



WOOTTON PARK

'Ipsam quod faciendum est diutius'

Knowledge Maps

Year 11: Term 1

GCSE Subjects including
Trilogy Science

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Week 1 -

Watch the plot summary of Macbeth



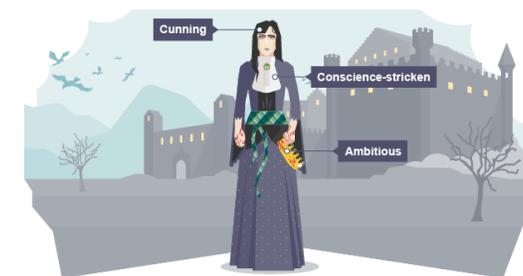
Read the following plot summary online

<https://www.sparknotes.com/shakespeare/macbeth/summary/>

Week 2 -

Please log on to the website below to look at key character descriptions:

<https://www.bbc.co.uk/bitesize/guides/z347v4j/revision/2>



Week 3 – Context 1

William Shakespeare wrote Macbeth in **1606** and it was performed at a time of **political tension**. The current monarch was **James I**, who inherited the throne of England after **Queen Elizabeth I** died. With Elizabeth having no children, her distant cousin James was the next best claimant to the crown.

Many other members of the **aristocracy** felt they too had a good claim to the throne, which meant James' place as king was not always certain.

King James was a **protestant** – one of the reasons he was able to gain the crown – despite his mother being a **catholic**. Catholics in England had hoped that James might support them because of his family connections, but he did not. This led to a number of **conspiracies** and plots being developed against him, including the infamous **Gunpowder Plot of 1605**, just a year before Shakespeare wrote Macbeth.

Generally, many of the plays Shakespeare wrote during the Elizabethan era were very positive such as A Midsummer Night's Dream, but when James came to the throne he brought with him political **uncertainty**, and this atmosphere is reflected in the more menacing and darker plays Shakespeare wrote like Macbeth and Hamlet.

King James I was **Scottish** by birth and fascinated by his own family history. The play 'Macbeth' is based on real events from Scottish history and there was actually a King Macbeth in Scotland. In real life, King Macbeth reigned from 1040 to 1057 and had many **successes** as a king, whilst Duncan was actually a weak man who lacked **respect** from the people of Scotland.

Shakespeare based many of his plays on '**The Chronicles of Holinshed**'. In this book, Banquo is included but he is shown to be a traitor just like Macbeth and assists him in the murder.

King James believed himself to be a descendant of Banquo's (although we now know he wasn't), which may have affected the way Shakespeare showed Banquo on stage.

Week 4 – Context

The Jacobean believed in the idea of a '**Great Chain of Being**'. The idea of this was that God had created a **hierarchy** that everyone had to live by, which God at the top and the King or Queen one place below Him. Therefore no one should want to become king because it was a position chosen by God and no one else could choose it. To want to become the monarch was therefore viewed as a **sin** and going against God.

King James very much believed in the concept of '**divine right**' to rule. When a king or queen is coronated, the ceremony makes them '**divine**', in many ways like the Catholic church's Pope who is also seen to be divinely chosen and the '**mouthpiece of God**' on earth.

During the Elizabethan era, Shakespeare's acting company was called the 'Chamberlain's Men', but during King James' time they changed their name to the '**King's Men**'. In many ways, the play 'Macbeth' **flatters** and pleases King James. Think about what happens to someone like Macbeth who goes against 'divine rule'. Do you remember the line of kings that stretches out 'to the crack of doom'? If James believed himself to be a descendant of Banquo then this implies many of his children would be king as well.

King James was very interested in the concept of an 'ideal king' and wrote about it in a book called '**Basilikon Doron**'. In this he discussed how a king should be someone of absolute **integrity** and someone who does their duty to both their country and God. In the play, Malcolm seems to represent this ideal king, something King James would have been fascinated by.

Furthermore, King James was intrigued by the **supernatural**, such as witches and ghosts, and wrote a book called '**Daemonologie**' about this. That the play is so packed full of the supernatural is again possibly to interest the king. It is believed that King James himself was involved in some **witch trials** up in North Berwick (near Scotland).

