tells the story. Lyrics change each time but tune stays the same.
Chorus	The main message of the song. Same words and tune each time.
Bridge	A section that links two other sections.
Middle 8	A contrasting section of new ideas – usually 8 bars long.
Outro	Extra bit of music to finish off the song.

- ***Riff** - A repeated pattern. Can help make the song memorable.

*Examples:

The Who Jimmy Hendrix The Beatles
Pink Floyd The Sex Pistols The Clash
AC/DC David Bowie Queen

Film Music

***Genre** - Action, Adventure, Horror, Romance, War, Sci-fi, Western...

*Composers - John Williams, James Horner, Jerry Goldsmith

*Think, how do the **musical features represent what is happening on-screen?** e.g.

Car Chase: Fast tempo, loud dynamics, sudden changes in melody direction...

WWII Film: Military instruments, fanfare, monophonic to represent isolation...

Large Theme Park Scene: Big Orchestra, Loud Dynamics, Fast/exciting rhythms...

Horror Scene: Dissonant chords and use of repeated pattern to build tension...

***Leitmotif** - A short musical idea linked to a specific character / thing



Musical Theatre

*A theatrical story told through music, singing, acting and dance

*Types: Jukebox, Film-to-stage, Sung-through (no speaking), Disney...

*Composers - Andrew Lloyd Webber, Leonard Bernstein, Stephen Sondheim...

***Overture** - The music played before the musical begins, usually featuring the musical's main themes.

***Solo** - Song for one character ***Duet** - Song for two characters

***Chorus** - Song for usually the whole 'company' to sing

***Recitative** - A song which does not have a memorable tune (more speech-like), often used to fill in the story if the show is all sung.



Year 10 Music:

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* **Leitmotif** - []



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- * **Overture** - []
- * **Solo** - Song for one character * **Duet** - Song for two characters
- * **Chorus** - Song for usually the whole 'company' to sing
- * **Recitative** - A song which does not have a memorable tune (more speech-like), often used to fill in the story if the show is all sung.



Year 10 Music Technology:



Term	Definition
Audio Interface	A device capable of converting audio signal from a microphone or guitar/ synth into a digital signal so it can enter a computer. Audio interfaces usually connect to a computer via a USB cable
Bouncing	Exporting a track to a format like an mp3 or wav file
Channel	Refers to one track of audio on a computer, part of the mixer or mixing desk
Chorus	- The chorus effect is an audio modulation effect that splits the original signal in the audio circuit into multiple signals, resulting in a chorus delayed signal that comes right after and alters the dry signal's pitch. It thickens the tone and creates an epic feeling. - Although it is best-used washing sounds and making supporting layers of your mix ambient, the chorus effect can have many purposes. One of the most obvious examples is how it can make your guitar feel like a "chorus" of guitars.
Clipping	Another word for 'distorting' or 'peaking'
Compression	- Compression, along with reverb, is probably one of the most used effects in a DAW. Simply put, compression makes the loudest bits quieter, and the quietest bits louder (it 'compresses' the extremes). - When done correctly, this usually produces a more pleasant listening experience
DAW	- DAW is an acronym that means 'digital audio workstation'. It is sometimes spelt out when spoken (dee, ay, double you), or pronounced like 'door' (which sounds silly and can be confusing, especially if you are explaining something and you are standing by an actual door). - It can refer to any software used for sequencing and creating music; whether recorded or synthesised. GarageBand, Logic, Soundtrap and Cubase are examples of popular DAWs
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Distortion	In theory, the distortion effect is any type of alteration in the audio waveform. In music, the most common type of distortion is produced by adding a lot of gain to your audio . By doing so you create a fuzzy or gritty feeling to your electrical instrument.
Effects	- Many DAW packages have a number of built-in effects, including reverb, echo, delay. These and others can be used creatively in composition. - For learners composing using electronic or traditional instruments, these effects could be created with devices such as loop stations.

Year 10 Music Technology:



Term	Definition
What is audio interface ?	
Define bouncing	
What is a channel ?	
Define chorus	
What is clipping ?	
What is compression ?	
What is DAW ?	
Define delay	
Explain distortion	
What are effects ?	

Year 10 Music Technology:



Term	Definition
Envelope (ADSR)	- In music technology, envelope describes the 'shape' of a sound. For example, hitting a piano key will create an immediate, loud 'start' of the sound (attack), followed by a reduction in volume (decay). - This quieter sound will continue for a time (sustain), before fading to nothing (release). The acronym ADSR is used to describe these four stages in a sound's envelope. As well as describing sounds, playing with envelope parameters is a vital part of synthesised sound
EQ	EQ, or equalisation, is a versatile tool that is used to make your music sound better (in a nutshell). With EQ, you can boost (turn up) or cut (turn down) various frequencies in a track or project.
Equalization	- Equalization is a producing technique that controls volume in the audio frequency spectrum. We can equalize or completely filter (volume 0) by dropping/raising the volume of certain frequencies or even a frequency range. - Equalization is key to having a good mix, it creates space for instruments to breathe and be heard without interference from other instruments. It enhances the stereo experience because each sound is in its place, if well equalized of course.
FX	Short for 'effects'. Common effects include reverb, chorus, distortion, and flange - processes or devices applied to a signal to alter its sound
Gain	How loud a signal is before it goes through an amplifier. Can be another word for volume, and another word for guitar distortion
Latency	- Latency is the delay between inputting a signal (such as playing a key on a controller), the processing of the signal in the DAW, and the playback of that signal. - Poor latency can cause problems, like out of time recordings, or audio effects that don't work as intended. The most common solution is to buy more expensive equipment
Live and recorded sound	Live sound is being performed in the moment, whereas recorded sound has already been performed and stored for playback at a later point. A music technology composition could include a combination of live and recorded sound, with or without effects being added to either or both.
Loop	A repeated section of a song, often using imported samples
Mastering	The final stages after mixing has been complete, the icing on the cake which makes tracks on a wider body of work sound uniform, and often also makes them louder
MIDI	Another acronym (musical instrument digital interface), this is pronounced as a word (like the French for 'midday'). MIDI is complicated, so just remember a 'MIDI track' is one that can be easily edited in a DAW.

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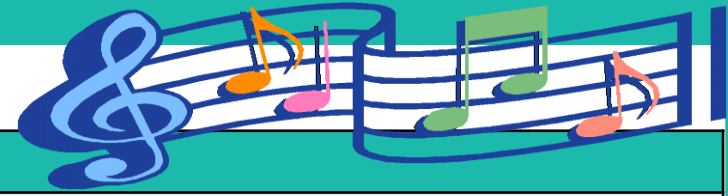
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Year 10 Music Technology:



Term	Definition
MIDI Controller	- A controller is a device which sends 'musical' information to the computer, often using MIDI. MIDI controllers often look like a (musical) keyboard, and send information such as frequency (pitch), duration, or velocity (dynamics), to a DAW. - They can be used to 'trigger' (start) certain events in live performance, such as beginning/ending a loop, or adding/changing an effect. They don't always look like keyboards; you may see drum pads, a guitar controller, or even a wind controller (that you blow into) used to send data to your computer
Mixing	Applying processing and levelling audio recordings with the goal of making a balanced and listenable end product
Mixing Desk	A unit which can control the routing and processing of audio signals. Some may have the functionality to connect to a computer, but not always. They are used commonly for live music or larger recording studio set ups. This is represented in GarageBand by each track's controls (Volume, Pan etc)
Panning	Panning is the act of distributing the audio signal in a stereo field with panning controls. It can make sounds appear to come from different places in the left-right audio spectrum, therefore creating more space and width in the mix.
Plug-In	A piece of software either included in a DAW or that can be loaded within a DAW and used for audio/MIDI processing. These can be used for effects such as EQ, Compression & Reverb
Quantising/ Quantisation	- When working with MIDI tracks, quantising can be used to 'make music sound in time'. It does this by 'snapping' each note to a predetermined point in the bar, depending on the settings. For example, 1/4 quantising will snap each note to the nearest quarter note, or crotchet, or 4th of a bar (it makes sense, trust me). - A general rule of thumb is to quantise to the shortest note value in a phrase (so if semi-quavers are used, try 1/16 quantisation). Be aware that this doesn't fix really out of time music, and it can remove some of the organic, musical qualities of a track
Recordings	During the process of composing and producing a music technology composition a number of recordings will probably be made. These may be "dry" so that effects can be added later or may incorporate effects from the point of recording. At the end of the process, they should be mixed down into a final stereo recording.
Reverb	- Reverb is a complex echo resulting from multiple echoes reflecting on a hard surface many times, and with different amplitudes. These reverberations happen around us daily, but we're too busy to pay attention. If you take time to notice next time you're in an indoor pool or a church, that feeling of multiple echoes vibrating back to you when you speak is reverb. The sound waves bounce so fast that they lay on top of each other, creating what we call reverberations. - This audio effect is a great way to create a feeling of spaciousness in your mix and can help unify all the elements of your song. It generally works great on vocals and guitars.

Year 10 Music Technology:



Term	Definition
What is a MIDI controller ?	
Define mixing	
What is a mixing desk ?	
Define panning	
What is a plug-in ?	
Define quantising/quantisation	
Define Recordings	
What is a reverb ?	

Year 10 Music Technology:

Term	Definition
Sample	- A sample is any pre-existing piece of audio that can be imported into a project and used as part of a track. The recorded 'loops' that come with GarageBand are samples, as is the hook from <i>Bootylicious</i> by Destiny's Child (it originally comes from the track <i>Edge of Seventeen</i> by Stevie Nicks). - Finding, editing, and reusing samples is a key part of much electronically produced music
Sampling	- Taking a short audio recording and manipulating this to include it in a new composition. - For example, the tempo and/or pitch of the sample could be changed, it could be reversed, it could be cut into smaller samples and rearranged, or short sections could be repeated to give a stuttering effect.
Scores and lead sheets	The way in which music is written down, either as a traditional score (such as may be produced in software like Sibelius) or in a lead sheet which communicates the information in a different way, possibly graphically, using chord symbols, software screenshots with annotation, or in tab notation used by guitarists and drummers
Software instrument	A virtual instrument (usually opened within a DAW), which interprets MIDI data and outputs it as the sound of an instrument
Tempo	The speed of music. In BPM (beats per minute), 60 BPM for example is one beat a second
Velocity	The force at which a note is played



Year 10 Music Technology:

Term	Definition
What is a sample ?	
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What are scores and lead sheets ?	
Define software instrument	
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Define velocity	



Year 10 Music Technology:



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MIDI	Another acronym (musical instrument digital interface), this is pronounced as a word (like the French for 'midday'). MIDI is complicated, so just remember a 'MIDI track' is one that can be easily edited in a DAW.

Year 10 Music Technology:



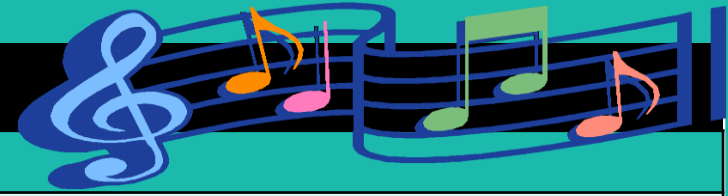
Term	Definition
Envelope (ADSR)	- In music technology, envelope describes the '_____' of a sound. For example, hitting a piano key will create an immediate, loud 'start' of the sound (attack), followed by a reduction in volume (decay). - This quieter sound will continue for a time (sustain), before fading to nothing (release). The acronym ADSR is used to describe these four stages in a sound's envelope. As well as describing sounds, playing with envelope parameters is a vital part of _____ sound
EQ	EQ, or _____, is a versatile tool that is used to make your music sound better (in a nutshell). With EQ, you can _____ (turn up) or cut (turn down) various frequencies in a track or project.
Equalization	- Equalization is a producing technique that controls volume in the audio frequency spectrum. We can equalize or completely _____ (volume 0) by dropping/raising the volume of certain frequencies or even a frequency range. - Equalization is key to having a good mix, it creates space for instruments to breathe and be heard without interference from other instruments. It enhances the stereo experience because each sound is in its place, if well equalized of course.
FX	Short for '_____' . Common effects include reverb, chorus, distortion, and flange - processes or devices applied to a signal to alter its sound
Gain	How _____ a signal is before it goes through an amplifier. Can be another word for volume, and another word for guitar distortion
Latency	- Latency is the _____ between _____ a signal (such as playing a key on a controller), the processing of the signal in the DAW, and the playback of that signal. - Poor latency can cause problems, like out of time recordings, or audio effects that don't work as intended. The most common solution is to buy more expensive equipment
Live and recorded sound	Live sound is being performed in the _____, whereas recorded sound has already been performed and stored for playback at a later point. A music technology composition could include a combination of live and recorded sound, with or without effects being added to either or both.
Loop	A _____ section of a song, often using imported _____
Mastering	The final stages after mixing has been complete, the icing on the cake which makes tracks on a wider body of work sound uniform, and often also makes them louder
MIDI	Another acronym (_____), this is pronounced as a word (like the French for 'midday'). MIDI is complicated, so just remember a 'MIDI track' is one that can be easily edited in a DAW.

Year 10 Music Technology:



Term	Definition
MIDI Controller	- A controller is a device which sends 'musical' information to the computer, often using MIDI. MIDI controllers often look like a (musical) keyboard, and send information such as frequency (pitch), duration, or velocity (dynamics), to a DAW. - They can be used to 'trigger' (start) certain events in live performance, such as beginning/ending a loop, or adding/changing an effect. They don't always look like keyboards; you may see drum pads, a guitar controller, or even a wind controller (that you blow into) used to send data to your computer
Mixing	Applying processing and levelling audio recordings with the goal of making a balanced and listenable end product
Mixing Desk	A unit which can control the routing and processing of audio signals. Some may have the functionality to connect to a computer, but not always. They are used commonly for live music or larger recording studio set ups. This is represented in GarageBand by each track's controls (Volume, Pan etc)
Panning	Panning is the act of distributing the audio signal in a stereo field with panning controls. It can make sounds appear to come from different places in the left-right audio spectrum, therefore creating more space and width in the mix.
Plug-In	A piece of software either included in a DAW or that can be loaded within a DAW and used for audio/MIDI processing. These can be used for effects such as EQ, Compression & Reverb
Quantising/ Quantisation	- When working with MIDI tracks, quantising can be used to 'make music sound in time'. It does this by 'snapping' each note to a predetermined point in the bar, depending on the settings. For example, 1/4 quantising will snap each note to the nearest quarter note, or crotchet, or 4th of a bar (it makes sense, trust me). - A general rule of thumb is to quantise to the shortest note value in a phrase (so if semi-quavers are used, try 1/16 quantisation). Be aware that this doesn't fix really out of time music, and it can remove some of the organic, musical qualities of a track
Recordings	During the process of composing and producing a music technology composition a number of recordings will probably be made. These may be "dry" so that effects can be added later or may incorporate effects from the point of recording. At the end of the process, they should be mixed down into a final stereo recording.
Reverb	- Reverb is a complex echo resulting from multiple echoes reflecting on a hard surface many times, and with different amplitudes. These reverberations happen around us daily, but we're too busy to pay attention. If you take time to notice next time you're in an indoor pool or a church, that feeling of multiple echoes vibrating back to you when you speak is reverb. The sound waves bounce so fast that they lay on top of each other, creating what we call reverberations. - This audio effect is a great way to create a feeling of spaciousness in your mix and can help unify all the elements of your song. It generally works great on vocals and guitars.

Year 10 Music Technology:



Term	Definition
What is a MIDI controller ?	
Define mixing	
What is a mixing desk ?	
Define panning	
What is a plug-in ?	
Define quantising/quantisation	
Define Recordings	
What is a reverb ?	

Year 10 Music Technology:

Term	Definition
Sample	- A sample is any pre-existing piece of audio that can be imported into a project and used as part of a track. The recorded 'loops' that come with GarageBand are samples, as is the hook from <i>Bootylicious</i> by Destiny's Child (it originally comes from the track <i>Edge of Seventeen</i> by Stevie Nicks). - Finding, editing, and reusing samples is a key part of much electronically produced music
Sampling	- Taking a short audio recording and manipulating this to include it in a new composition. - For example, the tempo and/or pitch of the sample could be changed, it could be reversed, it could be cut into smaller samples and rearranged, or short sections could be repeated to give a stuttering effect.
Scores and lead sheets	The way in which music is written down, either as a traditional score (such as may be produced in software like Sibelius) or in a lead sheet which communicates the information in a different way, possibly graphically, using chord symbols, software screenshots with annotation, or in tab notation used by guitarists and drummers
Software instrument	A virtual instrument (usually opened within a DAW), which interprets MIDI data and outputs it as the sound of an instrument
Tempo	The speed of music. In BPM (beats per minute), 60 BPM for example is one beat a second
Velocity	The force at which a note is played



Year 10 Music Technology:

Term	Definition
What is a sample ?	
Define sampling	
What are scores and lead sheets ?	
Define software instrument	
Define tempo	
Define velocity	



PE



Helping every person achieve things they never thought they could.

Year 10 Core PE: Qualities of a Leader

Confidence

A leader must be confident to speak to a group and lead them. They must believe in their own abilities.

Leading your own warm up – including a pulse raiser, dynamic stretches and a skill-based activity

Effective Communication

Talking and listening to teammates

Encouraging teammates

Supporting them instead of criticizing them

Knowledge of the sport and its rules

A leader must know the ins and outs of a sport to have a positive influence on their teammates

Punctuality

Being on time



Year 10 Core PE: What are the qualities of a good leader?



Year 10 Core PE: Officiating and Fair Play

Sportsmanship

Applauding opponents when they do something well. Admitting if a foul is made of if the ball is out of play. Playing fair.

Signal

Use arm signals to give a visual cue of what decision you have made

Etiquette

Polite behaviour in sport. Shaking hands with opponents. Complimenting them if they do something well.

Whistle

You need to blow your whistle to get the attention of the players

Gamesmanship

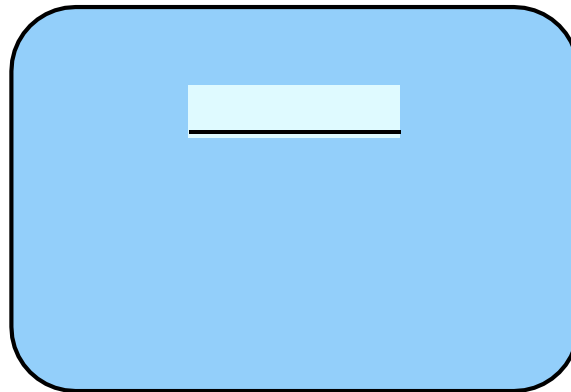
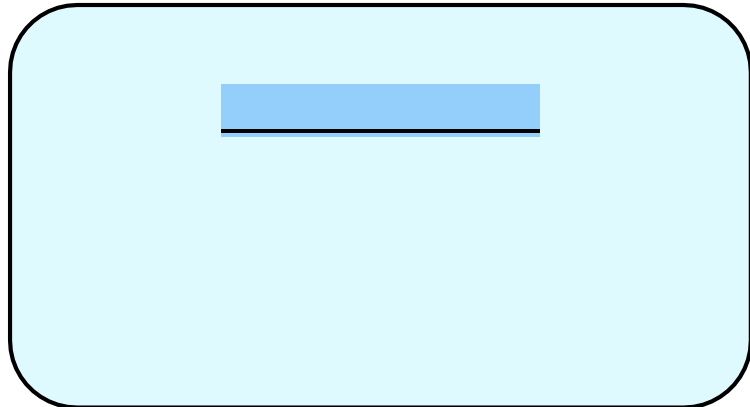
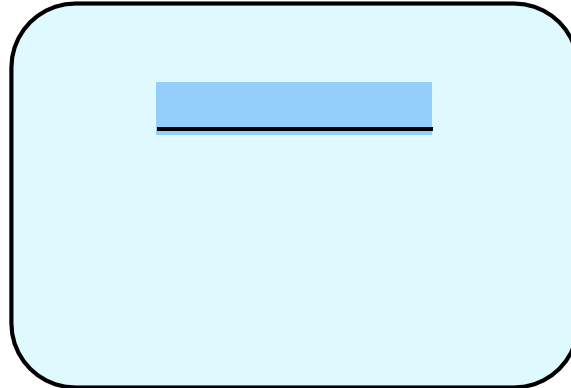
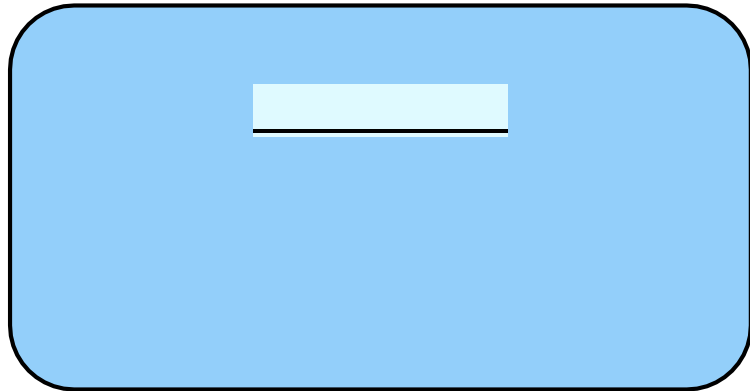
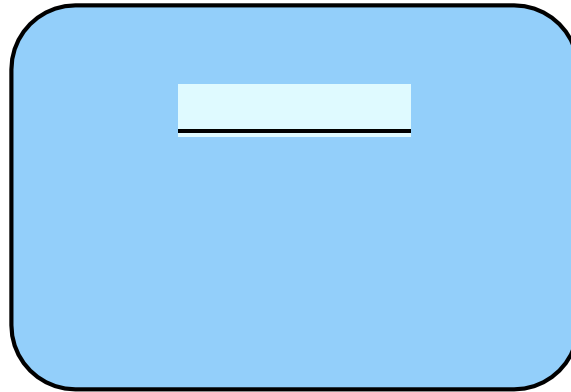
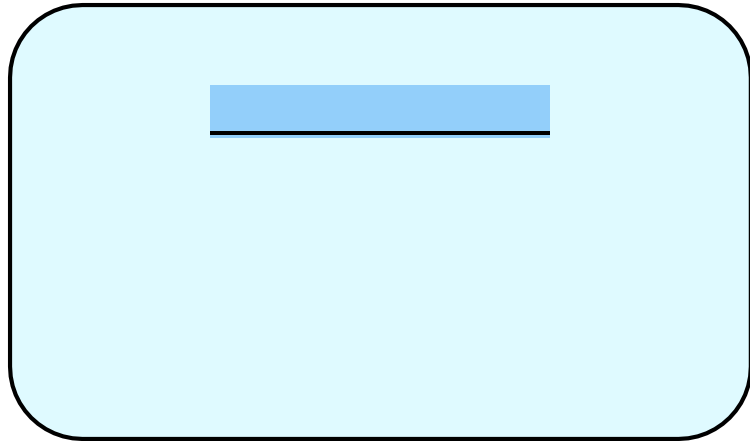
Bending the rules to gain an advantage. Not classed as cheating.

Restart

Know how to restart the game correctly



Year 10 Core PE: What are the components of officiating and fair play?



Year 10 Core PE:

Attacking & Defending Tactics

Zonal Defending

Defending a space rather than a person

Looking for a space

Move away from defenders and into space to receive a pass

Person on person defending

Staying close to a player and 'marking' them by following them wherever they go.

Communicating

- Using names to ask for a pass or to get the attention of the receiver
- Talking to teammates to keep the defence in an organised shape

Triangles

Create angles to pass and receive quickly with no defenders in between

Closing the space

Closing the space between you and the attacker to make it difficult for them

Width

Use width to attack and stretch defences, such as the inverted U.



Year 10 Core PE:

Define the attacking & defending tactics below:

Zonal Defending

Looking for a space

**Person on person
defending**

Communicating

Triangles

Closing the space

Width



Year 10 Core PE: Fitness

Motor Competence

Muscular Strength

The amount of force you can put out or the amount of weight you can lift.

Muscular Endurance

Perform exercises to failure so that you improve your muscular endurance.

Speed

Moving your body fast as possible.

Agility

Changing direction rapidly, whilst maintaining speed and precision.

Flexibility

A joint or series of joints to move through an unrestricted, pain free range of motion.

Balance

Even distribution of weight enabling someone or something to remain upright and steady.

Co-ordination

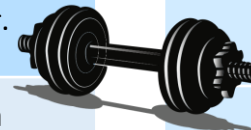
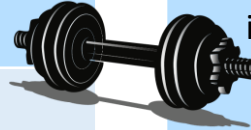
Throw with one hand catch with the other.

Reaction Time

How fast an athlete is able to respond to a stimulus.

Cardiovascular Fitness

To exercise the whole body for long periods



Rules, Strategies and Tactics

- With all of the movements completed to improve muscular strength the correct technique must be used as this would stop any injuries or muscular injuries occurring.
- With all of the movements completed to improve agility and speed the correct technique must be used as this would stop any injuries or muscular injuries occurring.



Healthy Participation

Muscles

Gluteal, hamstrings, quadriceps, gastrocnemius

Fitness components

Aerobic, anaerobic, warm up, cool down, circuit, continuous, fartlek

Year 10 Core PE: Fitness

Motor Competence- define each term below:

Muscular Strength

Muscular Endurance

Speed

Agility

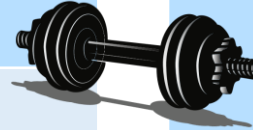
Flexibility

Balance

Co-ordination

Reaction Time

Cardiovascular Fitness



Rules, Strategies and Tactics

Explain the rules and strategies to fitness below:



Healthy Participation

What are the muscles used during fitness workouts?

What are the fitness components?

Year 10 Option PE: The Media



Digital and Social media:

- ☐ Social networking
- ☐ Media sharing sites
- ☐ Live streaming and technology on the move
- ☐ Websites/blogs

Social and digital media

Different source types for example Twitter

Streaming sites

For example, YouTube

Technology on the move

Tablets and phones

Websites and blogs

For example Sky Sports, F1 fanatic, CAUGHTOFFSIDE, the sporting blog

Different forms of broadcast media

Television

Freeview, SMART TV and subscription services

Radio

Specific sport internet streaming services and radio providers

Podcasts

iTunes, Amazon Music; That Peter Crouch Podcast

Print media sources

Newspapers

Broadsheet, tabloids, the Guardian, The Daily Mail

Magazines

Monthly subscriptions, FourFourTwo, Rugby World

Books

History, skill books, Sam Warburton - open side



Year 10 Option PE: The Media



List examples of digital and social media:

- ☐ Social networking
- ☐ Media sharing sites
- ☐ Live streaming and technology on the move
- ☐ Websites/blogs

Different source types for example Twitter

For example, YouTube

Tablets and phones

For example Sky Sports, F1 fanatic, CAUGHTOFFSIDE, the sporting blog

List the different forms of broadcast media:

Freeview, SMART TV and subscription services

Specific sport internet streaming services and radio providers

iTunes, Amazon Music; That Peter Crouch Podcast

What are print media sources?

Broadsheet, tabloids, the Guardian, The Daily Mail

Monthly subscriptions, FourFourTwo, Rugby World

History, skill books, Sam Warburton - open side





What are the **positive** effects of the media?

Participation	Raising the Profile of Sport	Education	Revenue
How the media can help promote sport to increase awareness and improve participation levels: - Inspiring others to participate - Creating and adopting role models Examples include: - Exposure and coverage more likely to inspire others to participate – grass roots increase (netball after Commonwealth gold, cycling after 2012 Olympic success) 'Influencers' through social networks - How this exposure and coverage might remove some barriers to participation	How the media can share positive messages and raise the profile of sports, break down barriers, promote the health and fitness industry - Sports initiatives that seek to increase participation - Promotion of an active, healthy lifestyle Examples may include: - Initiatives – how the media use topical role models and famous people (celebrities) to promote current initiatives - Rise in home health and fitness industry – online, live and on demand fitness classes	How the media can share positive updates and overviews of sports and their developments - Exposure for emerging and minority sports - Continued education of performers and spectators in emerging sports and changes to existing sports Includes: - Examples of emerging/new and minority sports – such as handball, walking football - Increase in media sources – this increases exposure and wider demographic reached so new initiatives are easily promoted - Education/changes: rules, new technologies, new variations to attract more spectators and participants	How the media positively influences the revenue from sport: - Promotional opportunities for business and commercial sport - Sport as a commodity - The Golden Triangle Includes: - Sport using the media to sell itself, the media uses sport to sell newspapers, TV channels, with many sports dependent on media money as source of revenue - Sport changing rules and adapts competitions to attract spectators and media coverage (e.g. 20/20 cricket) - How sport performers promote themselves and their sport using social networks - Sponsors of main events (e.g. Olympics)

Year 10 Option PE: The Media



What are the **positive** effects of the media?

Participation	Raising the Profile of Sport	Education	Revenue
How the media can help promote sport to increase awareness and improve participation levels: - - Examples include: - - - -	How the media can share positive messages and raise the profile of sports, break down barriers, promote the health and fitness industry - - Examples may include: - -	How the media can share positive updates and overviews of sports and their developments - - Includes: - - -	How the media positively influences the revenue from sport: - - - Includes: - - -

Year 10 Option PE: The Media

What are the **negative** effects of the media?

External factors affecting decline in live spectatorship	Ethical appropriateness of sponsors	How the media is assisting a widening wealth divide in sport	Impact of wider global issues on sport/performers and spectators	Media demands affecting sport fixture scheduling
To include: - Effect on clubs and surrounding communities; Pay Per View (PPV), live streaming, social networks, increased technology and multiple devices - Links between gambling online and attendance at live sports events	Examples may include: - Gambling logos: might this be banned? - Alcohol sponsors: American National Football league - Formula1: tobacco being banned since 2005 - Ethical sponsors: fast/junk food, energy drinks - Individual athletes: diet/supplement products	Examples may include: - Premiership football: agents' fees for top transfers, wages, TV rights compared to lower leagues and other sports - Gender divide in earnings - Divide between top sports and 'growing'/minority sports	Examples may include: - Reduction in live spectator sport due to current affairs (e.g. pandemics) - Major competition hosts - travel restrictions or different time zones/climates	Examples may include: - Christmas calendar for Premiership football - Major events/tournaments – international breaks - Major event (World Cup) impact on leagues/participants



Year 10 Option PE: The Media

What are the **negative** effects of the media?

External factors affecting decline in live spectatorship	Ethical appropriateness of sponsors	How the media is assisting a widening wealth divide in sport	Impact of wider global issues on sport/performers and spectators	Media demands affecting sport fixture scheduling
To include: - -	Examples may include: - - - - -	Examples may include: - - -	Examples may include: - -	Examples may include: - - -



Year 10 Option PE: The Media

Negative Impacts On Sport and Sports Performers

Coverage of inappropriate behaviour on-field and off-field

Includes a broad range of media sources – one off or repeated poor behaviour is for all to see up close, replayed, archived forever.

Rejection of sporting heroes

Research examples of current sporting heroes. Examples from 2020 may include:

- Sir Bradley Wiggins
- Danny Cipriani
- Victoria Pendleton

Scrutiny and criticism of participants including officials, performers and leaders

Impact in society:

Aggression seen in football fans, aggression against officials at grass roots.

Increased pressure on athletes to look a certain way and links to mental health

Different body types appropriate to different sports but not understood by the media.

E.g. female strength athletes having a body type which is not usually promoted as the standard ideal of what a woman should look like



Year 10 Option PE: The Media

What are the **negative** impacts on sport and sports performers?

1.

Includes a broad range of media sources – one off or repeated poor behaviour is for all to see up close, replayed, archived forever.

2.

Research examples of current sporting heroes. Examples from 2020 may include:

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- Danny Cipriani
- Victoria Pendleton

3.

Impact in society:

Aggression seen in football fans, aggression against officials at grass roots.

4.

Different body types appropriate to different sports but not understood by the media.

E.g. female strength athletes having a body type which is not usually promoted as the standard ideal of what a woman should look like



Religious Education



Helping every person achieve things they never thought they could.

Year 10 RE: Christianity

Christianity is a **monotheistic** religion, which means that they believe in **One God**. They believe that God has many qualities/attributes.

Qualities	Meaning	Evidence from the Bible
Omnipotent	All-powerful	The creation of the world in Genesis. Miracles that Jesus performed, for example, turning water into wine.
Omni-benevolent	All-loving	Jesus' death - so that humanity could achieve salvation and atonement.
Just	Fair, treat everyone equally.	The Parable of the Sheep and Goats. The Book of Job.

Key Words



- **Salvation** – the idea that Jesus **saved** humanity from **sin** and death through his death and **resurrection**.
- **Sin** – acting against God's will.
- **Original Sin** – Some Christians believe this was the **first** sin, committed by Adam and Eve.
- **Atonement** – Forgiveness, reconciliation, being '**at one**' with God.



Year 10 RE: Christianity

Christianity is a _____ religion, which means that they believe in _____. They believe that God has many qualities/attributes.

Qualities	Meaning	Evidence from the Bible
Omnipotent		
Omni-benevolent		
Just		

Key Words- define below:



- **Salvation** –
- **Sin** –
- **Original Sin** –
- **Atonement** –



Year 10 RE: Christianity



The Trinity is the Christian belief in One God, made up of three persons. The three persons of the Trinity for Christians are **God the Father**, **God the Son (Jesus)** and **God the Holy Spirit**. They are all equally important.

Christians see the three persons of the Trinity as having different characteristics and roles.



God the Father	God the Son	God the Holy Spirit
Sustains and rules everything.	Born of the Virgin Mary.	Part of God that works within the world.
Will judge.	Performed miracles.	Helper and guide.
Continues to care for us like a father.	Rose from the dead on the third day.	Invisible power of God which breathes new life into people.
Creator	Redeemer, saviour	Provides courage and strength.

Why do Christians believe in the Trinity?

1. It is explained in the Creeds, for example, the Apostles' Creed and the Nicene Creed.
2. It is referred to in the Creation Story.
3. It is referred to when Jesus was baptised.

How do Christians express their belief in the Trinity?

1. They recite the creeds.
2. They do the 'sign of the cross' at the beginning and end of prayers.
3. During baptism, water is poured over the head three times.
4. They celebrate Trinity Sunday.

Year 10 RE: Christianity



The Trinity is the Christian belief in One God, made up of three persons. The three persons of the Trinity for Christians are _____, _____ and _____. They are all equally important.

Christians see the three persons of the Trinity as having different characteristics and roles.



God the Father	God the Son	God the Holy Spirit

Why do Christians believe in the Trinity?

- 1. -
- 2. -
- 3. -

How do Christians express their belief in the Trinity?

- 1. -
- 2. -
- 3. -
- 4. -

Key Words

Absolute	Unchanging, eternal
Ascension	Jesus returning to be with God in heaven, 40 days after his resurrection.
Atonement	Forgiveness from God.
Crucifixion	Being nailed to the cross to die.
Divine	God
Eternal	Has always existed and will continue to exist forever.
Holy/sacred	Extremely special
Immanent	Involved in the world.
Incarnation	The idea that Jesus was fully God and fully human.



The Nature of God

Christians believe in **one God**, who is the **creator** and the **sustainer** of all that exists.
They believe God is:
Omnipotent - which means he is almighty and has unlimited power
Omnibenevolent – which means he is all loving, caring and kind.
Just – which means he is a perfect and fair judge.



The Trinity



Christians believe God is three persons in one. This idea is called the **Trinity**.
Each person of the Trinity is fully God but the three persons of the Trinity are not the same.
The **Father** is the creator of all life.
The **Son** is Jesus Christ who is both fully human and fully God.
The **Holy Spirit** is the unseen power at work in the world, especially answering prayers.
‘We believe in One God, Father, Son and Holy Spirit’ (Nicene Creed).

Key Words	
Absolute	
Ascension	
Atonement	
Crucifixion	
Divine	
Eternal	
Holy/sacred	
Immanent	
Incarnation	



The Nature of God

Christians believe in ___ **God**, who is the **creator** and the _____ of all that exists.
They believe God is:
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_____ – which means he is all loving, caring and kind.
_____ – which means he is a perfect and fair judge.



The Trinity



Christians believe God is three _____ in one. This idea is called the **Trinity**.
Each person of the Trinity is _____ God but the three persons of the _____ are not the same.
The **Father** is the _____ of all life.
The _____ is Jesus Christ who is both fully human and fully God.
The **Holy Spirit** is the _____ power at work in the world, especially answering prayers.
'We believe in One ____, Father, Son and Holy Spirit' (Nicene _____).

Year 10 RE:

Key Words

Just	Fair
Omnibenevolent	All loving, caring and kind
Omnipotent	All powerful
Omniscient	All knowing, all seeing
Original Sin	The first sin, committed by Adam and Eve.
Resurrection	Being raised from the dead.
Salvation	Being saved
Sin	Disobeying God.
Transcendent	Beyond this world
Trinity	The three persons of God – Father, Son and Holy Spirit.

Incarnation

Christians believe that God was **incarnated** (born) in human form as Jesus Christ.

Mary became pregnant by the power of the Holy Spirit and gave birth, even though she was a virgin. For Christians, this is proof of Jesus' status as the Son of God.

Christmas is the festival that celebrates the incarnation. 'The word became flesh' (John)

Crucifixion

Jesus travelled to Jerusalem to preach and celebrate the Jewish festival of Passover. While he was praying in the Garden of Gethsemane with his disciples (followers) he was arrested and then put on trial by the Jewish Sanhedrin (court). They accused him of blasphemy – saying he was God. He was later sentenced to death by the Roman Governor, Pontius Pilate.

Jesus was nailed to a cross to die. He said to the thief next to him, '**Today, you will be with me in paradise**' (Luke)

In his last moments Jesus was able to forgive those who were killing him, showing Christians how important forgiveness is. This event is remembered on Good Friday.

'Forgive them father, they know not what they do.' (Luke)

Key Words	

Incarnation

Crucifixion
Jesus travelled to _____ to preach and celebrate the Jewish festival of _____. While he was praying in the Garden of _____ with his disciples (followers) he was arrested and then put on _____ by the Jewish Sanhedrin (court). They accused him of _____ – saying he was God. He was later sentenced to _____ by the Roman Governor, _____ Pilate.

Jesus was nailed to a cross to die. He said to the thief next to him, ‘ _____ ’ (Luke)

In his last moments Jesus was able to _____ those who were killing him, showing Christians how important forgiveness is. This event is remembered on _____ Friday.
‘ _____.’ (Luke)

Year 10 RE:

Ascension - This is when Jesus went up to heaven.

For 40 days after the resurrection, many of Jesus' disciples said they had met him alive in various places around Jerusalem.

The, Jesus ascended into heaven to be with God the Father once again.

'While he was blessing them, he left them and was taken up into heaven.' (Luke)

Why is the belief in the Ascension important to Christians?

- It illustrates God's omnipotence (power). Jesus is now **'at the right hand of the mighty God.'** (Luke)
- It demonstrates that Jesus had done what he needed to do - died to save us from sin - and so it was time to go back to God.
- It shows them that they have an 'advocate' with God – someone who is looking out for them.
- It shows there is a place or all humans with God.

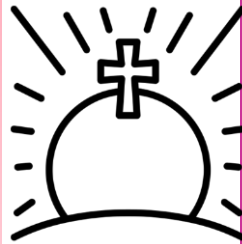
Resurrection

The resurrection is the Christian belief that after Jesus died and was buried, he rose from the dead.

Early on the Sunday morning after his crucifixion, three women visited his tomb expecting to find his body there. They were asked **'Why do you look for the living among the dead? He is not here, he has risen!'** (Luke)

Why is the belief in the Resurrection important to Christians?

- It shows God is omnipotent. He had the power to overcome death.
- Christians believe that if you follow Jesus' teachings and get baptised, they can also overcome death. They can achieve salvation and receive the gift of eternal life with God.
- It makes death less frightening.



Ascension –

Why is the belief in the Ascension important to Christians?

Resurrection

The resurrection is the Christian belief that after Jesus died and was buried, he rose from the dead.

Early on the Sunday morning after his crucifixion, three women visited his tomb expecting to find his body there. They were asked

‘ _____
_____ ’ (Luke)

Why is the belief in the Resurrection important to Christians?



Science

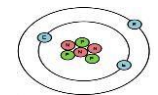
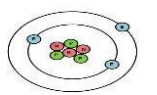


Helping every person achieve things they never thought they could.