Week 5 – Key Quotes

Key Quote	Basic Point	Higher Point
<i>"Is this a dagger which I see before me?"</i>	Macbeth hallucinates a dagger on his way to kill Duncan – he is losing control of his mental awareness.	The 'dagger' symbolises the violence and evil within him. He is willing to use pain to achieve his ambition.
<i>"Will all great Neptune's ocean wash this blood clean?"</i>	Macbeth feels so guilty about killing Duncan, he doesn't believe there's enough water to clean him of the deed.	Symmetry in the image of water: Lady Macbeth here dismisses Macbeth with "a little water clears us" – but by the end she is the one calling for more imaginary water to wash her hands clean of her crimes.
<i>"Bear-like"</i>	Macbeth fights really bravely in the final battle	Cyclical structure: Macbeth returns back to the brave warrior we knew at the start.
<i>"Unsex me"</i>	Lady Macbeth doesn't want to be a woman so she can be free if the innocence and purity expected of her gender.	She doesn't want to be a man either so she doesn't have to uphold honour – she's committing to evil. (And she's comfortable with the supernatural – asking the spirits to do it for her)
<i>"Dash'd the brains out"</i>	Lady Macbeth uses threats of violence and taunts of cowardice to bully Macbeth.	Lady Macbeth presents an image of not having the motherly, womanly instincts expected of the time.
<i>"Out damned spot!"</i>	Lady Macbeth loses control of her mind; she can't cope with the guilt and shame.	The spot represents her actions; she played a small role in comparison, but it had permanent consequences.
<i>"shame to wear a heart so white"</i>	Lady Macbeth mocks the cowardice of Macbeth.	'White' implies there is a purity and innocence in Macbeth: he's a reluctant villain.
<i>"Thunder, lightning or rain"</i>	Pathetic fallacy of the witches meeting suggests mystery and evil.	A storm, like the witches, is a disturbance to the natural order. They want to disrupt society and the great chain of being.

Week 6 – Key Quotes

Key Quote	Basic Point	Higher Point
<i>"Wish't they had stayed"</i>	Macbeth believes he can control the supernatural – he is upset when the witches go.	He depends on them for guidance. They depend on him to use his ambition and their riddles to make carnage.
<i>"Approach thou like the rugged Russian bear"</i>	Macbeth wants Banquo's ghost to turn into something physical so he is no longer afraid of it.	Macbeth is trying to show he is masculine enough to not be afraid, but the power of the supernatural usurps the power of masculinity.
<i>"His virtues will plead like angels"</i>	Macbeth knows it's a bad thing to kill Duncan.	Duncan is associated with the virtue and glory of God & Heaven, whereas Macbeth's rule is characterised by the supernatural and evil. The King is the head of the Great Chain of Being, so deserves that comparison.
<i>"Tears will drown"</i>	Macbeth knows lots of people will be upset when Duncan dies.	Macbeth prioritises his own ambition over the harmony of the Great Chain of Being, and the success and happiness of the Scottish society.
<i>"Fair is foul and foul is fair"</i>	The witches think good is bad and bad is good. They live to cause chaos.	The witches speak in rhyme and not in iambic pentameter: they do not fit in with the structural expectations of the play, just as they don't fit in our world.
<i>"Look like the innocent flower, but be the serpent under it"</i>	Lady Macbeth wants Macbeth to trick people before he kills the King.	Flower: Pure, innocent, attractive Serpent: snake (betrayal), dangerous, unpleasant.
<i>"I dare do all that may become a man; who dares do more is none"</i>	Macbeth is conscious his ruining his own perception of his character.	Macbeth, correctly, believe it is the more masculine thing to know when to be peaceful and righteous – Lady Macbeth disagrees.
<i>"We shall proceed no further in this business"</i>	Macbeth tries to assert his masculinity by telling Lady Macbeth they'll stop their plans to kill Duncan. He fails.	He calls it a 'business' – he's detached from the whole plan, he doesn't feel a true part of it. He doesn't want to be a villain.

Week 1 -

King Duncan hears how has been a brave warrior whilst fighting the Norwegians. Duncan gives Macbeth the title of Thane of as reward for his valour. The old Thane of is sentenced to death for being a traitor.

On their way back from battle, Macbeth and Banquo meet the who tell Macbeth that he will become the new Thane of Cawdor and also the new of Scotland. The weird sisters tell Banquo that his descendants will be the future of Scotland. Macbeth is not sure whether this is true, but he is soon told by a messenger that he is now the new This seems like the first part of the prophecy has come true.

Macbeth sends a letter to his wife,, about the witches' predictions. She is excited about becoming queen, but fears that Macbeth is not enough to kill Duncan. When Macbeth arrives home she tries to Macbeth eventually agrees with her.

Duncan arrives at castle and is greeted by the hosts. They hold a feast and most people get drunk. Macbeth is about killing Duncan and decides to abandon his plan. Macbeth believes that Duncan is a king and he comments that Duncan has said many about Macbeth. Lady Macbeth is angry that Macbeth has abandoned his plan to kill and calls him a coward. Macbeth decides to go through with the plan to murder Duncan.

Later that night, whilst approaching Duncan's room, Macbeth sees an imaginary before his eyes. He follows the dagger to Duncan's room. Macbeth creeps into and in cold blood. Lady Macbeth sees the daggers in Macbeth's hands and rushes back to

Macduff arrives at the castle and discovers and raises the alarm. Duncan's sons,, quickly leave Scotland because they might be of killing their father. Macduff does not Macbeth and suspects that Macbeth might have something to do with it.

Week 2 -

Macbeth is of Scotland. The witches' prophecy makes Macbeth believe that he must kill and his son Fleance, because Banquo's descendants Macbeth orders two to carry out the job. However, escapes and this makes Macbeth very angry and also concerned that the witches' predictions could come true.

Macbeth has a banquet and sets a place at the table for, knowing full well that he is dead. However, he sees the of Banquo. in the seat left for him and Macbeth shouts in horror at the ghost. His guests suspect that he has a guilty

Macbeth decides to pay the witches another visit and they show him three apparitions. The first is a on (this represents Macbeth's own severed head, later), the second is a (who is likely to be Macduff torn from his mother's womb), and the third is a with a tree in its hand (this is meant to represent Malcolm and Birnam Wood). The first apparition tells Macbeth to beware Macduff, the second that he will never be defeated by anyone born of, and the third tells Macbeth that he will never be beaten until comes to Dunsinane.

Macduff is sure that Macbeth has murdered Duncan and decides to join in England. He raises an army of Englishmen in order to kill Macbeth and reclaim the throne.

In rage that Macduff has fled the country, Macbeth orders his henchmen to kill Macduff's and this act disgusts his followers, who start to desert him.

Lady Macbeth has gone and talks in her sleep about

A messenger tells the king that the wood is on its way to and Macbeth is worried.

When the army arrives at the castle, Macbeth recklessly attacks and many men because he believes that no one can kill him. However, Macduff tells Macbeth that he was not born of woman because and they start to fight. Macduff Macbeth and his is displayed for everyone to see.

Week 3 – Context 1

William Shakespeare wrote Macbeth inand it was performed at a time of The current monarch was, who inherited the throne of England after died. With Elizabeth having no children, her distant cousin James was the next best claimant to the crown.

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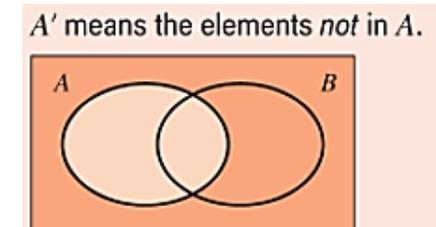
Week 6 – Key Quotes

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<i>"We shall proceed no further in this business"</i>		

Week 1: Venn diagram – set notation

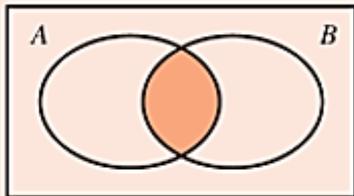
A **universal set** describes all of the elements that are being considered. We use this symbol, \mathcal{U} , to represent the universal set. An **element** is a member of a set and is shown by using the symbol: \in . To show the **set** of values we use curly brackets $\{ \}$

The **intersection** of a Venn diagram considers all of the elements that are in each set that that crosses over. The **union** considers all of the elements in each set being represented



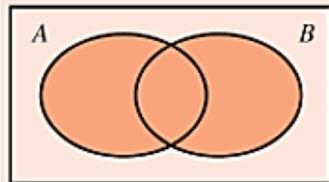
$A \cap B$ means "A intersection B".

This is all the elements that are in A and in B .

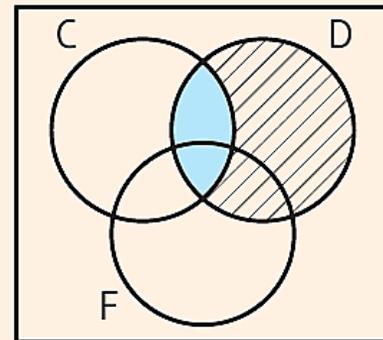


$A \cup B$ means "A union B".

This is all the elements that are in A or B or both.



$P(C \cap D | D)$ means the probability of a cat and dog owner given that pet owner owns a dog.