Year 10 Science: Atomic Structure

Atom	Same number of protons and electrons
Ion	Unequal number of electrons to protons
Mass number	Number of protons <u>and</u> neutrons
Atomic number	Number of protons

Particle	Charge	Mass(AMU)	Found
Neutron	None	1	In the nucleus
Proton	+	1	
Electron	-	negligible	Orbits the nucleus

Isotope	${}^6_3\text{Li}$		${}^7_3\text{Li}$	
Different forms of an element with the same number of protons but different number of neutrons				

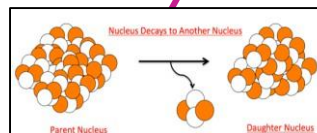
Radius of an atom
 $1 \times 10^{-10}\text{m}$

Electrons gained

Electrons lost

Negative ion

Positive ion



Atom structure

Decay	Range in air	Ionising power	Penetration power
Alpha	Few cm	Very strong	Stopped by paper
Beta	up to 1m	Medium	Stopped by Aluminium
Gamma	Great distances	Weak	Stopped by thick lead

Radioactive decay	Unstable atoms randomly emit radiation to become stable
Detecting	Use Geiger Muller tube
Unit	Becquerel
Ionisation	All radiation ionises

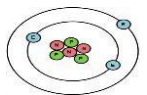
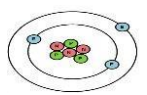
Discovery of the nucleus

Dalton (1803)	Suggested idea of atoms as small spheres that cannot be cut.
Thomson (1904)	Proposed 'plum pudding' model – atoms are a ball of positive charge with negative electrons embedded in it.
Geiger and Marsden (1909)	Directed beam of alpha particles (${}^4_2\text{He}$) at a thin sheet of gold foil. Found some travelled through, some were deflected, some bounced back.
Rutherford (1911)	Used above evidence to suggest alpha particles deflected due to electrostatic interaction between the very small charged nucleus. Proposed mass and positive charge contained in nucleus while electrons found outside the nucleus which cancel the positive charge exactly.
Bohr (1913)	Suggested modern model of atom – electrons in circular orbits around nucleus, electrons can change orbits by emitting or absorbing electromagnetic radiation. His research led to the idea of some particles within the nucleus having positive charge; these were named protons.
Chadwick (1932)	Discovered neutrons in nucleus - enabling other scientists to account for mass of atom.

Year 10 Science: Atomic Structure

Atom	
Ion	
Mass number	
Atomic number	

Particle	Charge	Mass(AMU)	Found
Neutron			
Proton			
Electron			

Isotope	${}^6_3\text{Li}$		${}^7_3\text{Li}$	
Different forms of an element with the same number of protons but different number of neutrons				

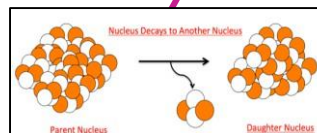
Radius of an atom
 $1 \times 10^{-10}\text{m}$

Electrons gained

Electrons lost

Negative ion

Positive ion



Atom structure

Decay

Range in
air

Ionising
power

Penetration
power

Alpha

Beta

Gamma

Radioactive decay

Detecting

Unit

Ionisation

Discovery of the nucleus

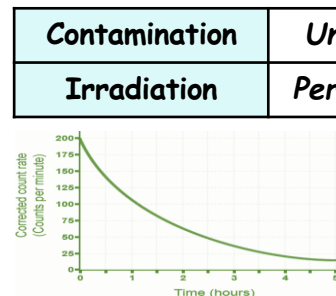
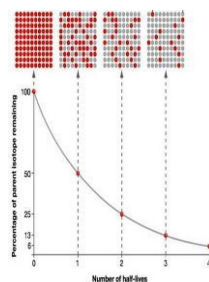
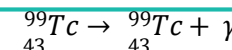
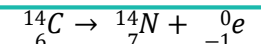
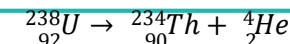
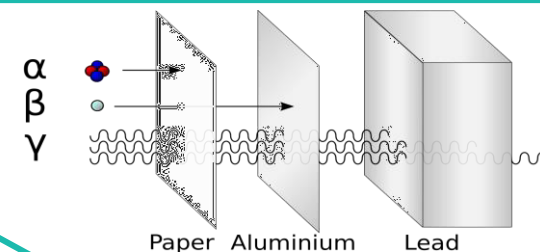
Dalton (1803)	
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Chadwick (1932)	Discovered neutrons in nucleus - enabling other scientists to account for mass of atom.

Year 10 Science: Atomic Structure

Atoms and Nuclear Radiation

Nuclear fission	One large unstable nucleus splits to make two smaller nuclei	Neutron hits U-235 nucleus, nucleus absorbs neutron, splits emitting two or three neutrons and two smaller nuclei. Process also releases energy.	Process repeats, chain reaction formed
			Used in nuclear power stations
Nuclear fusion	Two small nuclei join to make one larger nucleus	Difficult to do on Earth – huge amounts of pressure and temperature needed.	Occurs in stars

Decay	Emitted from nucleus	Changes in mass number and atomic number	
Alpha (α)	Helium nuclei (${}^4_2\text{He}$)	-4	-2
Beta (β)	Electron (${}^0_{-1}\text{e}$)	0	+1
Gamma (γ)	Electromagnetic wave	0	0
Neutron	Neutron	-1	0



Contamination

Unwanted presence of radioactive atoms

Irradiation

Person is in exposed to radioactive source

Sievert

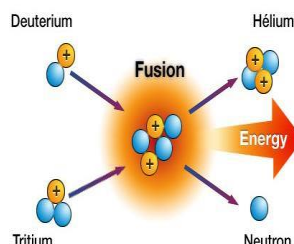
Unit measuring dose of radiation

Background

Constant low level environmental radiation, e.g. from nuclear testing, nuclear power, waste

Half life

The time taken to lose half of its initial radioactivity



Uses	Different isotopes have different half lives	Short half-lives used in high doses, long half lives used in low doses.
Tracers	Used within body	Isotope with short half life injected, allowed to circulate and collect in damaged areas. PET scanner used to detect emitting radiation. Must be beta or gamma as alpha does not penetrate the body.
Radiation therapy	Used to treat illnesses e.g. cancer	Cancer cells killed by gamma rays. High dose used to kill cells. Damage to healthy cells prevented by focussed gamma radiography machine.

Fuel rods

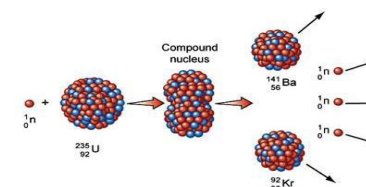
Made of U-238, 'enriched' with U-235 (3%). Long and thin to allow neutrons to escape, hitting nuclei.

Control rods

Made of Boron. Controls the rate of reaction. Boron absorbs excess neutrons.

Concrete

Neutrons hazardous to humans – thick concrete shield protects workers.

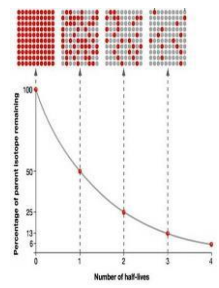
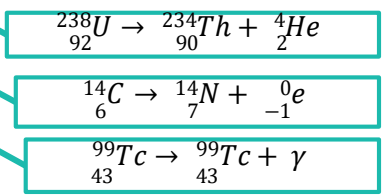
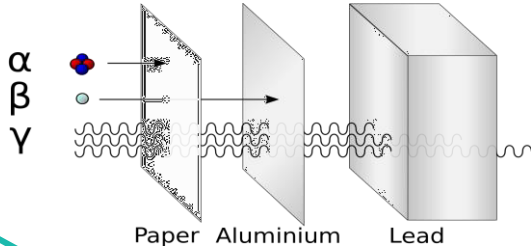


Year 10 Science: Atomic Structure

Atoms and Nuclear Radiation

Nuclear fission	One large unstable nucleus splits to make two smaller nuclei		
Nuclear fusion	Two small nuclei join to make one larger nucleus		

Decay	Emitted from nucleus	Changes in mass number and atomic number	
Alpha (α)	Helium nuclei (${}^4_2\text{He}$)		
Beta (β)	Electron (${}^0_{-1}\text{e}$)		
Gamma (γ)	Electromagnetic wave		
Neutron	Neutron		

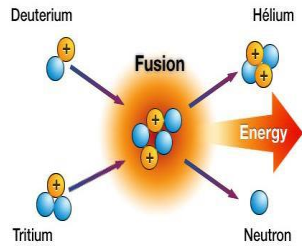


Contamination	
Irradiation	

Decay	Emitted from nucleus
Alpha (α)	Helium nuclei (${}^4_2\text{He}$)
Beta (β)	Electron (${}^0_{-1}\text{e}$)
Gamma (γ)	Electromagnetic wave
Neutron	Neutron

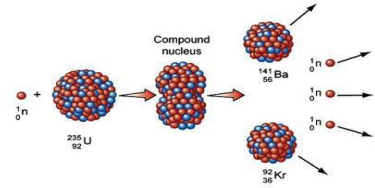
Sievert	
Background	

Half life *The time taken to lose half of its initial radioactivity*



Uses	
Tracers	
Radiation therapy	

Fuel rods	
Control rods	
Concrete	



Year 10 Science: Chemical Changes

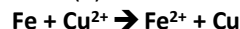
Oxidation Is Loss (of electrons) Reduction Is Gain (of electrons)

Ionic half equations (HT only)

For displacement reactions

Ionic half equations show what happens to each of the reactants during reactions

For example:
The ionic equation for the reaction between iron and copper (II) ions is:



The half-equation for iron (II) is:



The half-equation for copper (II) ions is:



AQA CHEMICAL CHANGES

Reactivity of metals

The reactivity series

Metal oxides

Oxidation and reduction in terms of electrons (HT ONLY)

Neutralisation of acids and salt production

Acid name

Salt name

Hydrochloric acid

Chloride

Sulfuric acid

Sulfate

Nitric acid

Nitrate

sodium hydroxide + hydrochloric acid $\rightarrow$ sodium chloride + water

calcium carbonate + sulfuric acid $\rightarrow$ calcium sulfate, + carbon dioxide + water

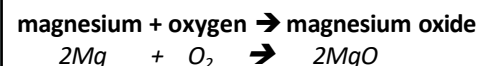
Neutralisation

Acids can be neutralised by alkalis and bases

An **alkali** is a soluble base e.g. metal hydroxide.
A **base** is a substance that neutralises an acid e.g. a soluble metal hydroxide or a metal oxide.

Metals and oxygen

Metals react with oxygen to form metal oxides



Reduction

This is when oxygen is removed from a compound during a reaction

e.g. metal oxides reacting with hydrogen, extracting low reactivity metals

Oxidation

This is when oxygen is gained by a compound during a reaction

e.g. metals reacting with oxygen, rusting of iron

Year 10 Science: Chemical Changes

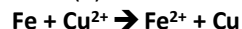
Oxidation Is Loss (of electrons) Reduction Is Gain (of electrons)

Ionic half equations (HT only)

For displacement reactions

Ionic half equations show what happens to each of the reactants during reactions

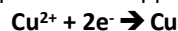
For example:
The ionic equation for the reaction between iron and copper (II) ions is:



The half-equation for iron (II) is:



The half-equation for copper (II) ions is:



Oxidation and reduction in terms of electrons (HT ONLY)

Neutralisation of acids and salt production

AQA CHEMICAL CHANGES

Reactivity of metals

The reactivity series

Metal oxides

Acid name	Salt name
Hydrochloric acid	
Sulfuric acid	
Nitric acid	

sodium hydroxide + hydrochloric acid →

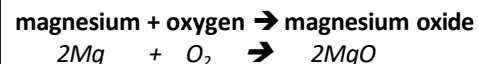
calcium carbonate + sulfuric acid →

Neutralisation

An **alkali** is a soluble base e.g. metal hydroxide.
A **base** is a substance that neutralises an acid e.g. a soluble metal hydroxide or a metal oxide.

Metals and oxygen

Metals react with oxygen to form metal oxides



e.g. metal oxides reacting with hydrogen, extracting low reactivity metals

e.g. metals reacting with oxygen, rusting of iron

Year 10 Science: Chemical Changes

HT ONLY: Reactions between metals and acids are redox reactions as the metal donates electrons to the hydrogen ions. This displaces hydrogen as a gas while the metal ions are left in the solution.

Reactions of acids

Reactions with acids

metal + acid → metal salt + hydrogen

magnesium + hydrochloric acid → magnesium chloride + hydrogen

zinc + sulfuric acid → zinc sulfate + hydrogen

Reactions of acids and metals

Acids react with some metals to produce salts and hydrogen.

Extraction using carbon

Metals less reactive than carbon can be extracted from their oxides by reduction.

For example:
zinc oxide + carbon → zinc + carbon dioxide

Extraction of metals and reduction

Unreactive metals, such as gold, are found in the Earth as the metal itself. They can be mined from the ground.

potassium	most reactive	K
sodium		Na
calcium		Ca
magnesium		Mg
aluminium		Al
carbon		C
zinc		Zn
iron		Fe
tin		Sn
lead		Pb
hydrogen		H
copper		Cu
silver		Ag
gold		Au
platinum	least reactive	Pt

Metals form positive ions when they react	The reactivity of a metal is related to its tendency to form positive ions	The reactivity series arranges metals in order of their reactivity (their tendency to form positive ions) following reactions with acid and water.		Reactions with water	Reactions with acid
			Group 1 metals	Reactions get more vigorous as you go down the group	Reactions get more vigorous as you go down the group
Carbon and hydrogen	Carbon and hydrogen are non-metals but are included in the reactivity series	These two non-metals are included in the reactivity series as they can be used to extract some metals from their ores, depending on their reactivity.	Group 2 metals	They react very slowly with water and steam.	Observable reactions include fizzing and temperature increases
Displacement	A more reactive metal can displace a less reactive metal from a compound.	Silver nitrate + Sodium chloride → Sodium nitrate + Silver chloride	Zinc, iron and copper	They react very slowly with water.	Zinc and iron react slowly with acid. Copper does not react with acid.

Year 10 Science: Chemical Changes

HT ONLY:

Reactions of acids

Reactions of acids and metals

Reactions with acids

metal + acid → metal salt + hydrogen

magnesium + hydrochloric acid →

zinc + sulfuric acid →

Acids react with some metals to produce _____ and _____.

Extraction using carbon

Metals less reactive than carbon can be extracted from their oxides by reduction.

For example:

zinc oxide + carbon →

Extraction of metals and reduction

Unreactive metals, such as _____, are found in the Earth as the metal itself. They can be mined from the ground.

potassium	most reactive	K
sodium		Na
calcium		Ca
magnesium		Mg
aluminium		Al
carbon		C
zinc		Zn
iron		Fe
tin		Sn
lead		Pb
hydrogen		H
copper		Cu
silver		Ag
gold		Au
platinum	least reactive	Pt

Metals form positive ions when they react		The reactivity series arranges metals in order of their reactivity (their tendency to form positive ions) following reactions with acid and water.		Reactions with water	Reactions with acid
			Group 1 metals		Reactions get more vigorous as you go down the group
Carbon and hydrogen		These two non-metals are included in the reactivity series as they can be used to extract some metals from their ores, depending on their reactivity.	Group 2 metals		Observable reactions include fizzing and temperature _____
Displacement		Silver nitrate + Sodium chloride →	Zinc, iron and copper		Zinc and iron react slowly with acid. _____ does not react with acid.

Year 10 Science: Chemical Changes

At the negative electrode	Metal will be produced on the electrode if it is less reactive than hydrogen. Hydrogen will be produced if the metal is more reactive than hydrogen.
At the positive electrode	Oxygen is formed at positive electrode. If you have a halide ion (Cl ⁻ , I ⁻ , Br ⁻) then you will get chlorine, bromine or iodine formed at that electrode.

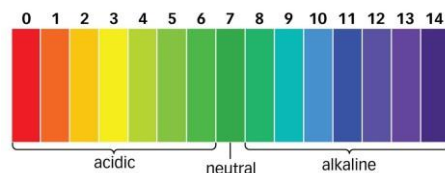
Electrolysis of aqueous solutions

Electrolysis

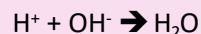
Strong and weak acids / (HT ONLY)

Strong acids	Completely ionised in aqueous solutions e.g. hydrochloric, nitric and sulfuric acids.
Weak acids	Only partially ionised in aqueous solutions e.g. ethanoic acid, citric acid.
Hydrogen ion concentration	As the pH decreases by one unit (becoming a stronger acid), the hydrogen ion concentration increases by a factor of 10.

Soluble salts	Soluble salts can be made from reacting acids with solid insoluble substances (e.g. metals, metal oxides, hydroxides and carbonates).
Production of soluble salts	Add the solid to the acid until no more dissolves. Filter off excess solid and then crystallise to produce solid salts.



In neutralisation reactions, hydrogen ions react with hydroxide ions to produce water:



The ions discharged when an aqueous solution is electrolysed using inert electrodes depend on the relative reactivity of the elements involved.

Process of electrolysis	Splitting up using electricity	When an ionic compound is melted or dissolved in water, the ions are free to move. These are then able to conduct electricity and are called electrolytes. Passing an electric current through electrolytes causes the ions to move to the electrodes.
Electrode	Anode Cathode	The positive electrode is called the anode. The negative electrode is called the cathode.
Where do the ions go?	Cations Anions	Cations are positive ions and they move to the negative cathode. Anions are negative ions and they move to the positive anode.

Reactions of acids

Soluble salts

You can use universal indicator or a pH probe to measure the acidity or alkalinity of a solution against the pH scale.

The pH scale and neutralisation

Acids	Acids produce hydrogen ions (H ⁺) in aqueous solutions.
Alkalis	Aqueous solutions of alkalis contain hydroxide ions (OH ⁻).

Year 10 Science: Chemical Changes

The ions discharged when an aqueous solution is electrolysed using inert electrodes depend on the relative reactivity of the elements involved.

At the negative electrode	
At the positive electrode	

Electrolysis of aqueous solutions

Electrolysis

Process of electrolysis

Splitting up using electricity

Electrode

Anode
Cathode

Where do the ions go?

Cations
Anions

Strong and weak acids /
(HT ONLY)

Completely ionised in aqueous solutions e.g. hydrochloric, nitric and sulfuric acids.

Weak acids

Only partially ionised in aqueous solutions e.g. _____, _____.

Hydrogen ion concentration

As the pH decreases by one unit (becoming a stronger acid), the hydrogen ion concentration increases by a factor of ____.

Reactions of acids

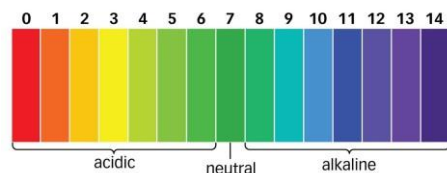
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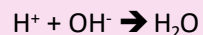
The pH scale and neutralisation

Soluble salts

Production of soluble salts



In neutralisation reactions, hydrogen ions react with hydroxide ions to produce water:



Acids

Alkalis

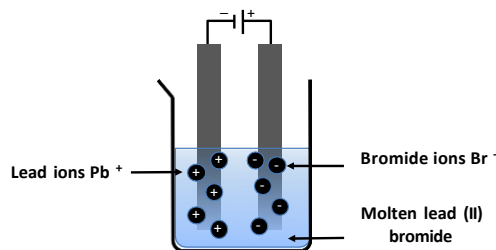
Year 10 Science: Chemical Changes

Extracting metals using electrolysis

Metals can be extracted from molten compounds using electrolysis.

This process is used when the metal is too reactive to be extracted by reduction with carbon.

The process is expensive due to large amounts of energy needed to produce the electrical current.
Example: aluminium is extracted in this way, from aluminium oxide.



Higher tier:

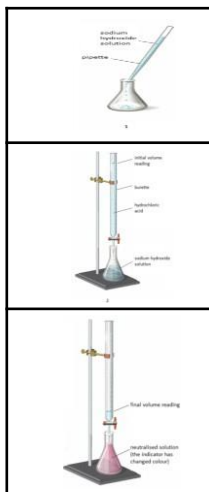
You can display what is happening at each electrode using half-equations:

At the cathode: $\text{Pb}^{2+} + 2\text{e}^- \rightarrow \text{Pb}$

At the anode: $2\text{Br}^- \rightarrow \text{Br}_2 + 2\text{e}^-$

Titrations (Chemistry only)

Titrations are used to work out the precise volumes of acid and alkali solutions that react with each other.

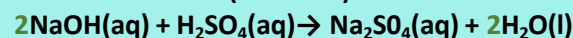


1. Use the pipette to add 25 cm³ of alkali to a conical flask and add a few drops of indicator.

2. Fill the burette with acid and note the starting volume. Slowly add the acid from the burette to the alkali in the conical flask, swirling to mix.

3. Stop adding the acid when the end-point is reached (the appropriate colour change in the indicator happens). Note the final volume reading. Repeat steps 1 to 3 until you get consistent readings.

Calculating the chemical quantities in titrations involving concentrations in mol/dm³ and in g/dm³ (HT ONLY):



It takes 12.20cm³ of sulfuric acid to neutralise 24.00cm³ of sodium hydroxide solution, which has a concentration of 0.50mol/dm³.

Calculate the concentration of the sulfuric acid in g/dm³
 $0.5 \text{ mol/dm}^3 \times (24/1000) \text{ dm}^3 = 0.012 \text{ mol of NaOH}$

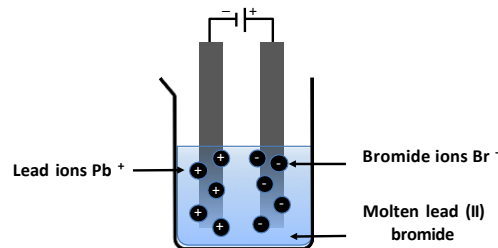
The equation shows that 2 mol of NaOH reacts with 1 mol of H₂SO₄, so the number of moles in 12.20cm³ of sulfuric acid is $(0.012/2) = 0.006 \text{ mol of sulfuric acid}$

Calculate the concentration of sulfuric acid in mol/dm³
 $0.006 \text{ mol} \times (1000/12.2) \text{ dm}^3 = 0.49 \text{ mol/dm}^3$

Calculate the concentration of sulfuric acid in g/dm³
 $\text{H}_2\text{SO}_4 = (2 \times 1) + 32 + (4 \times 16) = 98\text{g}$
 $0.49 \times 98\text{g} = 48.2 \text{ g/dm}^3$

Year 10 Science: Chemical Changes

Extracting metals using electrolysis



Higher tier:

You can display what is happening at each electrode using half-equations:

At the cathode: $\text{Pb}^{2+} + 2\text{e}^- \rightarrow \text{Pb}$

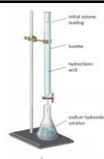
At the anode: $2\text{Br}^- \rightarrow \text{Br}_2 + 2\text{e}^-$

Titrations (Chemistry only)

Titrations are used to work out the precise volumes of acid and alkali solutions that react with each other.



1.

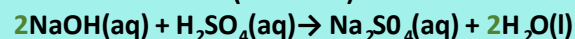


2.



3.

Calculating the chemical quantities in titrations involving concentrations in mol/dm^3 and in g/dm^3 (HT ONLY):

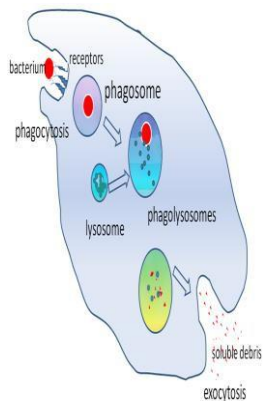


It takes 12.20cm^3 of sulfuric acid to neutralise 24.00cm^3 of sodium hydroxide solution, which has a concentration of 0.50mol/dm^3 .

Calculate the concentration of the sulfuric acid in g/dm^3

$$0.5 \text{ mol/dm}^3 \times (24/1000) \text{ dm}^3 = 0.012 \text{ mol of NaOH}$$

Year 10 Science: Infection and Response



Phagocytes	Phagocytosis	Phagocytes engulf the pathogens and digest them.
Lymphocytes	Antibody production	Specific antibodies destroy the pathogen. This takes time so an infection can occur. If a person is infected again by the same pathogen, the lymphocytes make antibodies much faster.
	Antitoxin production	Antitoxin is a type of antibody produced to counteract the toxins produced by bacteria.

BIOLOGY ONLY-Plants have several ways of defending themselves from pathogens and animals

Physical	Mechanical
Thick waxy layers, cell walls stop pathogen entry	Thorns, curling up leaves to prevent being eaten
Chemical	
Antibacterial and toxins made by plant	

Detection and identification of plant diseases (bio only)	Detection	Identification
	Stunted growth	Reference using gardening manual or website, laboratory test for pathogens, testing kit using monoclonal antibodies.
	Spots on leaves	
	Area of decay	
	growths	
	Malformed stem/leaves	
	Discolouration	
	Presence of pests	

Bacteria may produce toxins that damage tissues and make us feel ill

Viruses	Bacteria (prokaryotes)	Protists (eukaryotes)	Fungi (eukaryotes)
e.g. cold, influenza, measles, HIV, tobacco mosaic virus	e.g. tuberculosis (TB), Salmonella, Gonorrhoea	e.g. dysentery, sleeping sickness, malaria	e.g. athlete's foot, thrush, rose black spot
DNA or RNA surrounded by a protein coat	No membrane bound organelles (no chloroplasts, mitochondria or nucleus). Cell wall. Single celled organisms	Membrane bound organelles. Usually single celled.	Membrane bound organelles, cell wall made of chitin. Single celled or multi-cellular

Pathogens are microorganisms that cause infectious disease

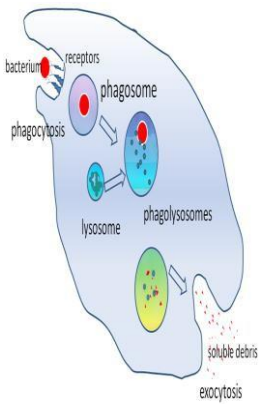
Pathogens

Viruses live and reproduce inside cells causing damage

Nitrate ions needed for protein synthesis – lack of nitrate = stunted growth.

Magnesium ions needed to make chlorophyll – not enough leads to chlorosis – leaves turn yellow.

Year 10 Science: Infection and Response



Phagocytes		
Lymphocytes		

BIOLOGY ONLY-Plants have several ways of defending themselves from pathogens and animals

Physical	Mechanical
Chemical	

Detection and identification of plant diseases (bio only)	Detection	Identification

Bacteria may produce toxins that damage tissues and make us feel ill

Viruses	Bacteria (prokaryotes)	Protists (eukaryotes)	Fungi (eukaryotes)

Pathogens are microorganisms that cause infectious disease

Pathogens

Viruses live and reproduce inside cells causing damage

Nitrate ions:

Magnesium ions:

Year 10 Science: Infection and Response

Pathogens are identified by white blood cells by the different proteins on their surfaces **ANTIGENS**.

White blood cells are part of the immune system

Immune system

Human defence systems

Non-specific defence systems



Nose

Nasal hairs, sticky mucus and cilia prevent pathogens entering through the nostrils.



Trachea and bronchus (respiratory system)

Lined with mucus to trap dust and pathogens. Cilia move the mucus upwards to be swallowed.



Stomach acid

Stomach acid (pH1) kills most ingested pathogens.



Skin

Hard to penetrate waterproof barrier. Glands secrete oil which kill microbes

Pathogens may infect plants or animals and can be spread by direct contact, water or air

Pathogen	Disease	Symptoms	Method of transmission	Control of spread
Virus	Measles	Fever, red skin rash.	Droplet infection from sneezes and coughs.	Vaccination as a child.
Virus	HIV	Initially flu like systems, serious damage to immune system.	Sexual contact and exchange of body fluids.	Anti-retroviral drugs and use of condoms.
Virus	Tobacco mosaic virus	Mosaic pattern on leaves.	Enters via wounds in epidermis caused by pests.	Remove infected leaves and control pests that damage the leaves.
Bacteria	Salmonella	Fever, cramp, vomiting, diarrhoea.	Food prepared in unhygienic conditions or not cooked properly.	Improve food hygiene, wash hands, vaccinate poultry, cook food thoroughly.
Bacteria	Gonorrhoea	Green discharge from penis or vagina.	Direct sexual contact or exchange of body fluids.	Use condoms. Treatment using antibiotics.
Protists	Malaria	Recurrent fever.	By an animal vector (mosquitoes).	Prevent breeding of mosquitoes. Use of nets to prevent bites.
Fungus	Rose black spot	Purple black spots on leaves.	Spores carried via wind or water.	Remove infected leaves. Spray with fungicide.

Year 10 Science: Infection and Response

Pathogens are identified by white blood cells by the different proteins on their surfaces **ANTIGENS**.

White blood cells are part of the immune system

Immune system

Human defence systems

Non-specific defence systems

The human body has several non specific ways of defending itself from pathogens getting in



Pathogens may infect plants or animals and can be spread by direct contact, water or air

Pathogen	Disease	Symptoms	Method of transmission	Control of spread
Virus	Measles			
Virus				
Virus				
Bacteria				
Bacteria				
Protists				
Fungus				

Year 10 Science: Infection and Response

Most new drugs are synthesised by chemists in the pharmaceutical industry.

Traditionally drugs were extracted from plants and microorganisms

Digitalis	Aspirin	Penicillin
Extracted from foxglove plants and used as a heart drug	A painkiller and anti-inflammatory that was first found in willow bark	Discovered by Alexander Fleming from the <i>Penicillium</i> mould and used as an antibiotic
		

Drugs have to be tested and trialled before to check they are safe and effective

New drugs are extensively tested for:

Efficacy	Make sure the drug works
Toxicity	Check that the drug is not poisonous
Dose	The most suitable amount to take

Preclinical trials - using cells, tissues and live animals - must be carried out before the drug can be tested on humans.

Clinical trials use healthy volunteers and patients

Antibiotics and painkillers

Bacteria can mutate

Sometimes this makes them resistant to antibiotic drugs.

Discovery and drug development

Double blind trial: patients and scientists do not know who receives the new drug or placebo until the end of the trial. This avoids bias.



Stage 1	Stage 2	Stage 3	Stage 4
Healthy volunteers try small dose of the drug to check it is safe record any side effects	A small number of patients try the drug at a low dose to see if it works	A larger number of patients; different doses are trialled to find the optimum dose	A double blind trial will occur. The patients are divided into groups. Some will be given the drug and some a placebo.

Specific to one binding site on the antigen. Can target specific chemicals or cells in the body

Year 10 Science: Infection and Response

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Aspirin

Penicillin



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Toxicity

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Discovery and drug development

Double blind trial:



Stage 1

Stage 2

Stage 3

Stage 4

Specific to one binding site on the antigen. Can target specific chemicals or cells in the body

Year 10 Science: Infection and Response

A placebo can look identical to the new drug but contain no active ingredients

Monoclonal antibodies can be used in a variety of ways

Diagnosis	Detecting pathogens	Detecting molecules	Treatment
e.g. pregnancy test – measure the level of hormones	Can detect very small quantities of chemicals in the blood	Fluorescent dye can be attached so it can be seen inside cells or tissues	Bound to radioactive substance, toxic drug or chemical Cancer cells are targeted to normal body cells are unharmed

Monoclonal antibodies	Identical copies of one types of antibody produced in laboratory	1. A mouse is injected with pathogen
		2. Lymphocytes produce antibodies
		3. Lymphocytes are removed from the mouse and fused with rapidly dividing mouse tumour cells
		4. The new cells are called hybridomas
		5. The hybridomas divide rapidly and release lots of antibodies which are then collected

Antibiotics have greatly reduced deaths from infectious bacterial disease

Antibiotics	e.g. penicillin	Kill infective bacteria inside the body. Specific bacterial infections require specific antibiotics.
Painkillers and other medicines	e.g. aspirin, paracetamol, ibuprofen	Drugs that are used to treat the symptoms of a disease. They do not kill pathogens

Antibiotics cannot be used to treat viral pathogens

It is difficult to develop drugs to kill viruses without harming body tissues because viruses live and reproduce inside cells

Vaccination

Used to immunise a large proportion of the population to prevent the spread of a pathogen

Vaccination	Small amount of dead or inactive form of the pathogen	1 st infection by pathogen	White blood cells detect pathogens in the vaccine. Antibodies are released into the blood.
		Re-infection by the same pathogen	White blood cells detect pathogens. Antibodies are made much faster and in larger amounts.

Created more side effects than expected (fatal in some cases) and are not as widely used as everybody hoped when first developed.

A person is unlikely to suffer the symptoms of the harmful disease and it's spread in a population is prevented

Year 10 Science: Infection and Response

Antibiotics have greatly reduced deaths from infectious bacterial disease

A placebo can look identical to the new drug but contain no active ingredients

Monoclonal antibodies can be used in a variety of ways

Diagnosis	Detecting pathogens	Detecting molecules	Treatment

Monoclonal antibodies	Identical copies of one types of antibody produced in laboratory

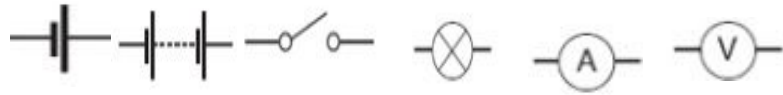
Vaccination	and other methods	1 st infection by pathogen	
		Re-infection by the same pathogen	

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Vaccination

It is difficult to develop drugs to kill viruses without harming

Year 10 science: Electricity



Cell	Battery	Switch	Lamp	Ammeter	Volt meter
Store of chemical energy	Two or more cells in series	Breaks circuit, turning current off	Lights when current flows	Measures current	Measures potential difference



Diode	LED	LDR	Fuse	Resistor	Variable resistor	Thermistor
Current flows one way	Emits light when current flows	Resistance low in bright light	Melts when current is too high	Affects the size of current flowing	Allows current to be varied	Resistance low at high temp

Circuit symbols

Electrons carry current.
Electrons are free to move in metal.

Current and Charge

Current, potential difference and resistance

$$R = V \div I$$

Resistance = Potential difference ÷ Current

Thermistor	LDR
Resistance varies with temperature	Resistance varies with light intensity
Resistance decreases as temperature increases.	Resistance decreases as light increases.

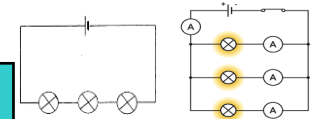
Current	Flow of electrical charge	Ampere (A)
Potential difference (p.d.)	How much electrical work is done by a cell	Volts (V)
Charge	Amount of electricity travelling in a circuit	Coulombs (C)

$$Q = I \times t$$

Charge = Current X time

Controlling current

Series and parallel circuits



Changing current	Change the p.d. of the cells
	Add more components
Ammeter	Set up in series with components
Voltmeter	Set up parallel to components

Series circuit	Current is the same in all components.	Total p.d. from battery is shared between all the components.	Total resistance is the sum of each component's resistance.
Parallel circuit	Total current is the sum of each component's current.	p.d. across all components is the same.	Total resistance is less than the resistance value of the smallest individual resistor.

Series	Parallel
A circuit with one loop	A circuit with two or more loops

Total p.d.
If cells are joined in series, add up individual cell values

Year 10 science: Electricity



$$R = V \div I$$

Circuit symbols

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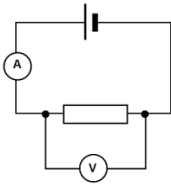
Current and Charge

Current, potential difference and resistance

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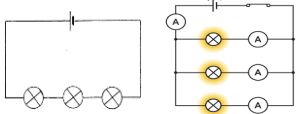
Thermistor	LDR

Current		
Potential difference (p.d.)		
Charge		



$$Q = I \times t$$

Series and parallel circuits



Series	Parallel

Changing current	

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Controlling current

Ammeter	
Voltmeter	

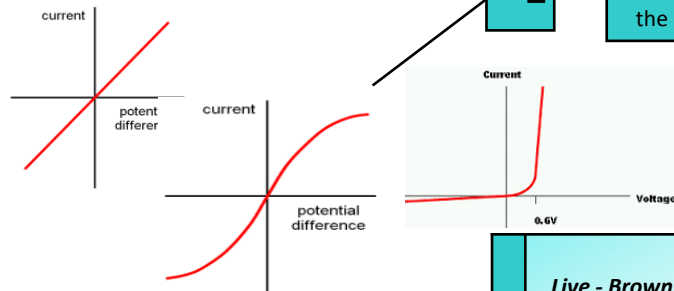
Series circuit			
Parallel circuit			

Total p.d	
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Year 10 science: Electricity

Resistance (Ω)	<i>A measurement of how much current flow is reduced</i>
The higher the resistance, the more difficult it is for current to flow.	
Increasing resistance, reduces current.	
Increasing voltage, increases current.	

Ohmic conduct or	<i>At a constant temperature, current is directly proportional to the p.d. across the resistor.</i>
Filament lamp	<i>As current increases, the resistance increases. The temperature increases as current flows.</i>
Diode	<i>Current flows when p.d. flows forward. Very high resistance in reverse.</i>

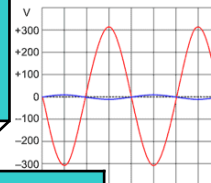


Thermistor	LDR
<i>Resistance varies with temperature</i>	<i>Resistance varies with light intensity</i>
Resistance decreases as temperature increases.	Resistance decreases as light increases.

Current – Potential difference graphs

Domestic uses and safety	
Alternating current	Direct current
<i>p.d. switches direction many times a second, current switches direction</i>	<i>p.d. remains in one direction, current flows the same direction</i>
Generator.	Cell or battery.

'Earthing' a safety device; Earth wire joins the metal case.



Mains supply
Frequency 50Hz,
230V

3 pin plug	Live - Brown	Carries p.d from mains supply.	p.d between live and earth = 230V
	Neutral - Blue	Completes the circuit.	p.d. = 0V
	Earth – Green and Yellow stripes	Only carries current if there is a fault.	p.d. = 0V

Energy transfers

Work is done when charge flowing.

Power (W) = potential difference X current

Power = (current)² X resistance

Energy transferred = Power X time

$$P = I^2 \times R$$

$$E = P \times t$$

National Grid
Distributes electricity generated in power stations around UK

Step-up transformers	Step-down transformers
<i>Increase voltage, decrease current</i>	<i>Decrease voltage, increase current</i>
Increases efficiency, reduces heat loss.	Makes safer for houses.