Week 2: Venn diagrams

To fill in a **Venn diagram**, we must consider the **elements** from the **universal set** that appear in each set which are then placed in the **intersection**.

The remaining elements from each set are then populated in to the Venn diagram.

Any element from the universal set that does not appear in the stated sets must then be placed outside of the Venn diagram.

Example

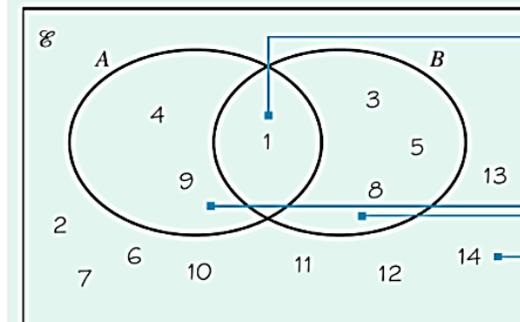
$\mathcal{U} = \{\text{numbers less than 15}\}$

$A = \{1, 4, 9\}$

$B = \{1, 3, 5, 8\}$

Draw a Venn diagram to represent this information.

1 Label \mathcal{U} and the sets A and B .



2 Write in the elements in A and B .

3 Write in the elements in A but not in B .

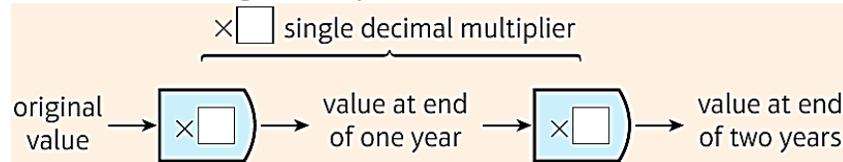
4 Write in the elements in B but not in A .

5 Write in the elements of \mathcal{U} but not in A or B .

Week 3: Growth and decay

If a value increases by a **constant rate** then we describe it as a **growth**. If a value decreases by a **constant rate** then we describe it as a **decay**.

To calculate the rate of growth you should look to find the decimal multiplier.



If a value increases by a **percentage** based on the value at the end of each year we can calculate the **compound interest**. Most interest rates are compound interest.

We can calculate compound interest by using the formula:

$$\text{New amount} = \text{initial amount} \times \left(\frac{100 + \text{interest amount}}{100} \right)^n$$

Where **n** represents the number of years that we are calculating for.

We can use the formula below to calculate depreciation (the opposite of compound interest):

$$\text{New amount} = \text{initial amount} \times \left(\frac{100 - \text{interest amount}}{100} \right)^n$$

Where **n** represents the number of years that we are calculating for.

Week 4: Compound measures

DID YOU KNOW? Police Accident Investigators use compound measures (Kinematics formulae) to work out the speed cars were travelling at in a serious collision.

Compound measures combine measures of two different quantities. One example is **speed, distance and time**. The formula to calculate speed distance and time is shown below:

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

A man walks at an average speed of 5.4 km/h. What is his average speed in m/s?

5.4 km/h

5400 m/h

90 m/min

1.5 m/s

Convert to km/h to m/h $\times 1000$

Convert m/h to m/min $\div 60$

Convert m/min to m/s $\div 60$

Kinematics formulae

a = constant acceleration

u = initial velocity

v = final velocity

s = displacement from position when t = 0

t = time taken

$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

$$v^2 = u^2 + 2as$$

Velocity = speed in a given direction

Acceleration = rate of change of velocity

Week 5: More compound measures

Other compound measures that you can have are listed below:

Mass, density and volume:

$$\text{Hint: } 1\text{cm}^3 = 1000\text{l}$$

$$\text{Density} = \frac{\text{mass}}{\text{volume}}$$

Density is the **mass** of substance in **g** contained in a certain **volume** in cm^3 . Density is often measured in **grams per cubic centimetre** (g/cm^3).

Force, pressure and area:

$$\text{Pressure} = \frac{\text{force}}{\text{area}}$$

Pressure is the force in **newton's** applied over an **area** in cm^2 or m^2 . It is usually measured in newton's (N) per square metre (N/m^2) or per square centimetre (N/cm^2)

Week 6: Ratio and proportion – direct proportion

When two things are in **direct proportion**, they will increase at the same rate.