Static electricity

SEPS only

Like charges	Repel
Unlike charges	Attract

Static electricity	Electrical charge is stationary	When two insulating material are rubbed together, electrons move from one material to the other.
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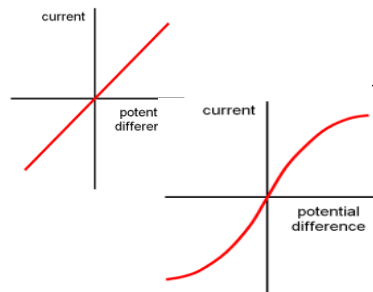
Shocks	Walking on carpet causes friction. Electrons move to the person and charge builds up. When the person touches a metal object, the electrons conduct away, making a spark.	
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Electric fields	Charged objects create electric fields around them. Strongest closest to the object. The field direction is the direction of force on a positive charge. Add more charge increases field strength.	
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Year 10 science: Electricity

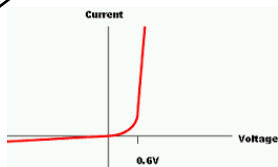
Resistance (Ω)	<i>A measurement of how much current flow is reduced</i>

Ohmic conduct or	
Filament lamp	
Diode	



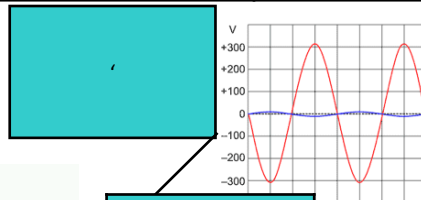
Thermistor	LDR

Current – Potential difference graphs



Domestic uses and safety

Alternating current	Direct current



Mains supply

3 pin plug	Live -		
	Neutral -		
	Earth -		

Energy transfers

National Grid

Step-up transformers	Step-down transformers

$$P = I^2 \times R$$

$$E = P \times t$$

Static electricity

SEPS only

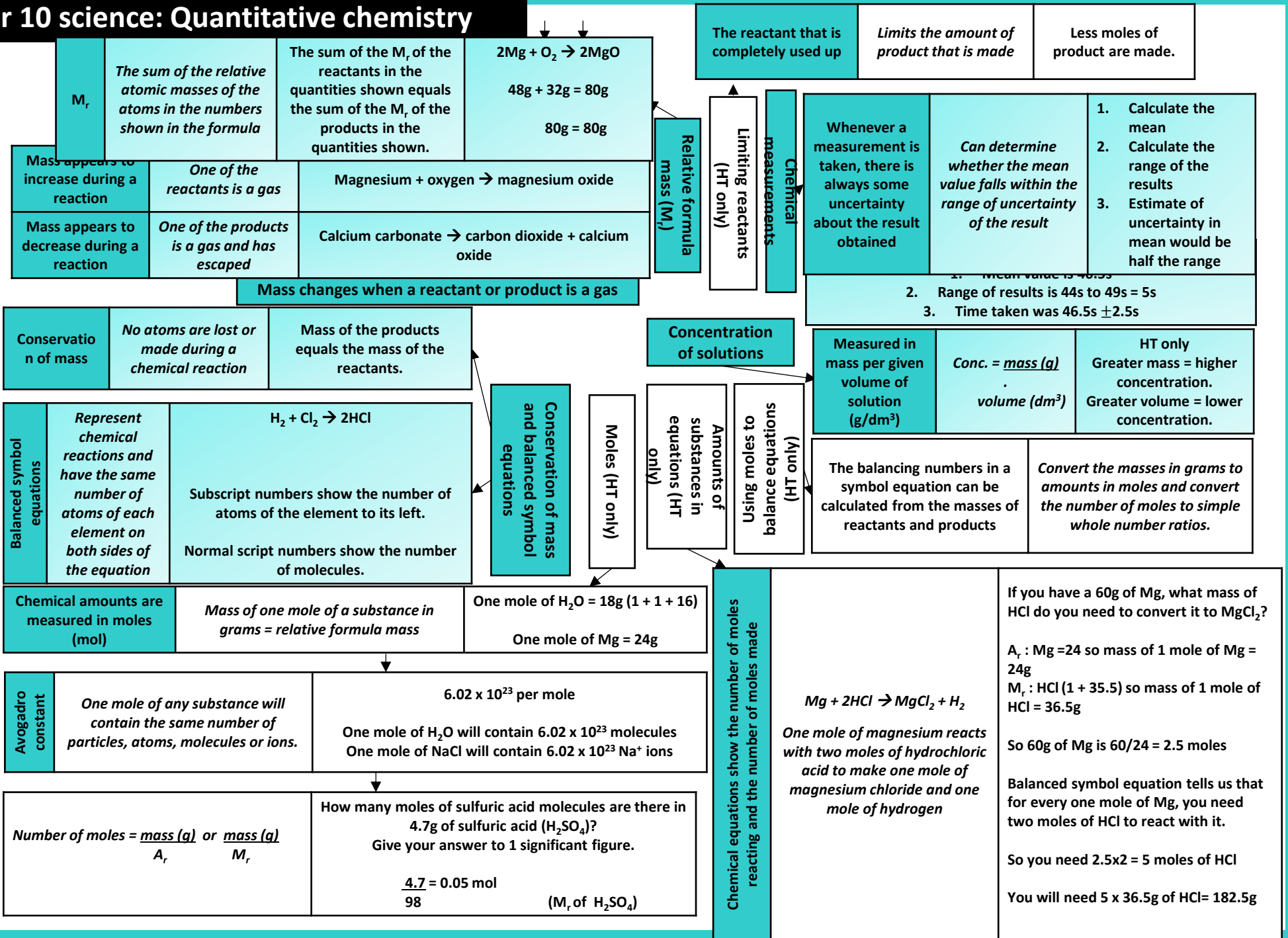
Like charges	
Unlike charges	

Static electricity	Electrical charge is stationary	
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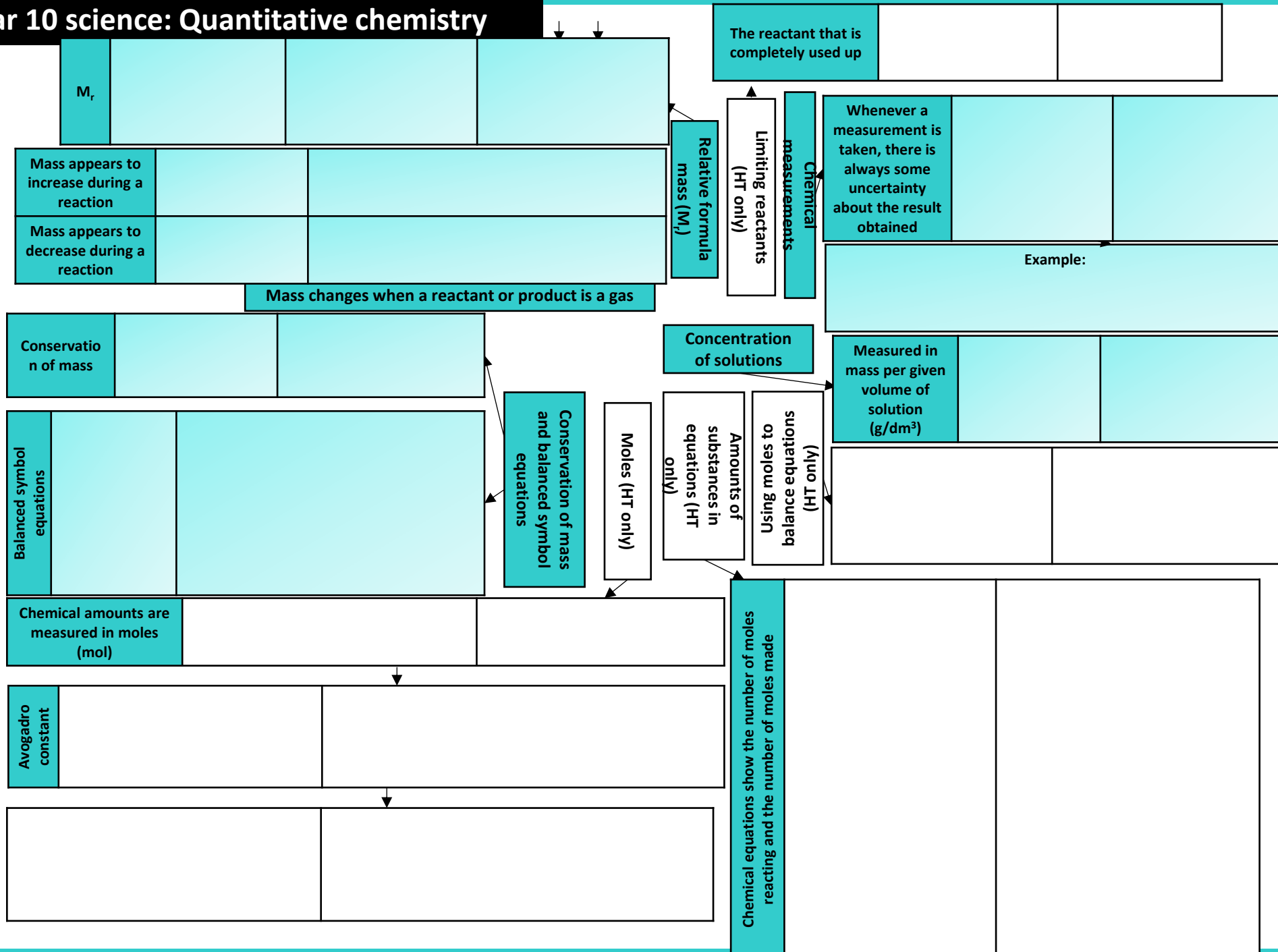
Shocks	
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Electric fields	
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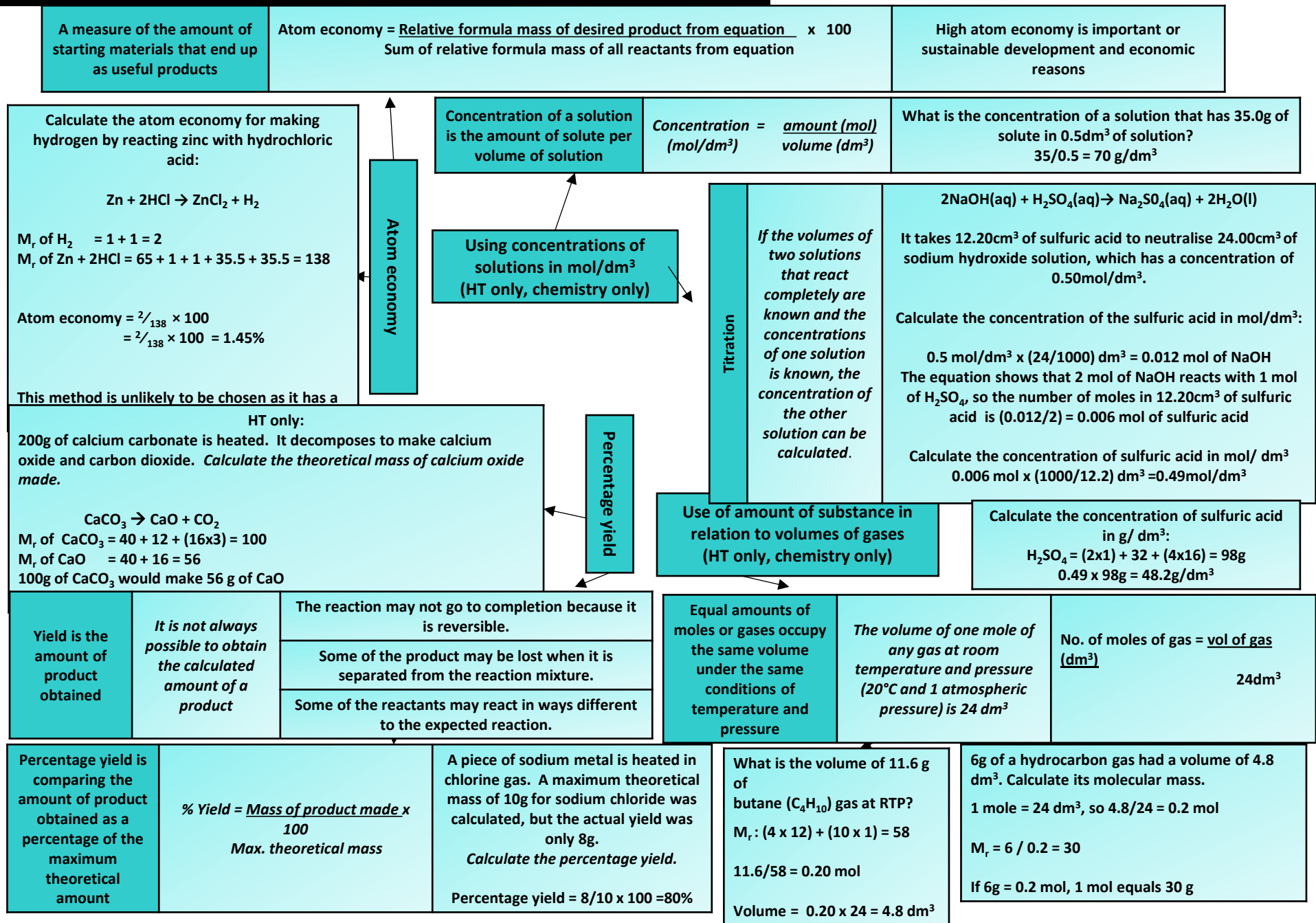
Year 10 science: Quantitative chemistry



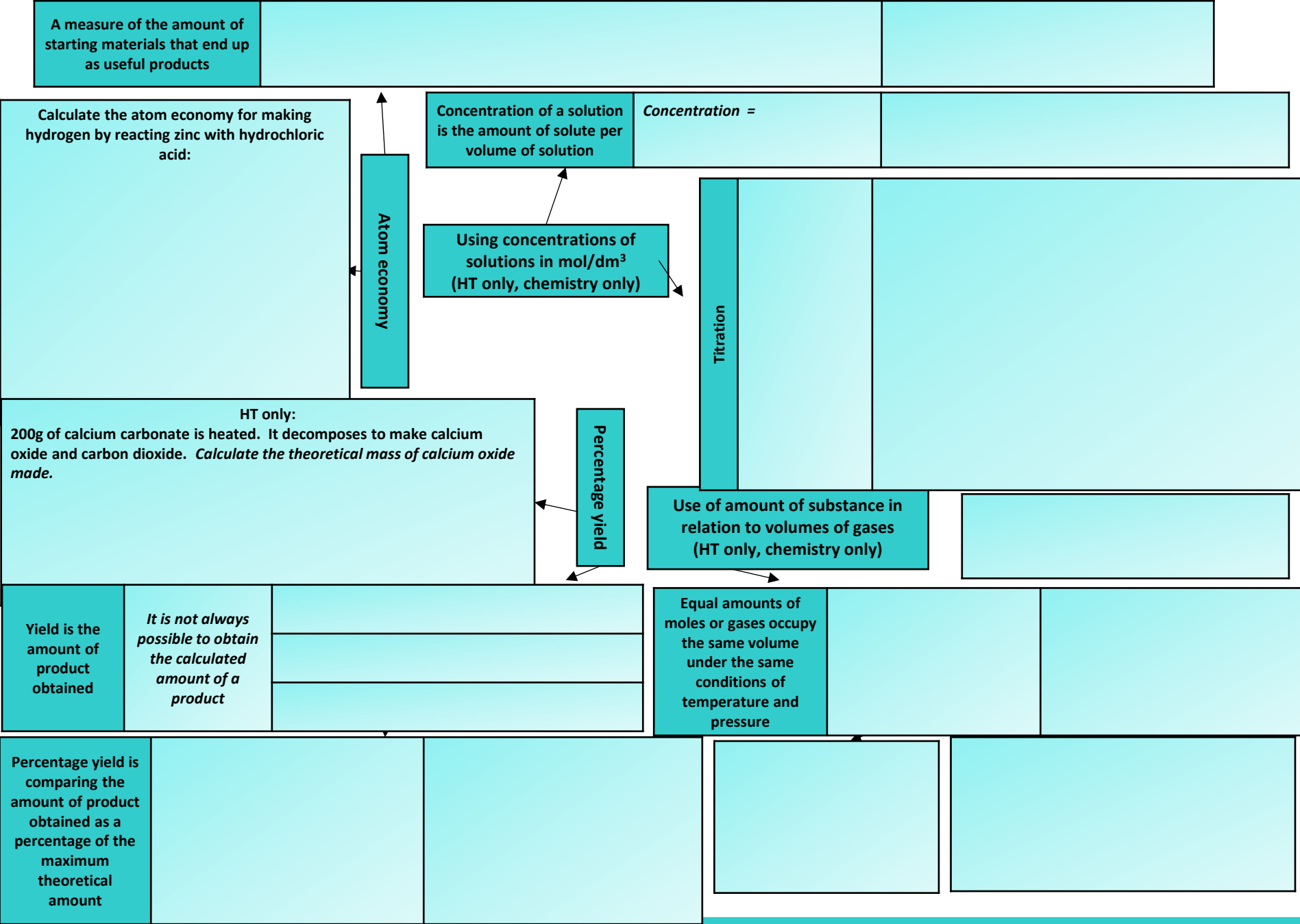
Year 10 science: Quantitative chemistry



Year 10 science: Quantitative chemistry SEPS ONLY



Year 10 science: Quantitative chemistry SEPS ONLY



Year 10 science: Energy changes

Endothermic	Energy is taken in from the surroundings so the temperature of the surroundings decreases	- Thermal decomposition - Sports injury packs
Exothermic	Energy is transferred to the surroundings so the temperature of the surroundings increases	- Combustion - Hand warmers - Neutralisation

Types of reaction

Hydrogen fuel cells	Ionic half equations	
	Negative electrode: $2\text{H}_2(\text{g}) + 4\text{OH}^-(\text{aq}) \rightarrow 4\text{H}_2\text{O}(\text{l}) + 4\text{e}^-$	Positive electrode: $\text{O}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l}) + 4\text{e}^- \rightarrow 4\text{OH}^-(\text{aq})$
	Word equation: $\text{hydrogen} + \text{oxygen} \rightarrow \text{water}$	Symbol equation: $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
Advantages: - No pollutants produced - Can be a range of sizes	Disadvantages: - Hydrogen is highly flammable - Hydrogen is difficult to store	

Breaking bonds in reactants	Endothermic process
Making bonds in products	Exothermic process

Reaction profiles	Show the overall energy change of a reaction
-------------------	--

Fuel cells (SEPS only)

Overall energy change of a reaction	Exothermic	Energy released making new bonds is greater than the energy taken in breaking existing bonds.
	Endothermic	Energy needed to break existing bonds is greater than the energy released making new bonds.

The energy change of reactions (HT only)

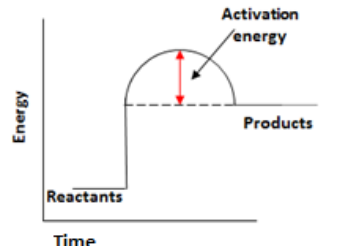
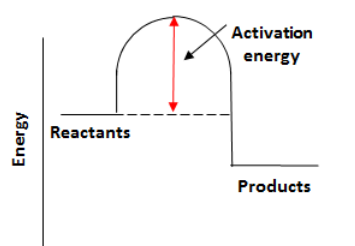
Cells and batteries (SEPS only)

Reaction profiles

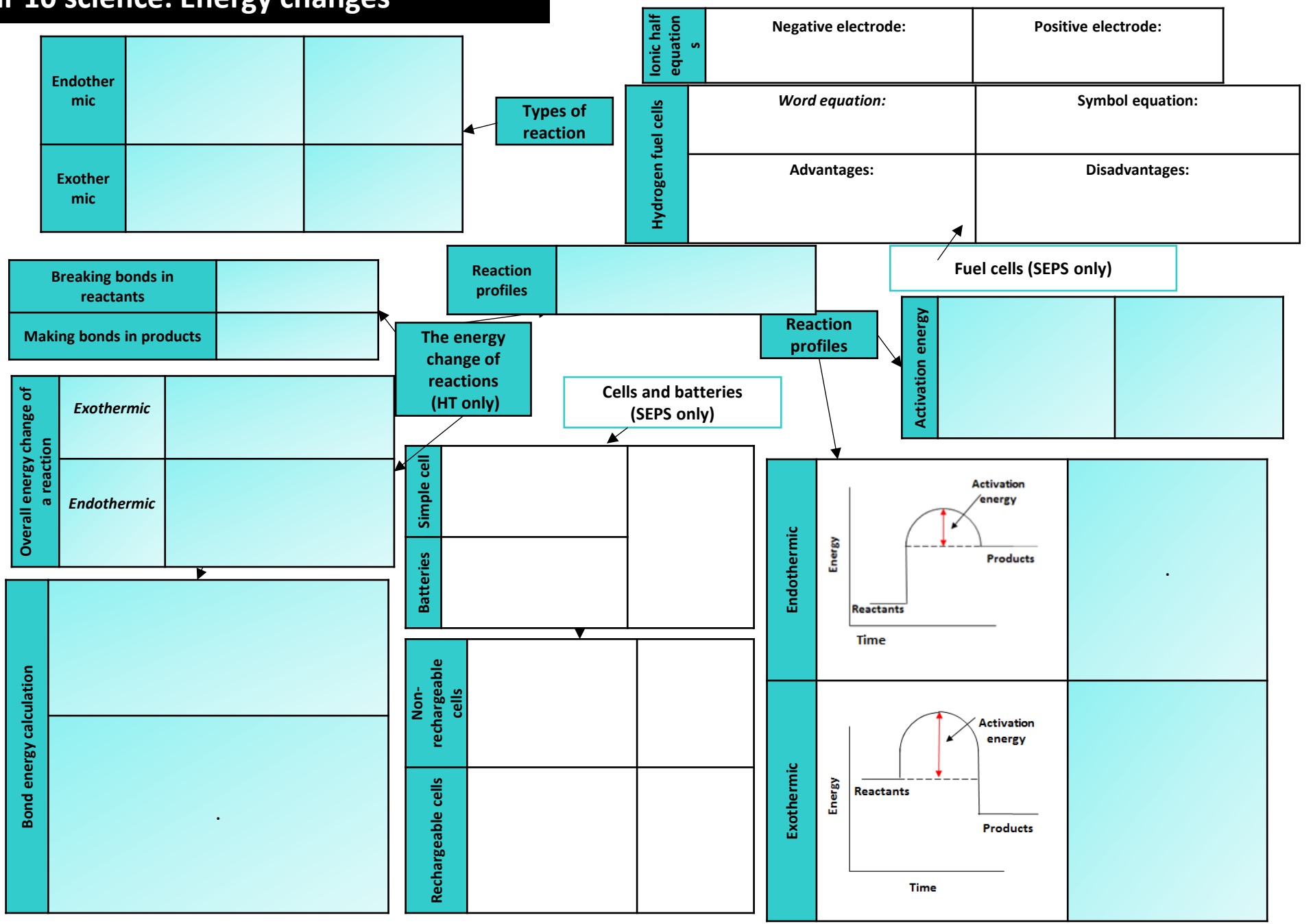
Activation energy	Chemical reactions only happen when particles collide with sufficient energy	The minimum amount of energy that colliding particles must have in order to react is called the activation energy.
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Bond energy calculation	Calculate the overall energy change for the forward reaction $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$
	Bond energies (in kJ/mol): H-H 436, H-N 391, N≡N 945
	Bond breaking: $945 + (3 \times 436) = 945 + 1308 = 2253 \text{ kJ/mol}$
	Bond making: $6 \times 391 = 2346 \text{ kJ/mol}$ Overall energy change = $2253 - 2346 = -93 \text{ kJ/mol}$ Therefore reaction is exothermic overall.

Simple cell	Make a simple cell by connecting two different metals in contact with an electrolyte	Increase the voltage by increasing the reactivity difference between the two metals.
Batteries	Consist of two or more cells connected together in series to provide a greater voltage.	
Non-rechargeable cells	Stop when one of the reactants has been used up	Alkaline batteries
Rechargeable cells	Can be recharged because the chemical reactions are reversed when an external electrical current is supplied	Rechargeable batteries

Endothermic		Products are at a higher energy level than the reactants. As the reactants form products, energy is transferred from the surroundings to the reaction mixture. The temperature of the surroundings decreases because energy is taken in during the reaction.
Exothermic		Products are at a lower energy level than the reactants. When the reactants form products, energy is transferred to the surroundings. The temperature of the surroundings increases because energy is released during the reaction.

Year 10 science: Energy changes



Year 10 science: Homeostasis and response

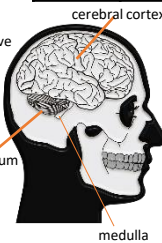
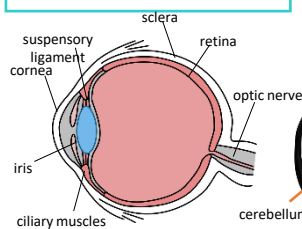
Structures of the eye

Retina	Light sensitive cell layer.
Optic nerve	Carries impulse to brain.
Sclera	Protects the eye.
Cornea	Transparent layer that covers the pupil and iris.
Iris	Pigmented layer, controls size of pupil.
Ciliary muscles	Controls thickness of lens.
Suspensory ligaments	Connects lens to ciliary muscles.

Sense organ containing receptors sensitive to light intensity and colour

The iris can dilate the pupil (aperture) to let in more light in dim conditions

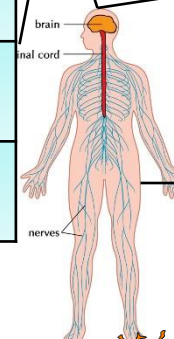
The Eye (SEPS only)



The human nervous system

Enables humans to react to their surroundings and to co-ordinate their behaviour

Human control systems include	Cells called receptors	Detect stimuli (changes in environment).
	Coordination centres	e.g. brain, spinal cord and pancreas that receive information from receptors.
	Effectors	Muscles or glands, which bring about responses to restore optimum levels.



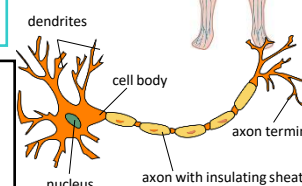
Information from receptors passes along cells (neurons) as electrical impulses to the central nervous system (CNS)

The CNS is the brain and the spinal cord.

Coordinates the response of effectors; muscles contracting or glands secreting hormones

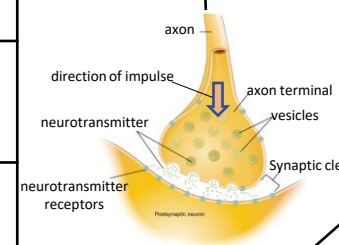
The Brain (SEPS only)

The brain controls complex behaviour. It is made of billions of interconnected neurones.



Typical motor neurone

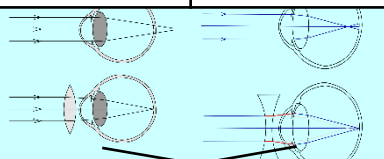
Synapse (gap where two neurones meet).



changing the shape of the lens to focus

Near object	Far object
Ciliary muscles contract, suspensory ligaments loosed, lens get thicker, light is more refracted.	Ciliary muscles relax, suspensory ligaments pulled tight, lens pulled thin, light is only slightly refracted.

Hyperopia (long sightedness)	Myopia (short sightedness)
Treated using a convex lens so the light is focused on the retina.	Treated using a concave lens so light is focused on the retina.



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

Neuroscientists have been able to map regions of the brain by studying patients with brain damage, electrical stimulation and MRI.



(H) The complexity and delicacy of the brain makes investigating and treating brain disorders very difficult

The brain has different regions that carry out different functions.

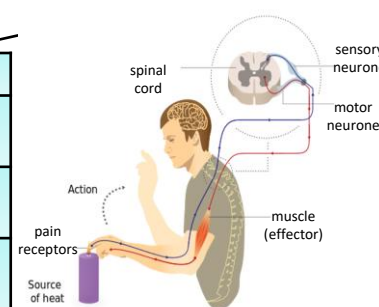
Cerebral cortex	Largest part of the human brain. Higher thinking skills e.g. speech, decision making.
Cerebellum	Balance and voluntary muscle function e.g. walking, lifting.
Medulla	Involuntary (automatic) body functions e.g. breathing, heart rate.

Treating brain damage and disease e.g. Lobotomy – cutting part of the cerebral cortex

Benefit: thought to alleviate the symptoms of some mental illnesses.

Risks: bleeding in the brain, seizures, loss of brain function. Procedure was abandoned in the 1950s due to risk.

Reflex arc	Receptor	Detect stimuli.
	Sensory neurone	Long axon carries impulse from receptor to spinal cord.
	Synapse	Gap where neurones meet. Chemical message using neurotransmitter.
	Relay neurone	Allows impulses to travel between sensory and motor neurones in the spinal cord.
	Motor neurone	Long axon carries impulse from receptor to effector.
	Effector	Muscle or gland that carries out response.



Reflex actions are automatic and rapid; they do not involve the conscious part of the brain and can protect humans from harm.

Year 10 science: Homeostasis and response

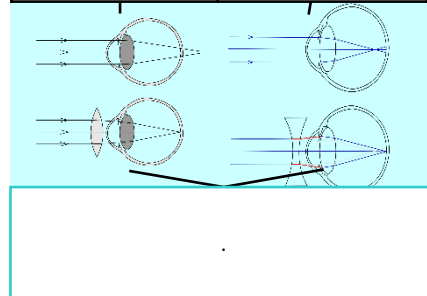
Structures of the eye

Retina	
Optic nerve	
Sclera	
Cornea	
Iris	
Ciliary muscles	
Suspensory ligaments	

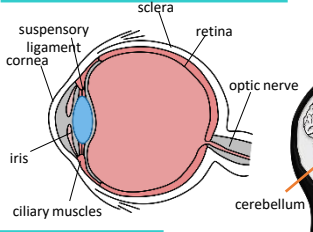
Accommodation is the process of changing the shape of the lens to focus

Near object	Far object

Hyperopia (long sightedness)	Myopia (short sightedness)



The Eye (SEPS only)



The Brain (SEPS only)



(H) The complexity and delicacy of the brain makes investigating and treating brain disorders very difficult.

Cerebral cortex	
Cerebellum	
Medulla	

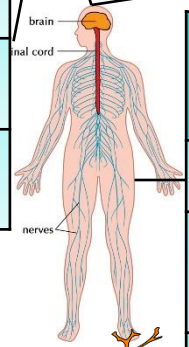


Treating brain damage and disease e.g. Lobotomy – cutting part of the cerebral cortex

Benefit:	
Risks:	

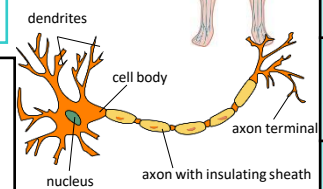
The human nervous system

Human control systems include	Cells called receptors	
	Effectors	



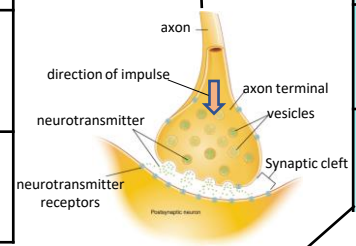
Information from receptors passes along cells (neurones) as electrical impulses to the central nervous system (CNS)

Stimulus	
	Cells in retina
Coordinator	
	Muscles connected to iris
Response	

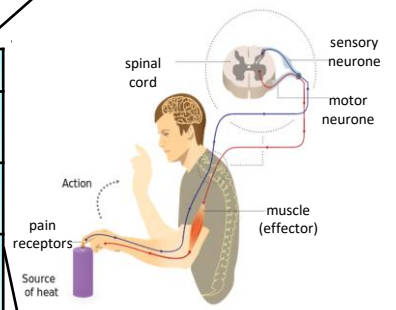


Typical motor neurone

Synapse (gap where two neurones meet).



Receptor	
Sensory neurone	
Synapse	
Relay neurone	
Motor neurone	
Effector	



Year 10 science: Homeostasis and response

(HT only) digestion of proteins results in excess ammonia. In the liver they are de-aminated to form toxic ammonia which is converted to urea

Response to internal and external change

Controls in the human body	Blood glucose concentration	These automatic control systems may involve nervous responses or chemical responses.
	Body temperature	
	Water levels	

The regulation of internal conditions of a cell or organism to maintain optimum conditions for function.

Homeostasis maintains optimal conditions for enzyme action and all cell functions.

Water and nitrogen balance (SEPS only)

If body cells lose or gain too much water by osmosis they do no function efficiently.	Uncontrolled water/ion urea loss	Water exhaled in lungs, water, ions and urea in sweat.
	Controlled water/ion/urea loss	Via the kidneys in urine.

Kidney failure is treated by organ transplant or dialysis.

Kidney function	Maintain water balance of the body.	Produce urine by filtration of the blood and selective reabsorption of glucose, ions and water.
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(HT only) ADH	Acts on kidney tubules to control water levels.	Released by pituitary gland when blood is too concentrated. Water is reabsorbed back into the blood from the kidney tubules (NEGATIVE FEEDBACK).
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A dialysis machine removes urea from the blood by diffusion while maintaining ion and glucose levels.



Thermoregulatory centre (hypothalamus)

Control of body temperature (SEPS only)

Homeostasis

Control of blood glucose concentration

Negative feedback (HT only)	Adrenaline	Produced in adrenal glands, increases breathing/heart rate, blood flow to muscles, conversion glycogen to glucose. Prepares body for 'fight or flight'.
	Thyroxine	Produced in the thyroid gland, stimulates the basal metabolic rate. Important in growth and development.

Increasing thyroxine levels prevent the release of thyroid stimulating hormone which stops the release of thyroxine.

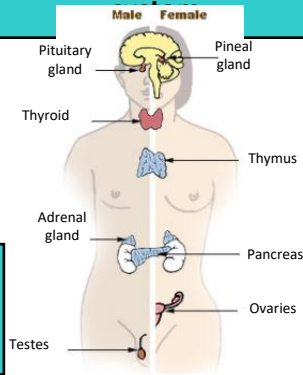
Monitoring body temperature	Thermoregulatory centre	Contains receptors sensitive to the temperature of the blood.
	Skin	Contains temperature receptors, sends nervous impulses to the thermoregulatory centre.



Body temperature	Too high	Blood vessels dilate (vasodilation), sweat produced from sweat glands.
	Too low	Blood vessels constrict (vasoconstriction), sweating stops, muscles contract (shivering).

(HT) Thermal energy is lost from blood near the surface of the skin, sweat evaporates transferring thermal energy.
(HT) Thermal energy loss at the surface of the skin is reduced, respiring muscles cells transfer chemical to thermal energy.

Human endocrine



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

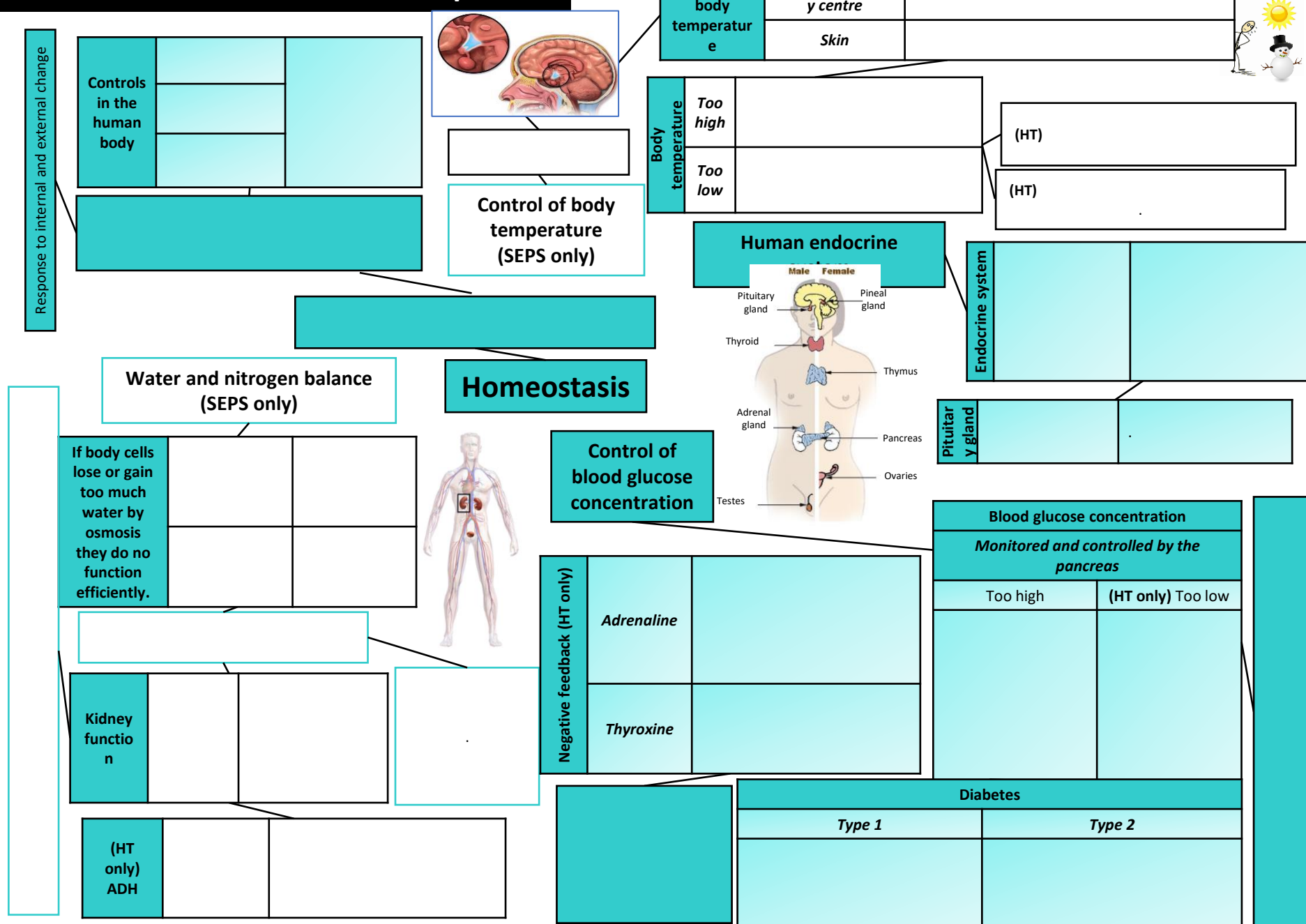
Pituitary gland	'Master gland'; secretes several hormones into the blood	Stimulates other glands to produce hormones to bring about effects.
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Blood glucose concentration	
Monitored and controlled by the pancreas	
Too high	(HT only) Too low
Pancreas produces the hormone insulin, glucose moves from the blood into the cells. In liver and muscle cells excess glucose is converted to glycogen for	Pancreas produces the hormone glucagon that causes glycogen to be converted into glucose and released into the

(HT) Rising glucose levels inhibit the release of glucagon in a negative feedback system. Insulin is released to reduce glucose levels and which cause the pancreas to release glucagon

Diabetes	
Type 1	Type 2
Pancreas fails to produce sufficient insulin leading to uncontrolled blood glucose levels. Normally treated by insulin injection.	Obesity is a risk factor. Body cells no longer respond to insulin. Common treatments include changing by diet and increasing exercise.

Year 10 science: Homeostasis and response



Year 10 science: Homeostasis and response

FSH and LH are used as 'fertility drugs' to help someone become pregnant in the normal way

In Vitro Fertilisation (IVF) treatment.

Involves giving a mother FSH and LH to stimulate the maturation of several eggs

The eggs are collected from the mother and fertilised by sperm from the father in a laboratory.

The fertilised eggs develop into embryos.

At the stage when they are tiny balls of cells, one or two embryos are inserted into the mother's uterus (womb).

Potential disadvantages of IVF

- Emotional and physical stress.
- Success rates are not high.
- Multiple births risk to mother and babies.

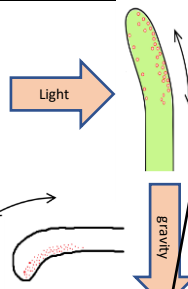
Hormones are used in modern reproductive technologies to treat infertility

The use of hormone to treat infertility (HT only)

Contraception

Fertility can be controlled by hormonal and non hormonal methods

Oral contraceptives	Contain hormones to inhibit FSH production so that no eggs mature.
Injection, implant, skin patch	For slow release of progesterone to inhibit the maturation and release of eggs for months or years.
Barrier methods	Condoms or diaphragms which prevent sperm reaching the egg.
Intrauterine devices	Prevent implantation of an embryo or release a hormone.
Spermicidal agents	Kill or disable sperm.
Abstaining	Avoiding intercourse when an egg may be in the oviduct.
Surgery	Male or female sterilisation.



Plant responses using hormones (auxins)

- Light (phototropism)**
- Gravity (geotropism or gravitropism)**

Light breaks down auxins and they become unequally distributed in the shoot. The side with the highest concentration of auxins has the highest growth rate and the shoot grows toward the light.

Gravity causes an unequal distribution of auxins. In roots the side with the lowest concentration has the highest growth rate and the root grows in the direction of gravity.

In new shoots from a seedling the unequal distribution of auxins causes the shoot to grow away from gravity.

(HT only) Gibberellins are important in initiating seed germination.

(HT only) Ethene controls cell division and ripening of fruits.

Plants produce hormones to coordinate and control growth

Use of plant hormones (HT only)

Plant growth hormones are used in agriculture and horticulture

Auxins	Weed killers, rooting powders, promoting growth in tissue culture.
Ethene	Control ripening of fruit during storage and transport.
Gibberellins	End seed dormancy, promote flowering, increase fruit size.

Plant hormone s (SEPS ONLY)

Hormones in human reproduction

During puberty reproductive hormones cause secondary sexual characteristics to develop

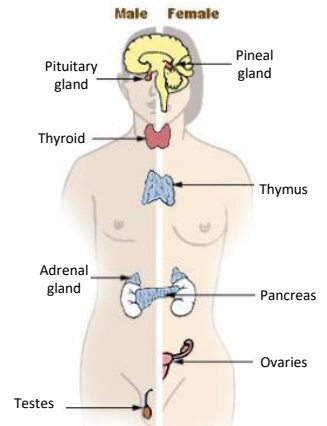
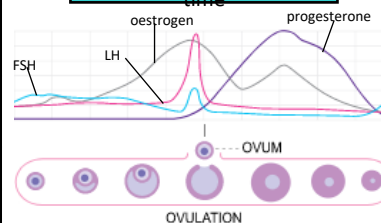
Oestrogen (main female reproductive hormone)

Produced in the ovaries. At puberty eggs begin to mature releasing one every 28 days – **ovulation**.

Testosterone (main male reproductive hormone)

Produced in the testes stimulation sperm production.

(HT only) a graph of hormone levels over time



Follicle stimulating hormone (FSH)	Causes maturation of an egg in the ovary.	(HT) FSH stimulates ovaries to produce oestrogen.
Luteinising hormone (LH)	Stimulates release of an egg.	(HT) Oestrogen stops FSH production and stimulates LH production in pituitary gland.
Oestrogen and progesterone	Oestrogen builds and progesterone maintains the uterus lining.	

Year 10 science: Homeostasis and response

In Vitro Fertilisation (IVF) treatment.

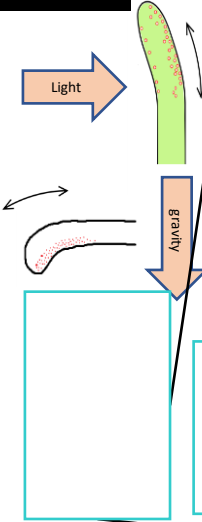
Involves giving a mother FSH and LH to stimulate the maturation of several eggs

Potential disadvantages of IVF	

Fertility can be controlled by hormonal and non hormonal methods	Oral contraceptives	
	Intrauterine devices	
	Spermicidal agents	
		Male or female sterilisation.

The use of hormone to treat infertility (HT only)

Contraception



Plant responses using hormones (auxins)	Light (phototropism)	
	Gravity (geotropism or gravitropism)	

(HT only)	(HT only)
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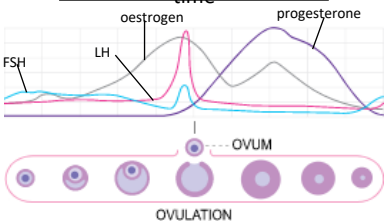
Use of plant hormones (HT only)	Plant growth hormones are used in agriculture and horticulture	Auxins	
		Ethene	
		Gibberellins	

Plant hormone s (SEPS ONLY

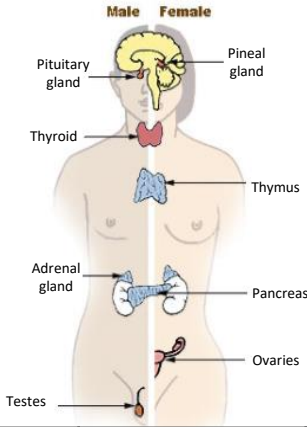
Hormones in human reproduction

During puberty reproductive hormones cause secondary sexual characteristics to develop	
Oestrogen (main female reproductive hormone)	Testosterone (main male reproductive hormone)

(HT only) a graph of hormone levels over time



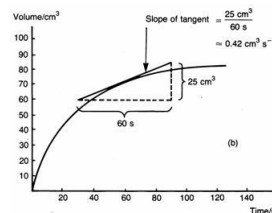
Menstrual cycle	Follicle stimulating hormone (FSH)		(HT)
	Oestrogen and progesterone		(HT)



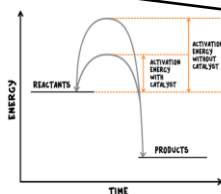
Year 10 Science: The rate and extent of chemical change

Rate of chemical reaction	<i>This can be calculated by measuring the quantity of reactant used or product formed in a given time.</i>	$\text{Rate} = \frac{\text{quantity of reactant used}}{\text{time taken}}$ $\text{Rate} = \frac{\text{quantity of product formed}}{\text{time taken}}$
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Calculating rates of reactions



Catalysts



If a catalyst is used in a reaction, it is not shown in the word equation.

Catalyst	A catalyst changes the rate of a chemical reaction but is not used in the reaction.
Enzymes	These are biological catalysts.
How do they work?	Catalysts provide a different reaction pathway where reactants do not require as much energy to react when they collide.

Reversible reactions

Reversible reactions	In some chemical reactions, the products can react again to re-form the reactants.
Representing reversible reactions	$A + B \rightleftharpoons C + D$
The direction	The direction of reversible reactions can be changed by changing conditions: $A + B \xrightleftharpoons[\text{cool}]{\text{heat}} C + D$

Energy changes and reversible reactions

If one direction of a reversible reaction is exothermic, the opposite direction is endothermic. The same amount of energy is transferred in each case.

Changing conditions and equilibrium (HT)

The relative amounts of reactants and products at equilibrium depend on the conditions of the reaction.

Equilibrium

Equilibrium in reversible reactions	When a reversible reaction occurs in apparatus which prevents the escape of reactants and products, equilibrium is reached when the forward and reverse reactions occur exactly at the same rate.
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For example:

$$\text{Hydrated copper sulfate} \xrightleftharpoons[\text{exothermic}]{\text{endothermic}} \text{Anhydrous copper sulfate} + \text{Water}$$

Factors affecting the rate of reaction

Temperature	<i>The higher the temperature, the quicker the rate of reaction.</i>
Concentration	<i>The higher the concentration, the quicker the rate of reaction.</i>
Surface area	<i>The larger the surface area of a reactant solid, the quicker the rate of reaction.</i>
Pressure (of gases)	<i>When gases react, the higher the pressure upon them, the quicker the rate of reaction.</i>

Collision theory and activation energy

Collision theory	<i>Chemical reactions can only occur when reacting particles collide with each other with sufficient energy.</i>	Increasing the temperature increases the frequency of collisions and makes the collisions more energetic, therefore increasing the rate of reaction.
Activation energy	<i>This is the minimum amount of energy colliding particles in a reaction need in order to react.</i>	Increasing the concentration, pressure (gases) and surface area (solids) of reactions increases the frequency of collisions, therefore increasing the rate of reaction.

Le Chatelier's Principles

States that when a system experiences a disturbance (change in condition), it will respond to restore a new equilibrium state.

Changing concentration

If the concentration of a reactant is increased, more products will be formed.
If the concentration of a product is decreased, more reactants will react.

Changing temperature

If the temperature of a system at equilibrium is increased:

- Exothermic reaction = products decrease
- Endothermic reaction = products increase

Changing pressure (gaseous reactions)

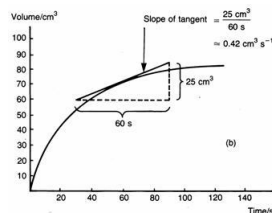
For a gaseous system at equilibrium:

- Pressure increase = equilibrium position shifts to side of equation with smaller number of molecules.
- Pressure decrease = equilibrium position shifts to side of equation with larger number of molecules.

Year 10 Science: The rate and extent of chemical change

Rate of chemical reaction

Calculating rates of reactions



Factors affecting the rate of reaction

Temperature

Concentration

Surface area

Pressure (of gases)

Catalysts

Catalyst

Enzymes

How do they work?

Reversible reactions

Quantity

Unit

Mass

Volume

Rate of reaction

Collision theory and activation energy

Collision theory

Activation energy

Reversible reactions

Representing reversible reactions

The direction

Changing conditions and equilibrium (HT)

Equilibrium

Equilibrium in reversible reactions

Le Chatelier's Principles

Changing concentration

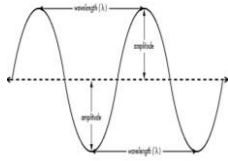
Changing temperature

Changing pressure (gaseous reactions)

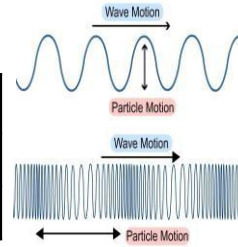
Energy changes and reversible reactions

For example:

Year 10 Science: Waves



Wave speed	Wave speed = frequency X wavelength	$V = f \times \lambda$
Wave period	Wave period = $1 \div \text{frequency}$	$T = 1 \div f$
Speed	Speed = distance $\div$ time	$v = d \div t$

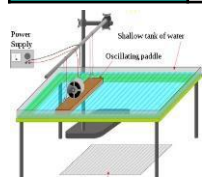


Transverse wave	Vibration causing the wave is at right angles to the direction of energy transfer	Energy is carried outwards by the wave.	Water waves, all electromagnetic waves
Longitudinal wave	Vibration causing the wave is parallel to the direction of energy transfer	Energy is carried along the wave.	Sound waves, waves in springs

Wavelength	Distance from one point on a wave to the same point of the next wave
Amplitude	The maximum disturbance from its rest position
Frequency	Number of waves per second
Period	Time taken to produce 1 complete wave

Transverse and Longitudinal waves

Waves in air, fluids and solids

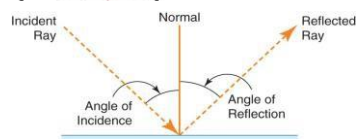
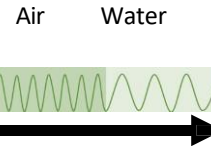


In water, use a ripple tank.

Measuring speed

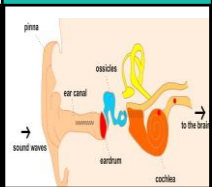
In air, use echoes.

Sound waves travelling through different mediums, the frequency stay constant.

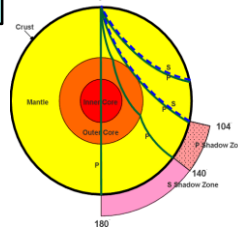


Angle of incidence = angle of reflection ($i = r$)

Reflection	Wave bounces off the surface.
Refraction	Waves changes direction at boundary.
Transmitted	Passes through the object.
Absorbed	Passes into but not out of a substance, transfers energy and heats up the object.

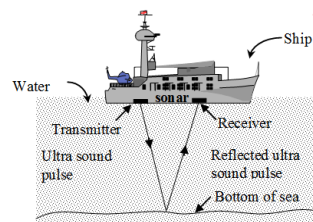


Hearing	Frequencies between 20 – 20,000 Hz	Longitudinal waves cause ear drum to vibrate, amplified by three ossicles which creates pressure in the cochlea.
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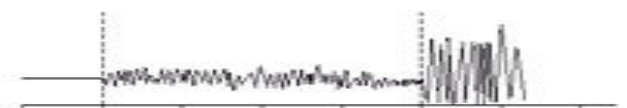


Light refracts as it slows down in a denser substance

SEPS ONLY Seismic waves

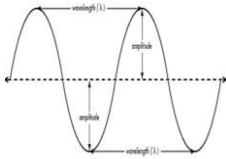


Ultra sound	Partially reflected off boundary	Used for medical and foetal scans.
Sonar	Reflected off objects	Used to determine depth of objects under the sea.



P wave	S wave	Seismograph
Longitudinal	Transverse	Shows P and S waves arriving at different times.
Fast	Slow	
Travel through solids and liquids	Travels through solids	By using the time the waves arrive at the monitoring centres, the epicentre of earthquake can be found. ($v = x \div t$).
Produced by earthquakes.		

Year 10 Science: Waves



Wave speed

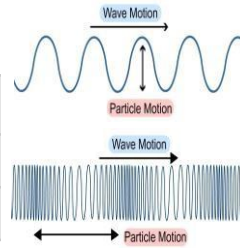
Wave period

Speed

$$V = f \times \lambda$$

$$T = 1 \div f$$

$$v = d \div t$$



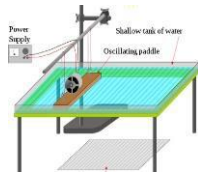
Transverse wave

Longitudinal wave

Transverse and Longitudinal waves

Waves in air, fluids and solids

Wavelength	
Amplitude	
Frequency	
Period	



In water, use a ripple tank.

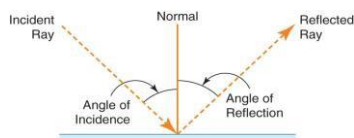
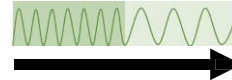
In air, use echoes.

Measuring speed

Properties

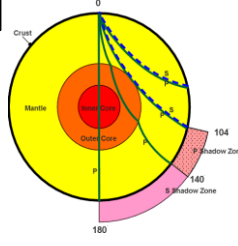
Sound waves travelling through different mediums, the frequency stay constant.

Air Water

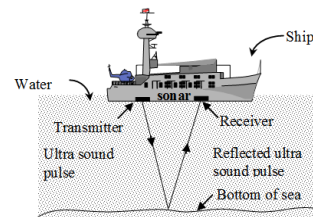


Angle of incidence = angle of reflection (i) = (r)

Reflection	
Refraction	
Transmitted	
Absorbed	

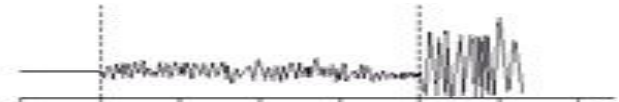


Light refracts as it slows down in a denser substance



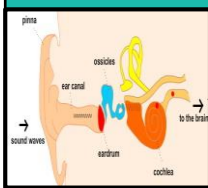
Ultra sound

Sonar



SEPS ONLY Seismic waves

P wave	S wave	Seismograph
		Shows P and S waves arriving at different times.
		By using the time the waves arrive at the monitoring centres, the epicentre of earthquake can be found. ($v = x \div t$).



Hearing

Frequencies between 20 – 20,000 Hz

Year 10 Science: Waves

Black body radiation

e.g. Gamma

Short wavelengths have high frequency and high energy.

SEPS ONLY

Earth and Global warming

Ultraviolet, visible light, infra-red radiation penetrate atmosphere and heat up Earth's surface.

Longer wavelengths are radiated back, trapped by the atmosphere.

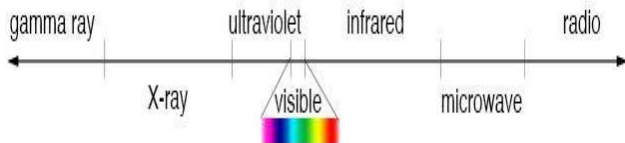
Energy lost is not at the same rate as energy being absorbed so Earth heats up.

Electromagnetic waves

Electromagnetic wave

Continuous spectrum of transverse waves

Magnification = image size ÷ object size



Black body radiation

All objects absorb or reflect infrared radiation

A perfect black body object absorbs all infrared radiation

Constant temperature

Rate of absorption = rate of radiation

Intensity and wavelength of energy affects temperature.

Distance

Wave speed

Wavelength

Frequency

Period

Units

Metres (m)

Metres per second (m/s)

Metres (m)

Hertz (Hz)

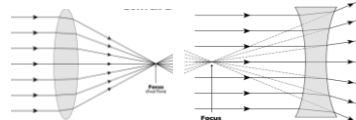
Seconds (s)

Convex

Real or virtual images.

Concave

Only virtual images.



2F

Image same size, upside down, real.

2F - F

Image larger, upside down, real.

< F

Image bigger, right way, virtual.

Specular

Flat surface reflection.

Diffuse

Rough surface reflection.

EM wave

Danger

Use

Radio

None known

Communications, TV, radio.

Microwave

Burning if concentrated.

Mobile phones, cooking, satellites.

Infrared

Heating, remote controls, cooking.

Visible

Damage to eyes.

Illumination, photography, fibre optics.

Ultra violet

Sunburn, skin cancer.

Security marking, disinfecting water.

X-ray

Cell destruction/ mutation, cancer.

Broken bones, airport security.

Gamma

Sterilising, detecting and killing cancer.

Low frequency, long wavelength.

White

Wave lengths reflected

Black

Wave lengths absorbed

High frequency, short wavelength

Year 10 Science: Waves

Black body radiation

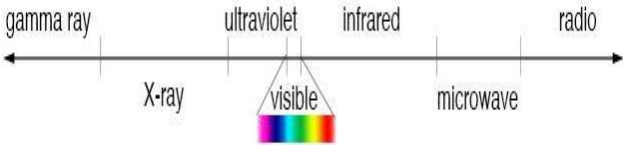
e.g. Gamma

Short wavelengths have high frequency and high energy.

Electromagnetic waves

Electromagnetic wave

Magnification = image size ÷ object size



SEPS ONLY

Earth and Global warming

Ultraviolet, visible light, infra-red radiation penetrate atmosphere and heat up Earth's surface.

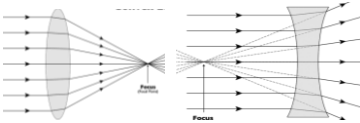
Longer wavelengths are radiated back, trapped by atmosphere.

Energy lost is not at the same rate as energy being absorbed so Earth heats up.

Black body radiation		
Constant temperature		

	Units
Distance	
Wave speed	
Wavelength	
Frequency	
Period	

Convex	
Concave	



2F	
2F - F	
< F	

Specular	
Diffuse	

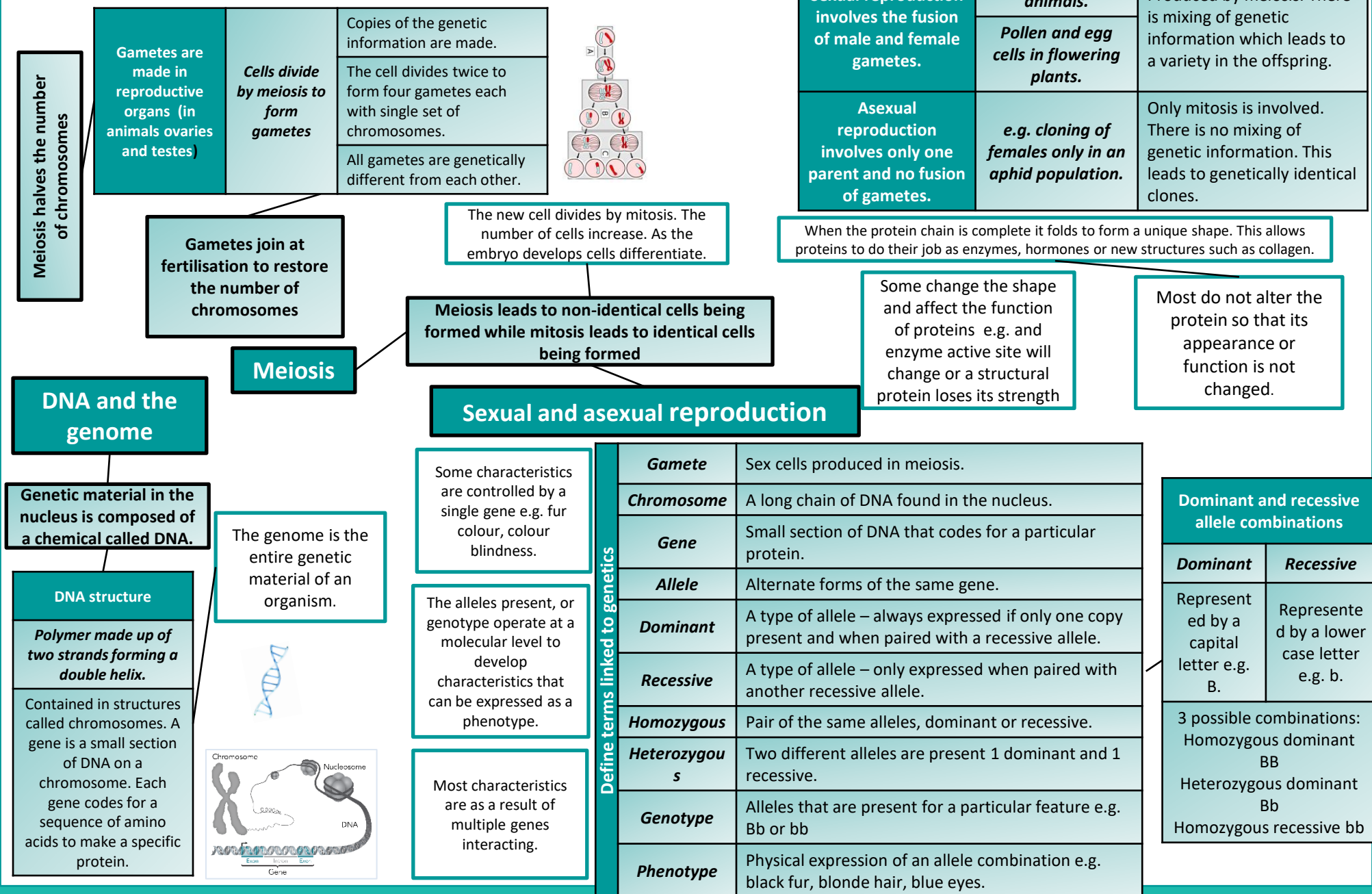
EM wave	Danger	Use
Radio		
Microwave		
Infrared		
Visible		
Ultra violet		
X-ray		
Gamma		

Low frequency, long wavelength.

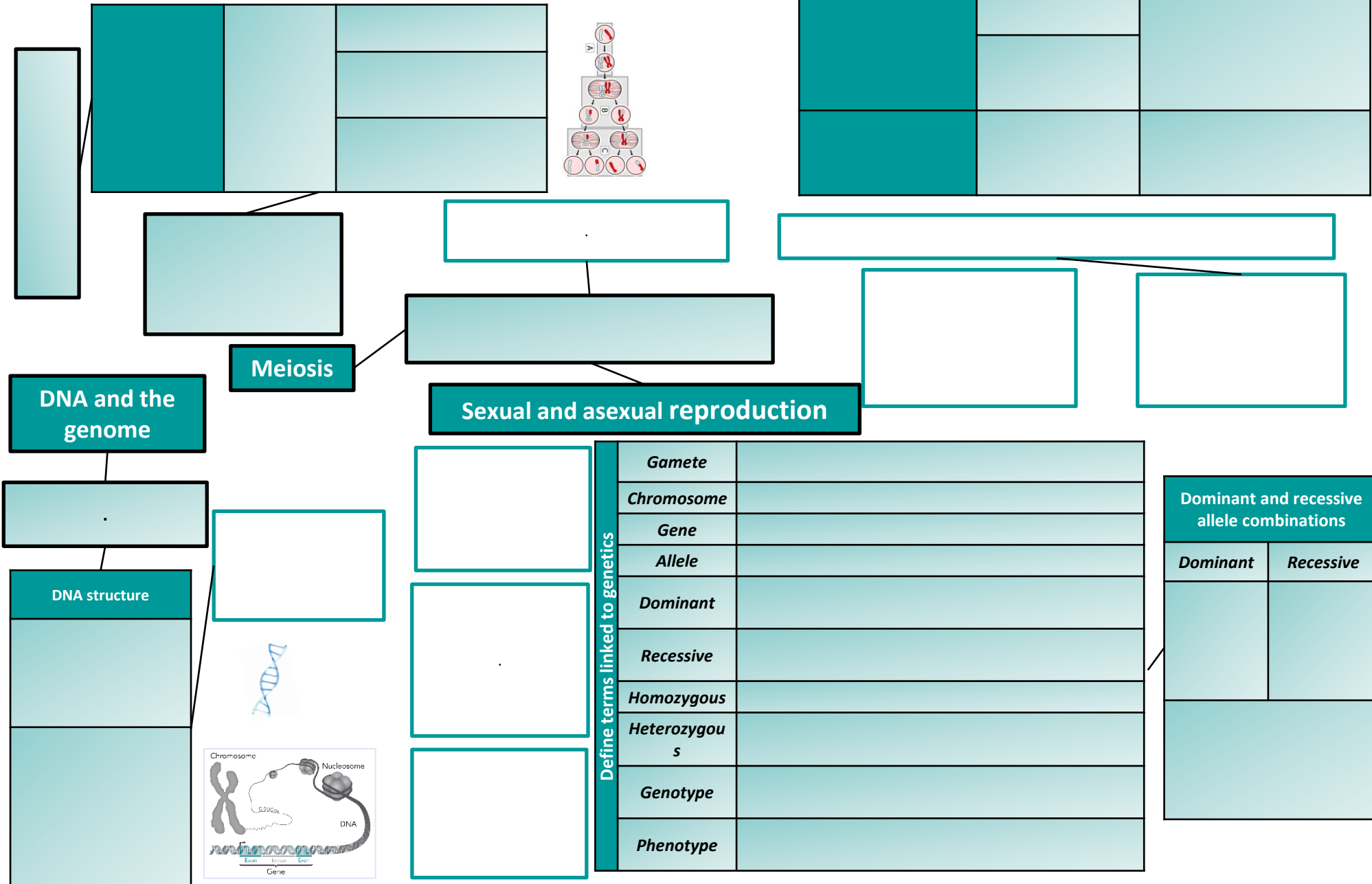
↕

High frequency, short wavelength

Year 10 science: Inheritance, variation and evolution



Year 10 science: Inheritance, variation and evolution



Year 10 science: Inheritance, variation and evolution

SEPS ONLY

When the protein chain is complete it folds to form a unique shape. This allows proteins to do their job as enzymes, hormones or new structures such as collagen.

Advantages and disadvantages of sexual and asexual reproduction (Biology only)

Some change the shape and affect the function of proteins e.g. and enzyme active site will change or a structural protein loses its strength

Most do not alter the protein so that its appearance or function is not changed.

Mutations occur continuously (HT only)

DNA structure (Biology only)

Protein synthesis (HT only)

Repeating nucleotide units.

In DNA the complementary strands C, A, T, G always link in the same way. C always linked to G on the opposite strand and A to T.

(HT) Making new proteins (protein synthesis)

Composed of chains of amino acids. A sequence of 3 bases codes for a particular amino acid.

DNA in the nucleus unravels.

Enzymes make a copy of the DNA strand called mRNA.

mRNA moves from the nucleus to ribosomes in the cytoplasm.

Ribosomes translate each 3 bases into amino acids according to mRNA template

Ribosomes link amino acids brought by carrier proteins.

A long chain of amino acids form. Their specific order forms a specific protein.

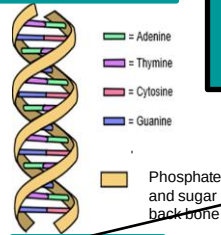
A sequence of 3 bases is the code for a particular amino acid. The order of bases controls the order in which each amino acid is assembled to produce a specific protein.

Concern: some people have ethical objections to adult cell cloning e.g. welfare of the animals.

Reproduction advantages/disadvantages	
Sexual	Asexual
Needs two parents.	Only one parent needed (quicker).
Produces variation in the offspring.	Identical offspring (no variation).
If the environment changes variation gives a survival advantage by natural selection.	Vulnerable to rapidly changing conditions due to lack of variation.
Negative mutations are not always inherited.	Negative mutation can affect all offspring.
Natural selection can be speeded up using selective breeding to increase food production.	Food/medicine production can be extremely quick.

Some organisms use both methods depending on the circumstances	Malarial parasites	Asexually in the human host but sexually in a mosquito.
	Fungi	Asexually by spores, sexually to give variation.
	Plants	Produce seeds sexually, asexually by runners in strawberry plants, bulbs division in daffodils.

Cloning (Biology only)



(HT only) Not all parts code for proteins. Non-coding parts can switch genes on and off. Mutations may affect how genes are expressed.

DNA is polymer made from four different nucleotides. Each nucleotide consists of a common sugar, phosphate group and one of 4 different bases A, C, G & T

The whole human genome has now been studied.

It is of great importance for future medical developments

Searching for genes linked to different types of disease.

Understanding and treatment of inherited disorders.

Tracing migration patterns from the past.

Adult cell cloning

1. Nucleus is removed from an unfertilised egg.
2. Nucleus from body cell is inserted into egg cell.
3. An electric shock stimulates the egg to divide into an embryo
4. Embryo cells are genetically identical to adult cells.
5. When embryo has developed into ball of cells it is inserted into host womb.

Cloning techniques in plants/animals

Tissue culture	Small groups of cells to grow new plants. Important for preservation of rare plants and commercially in nurseries.
Cuttings	Part of a plant is cut off and grown into full plant.
Embryo transplants	Splitting apart cells from animals embryo before they become specialised. New clone embryos are inserted into womb of adult female.

Year 10 science: Inheritance, variation and evolution

SEPS ONLY

Advantages and disadvantages of sexual and asexual reproduction (Biology only)

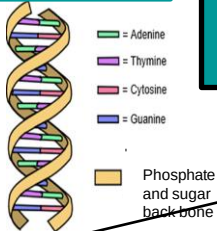
Mutations occur continuously (HT only)

DNA structure (Biology only)

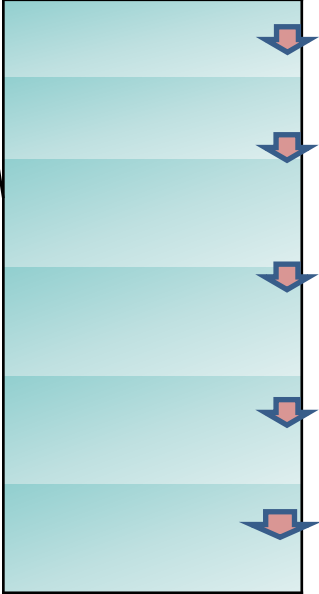
Protein synthesis (HT only)

(HT) Making new proteins (protein synthesis)

Reproduction advantages/disadvantages	
Sexual	Asexual



The whole human genome has now been studied.		



Some organisms use both methods depending on the circumstances			

Cloning (Biology only)

Adult cell cloning

Cloning techniques in plants/animals	

Year 10 science: Inheritance, variation and evolution

Embryo screening: small piece of developing placenta removed to check for presence of faulty genes

Gene therapy: replacing the faulty allele in somatic cells with a normal allele

Embryo screening/gene therapy issues	Economic	Costly and not 100% reliable.
	Social	Not available to everyone (due to cost).
	Ethical	Should only 'healthy' embryos be implanted following screening.

Very rarely a mutation will lead to a new phenotype which if is suited to environmental change can lead to rapid change in the species.

Using a family tree: If the father was homozygous dominant then all of the offspring would have the disorder. He must be heterozygous

Embryo screening and gene therapy may alleviate suffering

Variation

Mutations occur continuously

Variation: difference in the characteristics of individuals in a population may be due to	Genetic causes (inheritance)	There is usually extensive genetic variation within the population of a species e.g. hair colour, skin colour, height that can also be affected by environment e.g. nutrition, sunlight.
	Environmental causes (condition they have developed in)	
	A combination of genes and environment	

All genetic variation arises in mutation, most have no effect on phenotype, some influence but very few determine phenotype.

The genome and its interaction with the environment influence the development of phenotypes

Inherited disorders

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

Polydactyly	Cystic fibrosis
Caused by inheriting a dominant allele.	Caused by inheriting a recessive allele (both parents have to at least carry it).
Causes a person/animal to have extra toes or fingers.	A disorder of the cell membrane. Patients cannot control the viscosity of their mucus.

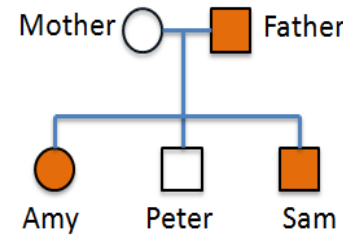
Sex determination

Ordinary human body cells contain 23 pairs of chromosomes

One pair of chromosomes carry the genes that determine sex

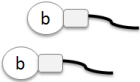
	Female	Male
	XX	XY
Gametes	X	Y
X	XX	XY
X	XX	XY

The probability of a male of female child is 50%. The ratio is 1:1



Key
 ○ Female without disorder
 ● Female with disorder
 □ Male without disorder
 ■ Male with disorder

Using a punnet square (using mouse fur colour as an example)

Parent phenotype	Black fur 	White fur 									
Parent genotype	BB	bb									
What gametes are present	In each egg 	In each sperm 									
<table><tr><th>Gametes</th><th>b</th><th>b</th></tr><tr><th>B</th><td>Bb</td><td>Bb</td></tr><tr><th>B</th><td>Bb</td><td>Bb</td></tr></table>			Gametes	b	b	B	Bb	Bb	B	Bb	Bb
Gametes	b	b									
B	Bb	Bb									
B	Bb	Bb									

The probability of black fur offspring phenotype is 100%. All offspring genotypes are heterozygous (Bb).

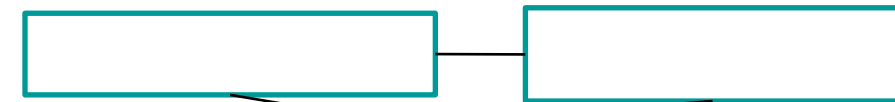
Crossing two heterozygous mice (Bb)

Gametes	B	b
B	BB	Bb
b	Bb	bb

The probability of black fur is 75% and white fur 25%. The ratio of black to white mice is 3:1

The concept of probability in predicting results of a single gene cross.

Year 10 science: Inheritance, variation and evolution



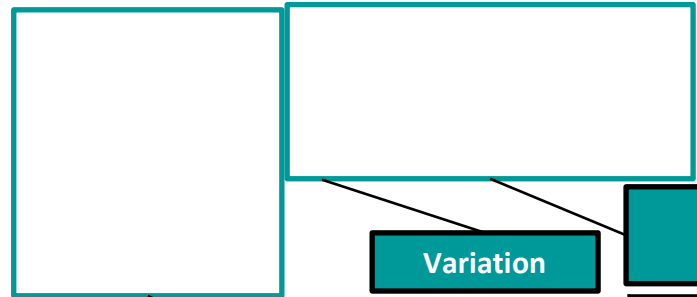
Embryo screening/gene therapy issues		

Sex determination



One pair of chromosomes carry the genes that determine sex

Gametes	X	Y
X	XX	XY
X	XX	XY

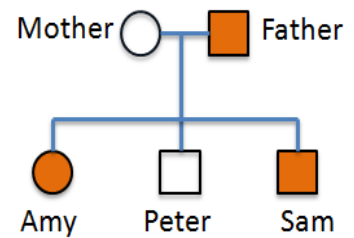


Variation

Inherited disorders

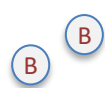
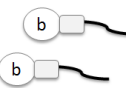
Variation: difference in the characteristics of individuals in a population may be due to		

Mutations occur continuously



- Key
- Female without disorder
 - Female with disorder
 - Male without disorder
 - Male with disorder

Using a punnet square (using mouse fur colour as an example)

	Black fur 	White fur 
	In each egg	In each sperm
		
Gametes	b	b
B	Bb	Bb
B	Bb	Bb



Crossing two heterozygous mice (Bb)

Gametes	B	b
B	BB	Bb
b	Bb	bb

The concept of probability in predicting results of a single gene cross.



Year 10 science: Inheritance, variation and evolution

Evolution

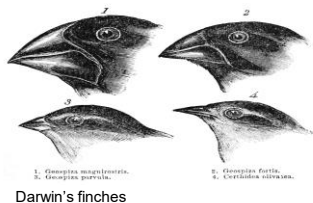
A change in the inherited characteristics of a population over time through the process of natural selection.

Over time this results in the formation of new species.

Evidence for evolution

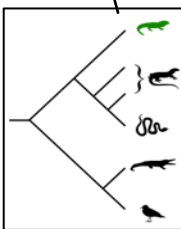
Evolution is widely accepted. Evidence is now available as it has been shown that characteristics are passed on to offspring in genes.

Fossils and antibiotic resistance in bacteria provide evidence for evolution.



Darwin's finches

Evolutionary trees are a method used by scientists to show how organisms are related



Humans have been doing this for thousands of years since they first bred food from crops and domesticated animals.

Selective breeding

Choosing parents with the desired characteristics from a mixed population

Chosen parents are bred together.

From the offspring those with desired characteristics are bred together.

Repeat over several generations until all the offspring show the desired characteristics.

Choosing characteristics

Desired characteristics are chosen for usefulness or appearance

Disease resistance in food crops.



Animals which produce more meat or milk.



Domestic dogs with a gentle nature.



Large or unusual flowers.



Concern: effect of GMO on wild populations of flowers and insects.



Selective breeding can lead to 'inbreeding' where some breeds are particularly prone to disease or inherited defects. e.g. British Bulldogs have breathing difficulties.

Genetic engineering

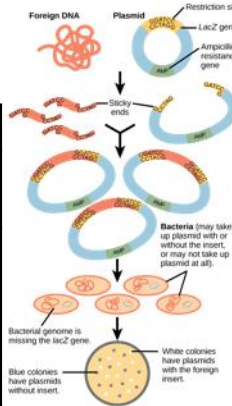
Modern medical is exploring the possibility of GM to over come inherited disorders e.g. cystic fibrosis

The process by which humans breed plants/animals for particular genetic characteristics

Concern: effect of GMO on human health not fully explored

Genetic engineering process (HT only)

1. Enzymes are used to isolate the required gene.
2. Gene is inserted into a vector – bacterial plasmid or virus.
3. Vector inserts genes into the required cells.
4. Genes are transferred to plants/animals/microbes at an early stage of development so they develop the required characteristics.



Extinction

When no members of a species survive

Due to extreme geological events, disease, climate change, habitat destruction, hunting by humans.

Antibiotic resistant bacteria

Mutations produce antibiotic resistant strains which can spread

Resistant strains are not killed.

Strain survives and reproduces.

People have no immunity to strain and treatment is ineffective.

Fossils

'remains' of ancient organisms which are found in rocks

Parts of organism that have not decayed as necessary conditions are absent.

Parts of the organism replaced by minerals as they decay.

Preserved traces of organisms such as footprints, burrows and rootlet traces.

Early forms of life were soft bodied and few traces are left behind and have been destroyed by geological activity, cannot be certain about how life began.

Fossils tell scientists how much or how little different organisms have changed over time.

Genetically modified crops (GMO)

Crops that have genes from other organisms

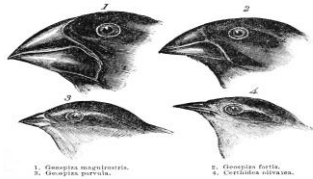
To become more resistant to insect attack or herbicides.

To increase the yield of the crop.

Genes from the chromosomes of humans or other organisms can be 'cut out' and transferred to the cells of other organisms.

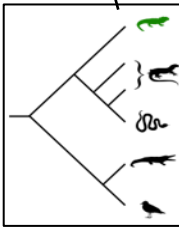
Year 10 science: Inheritance, variation and evolution

Evolution



Darwin's finches

Evidence for evolution



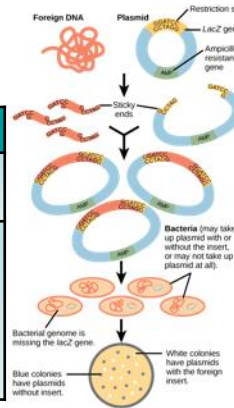
Selective breeding

Choosing characteristics



Genetic engineering

Genetic engineering process (HT only)



Genetically modified crops (GMO)

Fossils

Antibiotic resistant bacteria

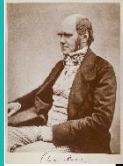
Extinction

Year 10 science: Inheritance, variation and evolution

Charles Darwin

Theory of evolution by natural selection.

- Individual organisms within a particular species show a wide range of variation for a characteristic.
- Individual most suited to the environment are more likely to breed successfully.
- Characteristics enable individuals to survive are then passed on to the next generation.



Evidence from around the world, experimentation, geology, fossils, discussion with other scientists (Alfred Wallace) lead to:

Theory of evolution (SEPS only)

Charles Darwin 'On the Origin of the Species' (1859)

Published the theory of evolution by natural selection

Slowly accepted; challenged creation theory (God), insufficient evidence at time, mechanism of inheritance not yet known.

Other theories e.g. Lamarckism are based on the idea that changes occur in an organism during its lifetime which can be inherited. We now know that in the vast majority of cases this cannot occur.

Allows biologists to understand the diversity of species on the planet.

Developed since its proposal from information gathered by other scientists.

Did much pioneering work on speciation but more evidence over time has lead to our current understanding.



Alfred Wallace

Independently proposed the theory of evolution by natural selection

Published joint writings with Darwin in 1858.

Worked worldwide gathering evidence.

Best known for work on warning colouration in animals and his theory of speciation.

Speciation (SEPS Only)

Due to isolation of a population of a species e.g. species are split across far apart islands.

Environmental conditions differ for populations e.g. types of food available, habitat.

Individuals in each population most suited to their environments are more likely to breed successfully.

Over long periods of time each population will have greater differences in their genotype.

If two populations of one species become so different in phenotype that they can no longer interbreed to produce fertile offspring they have formed two new species.

Classification of living organisms

The full human classification

Carl Linnaeus classified living things	Kingdom	Animalia
	Phylum	Chordata
	Class	Mammalia
	Order	Primates
	Family	Hominidae
	Genus	Homo
	Species	sapiens

Due to improvements in microscopes, and the understanding of biochemical processes, new models of classification were proposed.

Organisms are named by the binomial system of genus and species. Humans are *Homo sapiens*

Carl Woese

3 domain based on chemical analysis.

Archaea (primitive bacteria), true bacteria, eukaryota.

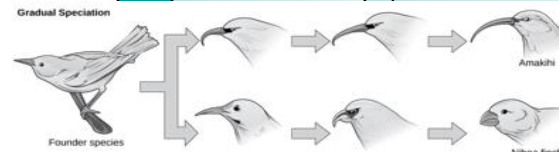
The understanding of genetics (SEPS only)

Gregor Mendel

In the mid 19th century carried out breeding experiments on plants

Inheritance of each characteristic is determined by units that are passed on to descendants unchanged.

Led to gene theory being developed but not until long after Mendel died.



Further understanding of genetics

Improving technology allowed new observations.

Late 19th century: behaviour of chromosomes in cell division.

Early 20th century: chromosomes and Mendel's 'units' behave in similar ways. 'units' now called genes must be located on chromosomes.

Mid 20th century: structure of DNA determined. Mechanism of gene function worked out.

Year 10 science: Inheritance, variation and evolution

Charles Darwin



Charles Darwin 'On the Origin of the Species' (1859)

Theory of evolution (SEPS only)



Alfred Wallace

Speciation (SEPS Only)



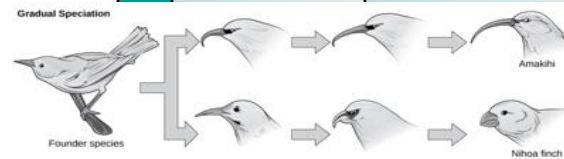
Classification of living organisms

Carl Woese

Carl Linnaeus classified living things

The understanding of genetics (SEPS only)

Gregor Mendel



Further understanding of genetics