For example, if x and y are in direct proportion to one another, we can represent this by:

$$y \propto x$$

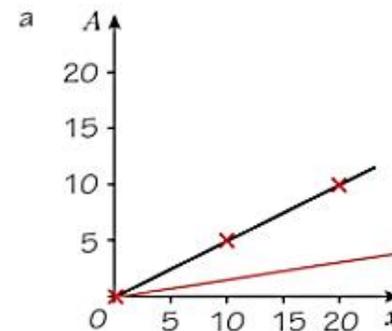
$$y = kx, \text{ where } k \text{ is a constant}$$

And where k is the **gradient** of the graph of y against x

Example 4

A is directly proportional to x . $A = 5$ when $x = 10$.

- Sketch a graph of A against x .
- Use your graph to work out a formula for A in terms of x .
- Use your formula to work out the value of A when $x = 100$



A sketch does not have to be drawn on graph paper. Graph of A against x means A is on the vertical axis. When A and x are in direct proportion, the graph must go through the origin and as A doubles so does x .

b $A = kx$, so $k = \frac{A}{x}$ $k = \frac{5}{10} = \frac{1}{2}$ or 0.5

$A = 0.5x$

Substitute $A = 5$ and $x = 10$

c $A = 0.5 \times 100$ $A = 50$

Substitute $x = 100$ into the formula $A = 0.5x$

Week 7: Ratio and proportion – inverse proportion

Example 5

In 2012, visitor numbers to an ice rink increased by 20% compared to the previous year.
 In 2013, visitor numbers decreased by 10% compared to the previous year.
 In 2013, there were 21 762 visitors. How many visitors were there during 2011?

Inverse proportion is when one value increase whilst the other decrease by the same rate. For example, if one variable doubles ($\times 2$) the other will half ($\div 2$) over time.

In 2012, visitor numbers increased by 20%. Draw an arrow and a multiplier of 1.2

Year
2011

Number of visitors
?

Use ? to show that you don't know the number of visitors during 2011.

In 2013, visitor numbers decreased by 10%. Draw an arrow and a multiplier of 0.9

2012

$\times 1.2$

Draw arrows to work backwards, using the inverse operations: $\div 0.9$, then $\div 1.2$

2013

$\times 0.9$

21 762

Number of visitors in 2011 = $21\,762 \div 0.9 \div 1.2 = 20\,150$

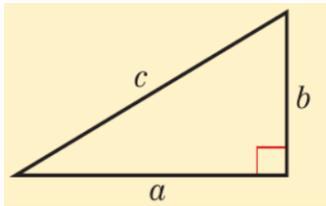
Use the arrow diagram to calculate the number of visitors in 2011.

Check: $20\,150 \times 1.2 \times 0.9 = 21\,762$

Check your answer.

Week 1: Pythagoras' Theorem

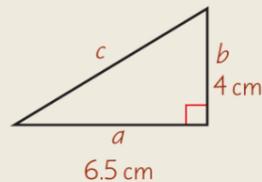
Pythagoras theorem: $a^2 + b^2 = c^2$



Hint: The hypotenuse is the longest side of the triangle, side c in this diagram.

Finding the hypotenuse

Work out the length of the hypotenuse of this right-angled triangle, to the nearest mm.



Sketch the triangle. Label the hypotenuse c and the other sides a and b .

$$c^2 = a^2 + b^2$$

$$c^2 = 6.5^2 + 4^2$$

$$c^2 = 42.25 + 16 = 58.25$$

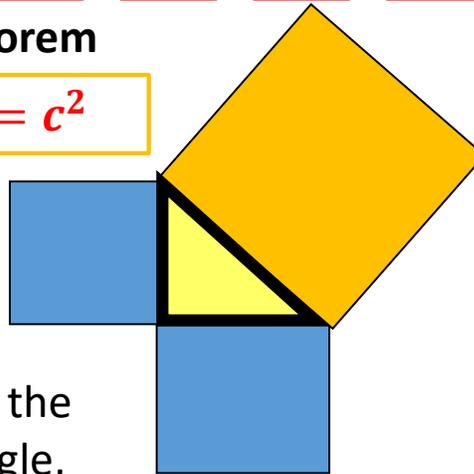
$$c = \sqrt{58.25} = 7.632168\dots$$

The length of the hypotenuse is 7.6 cm to the nearest mm.

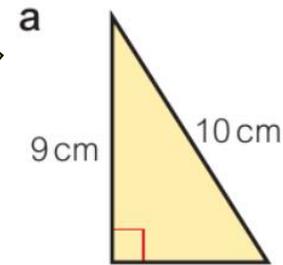
Substitute $a = 6.5$ and $b = 4$ into the formula for Pythagoras' theorem, $c^2 = a^2 + b^2$

Use a calculator to find the square root.

Round to the nearest mm.



Finding a shorter side



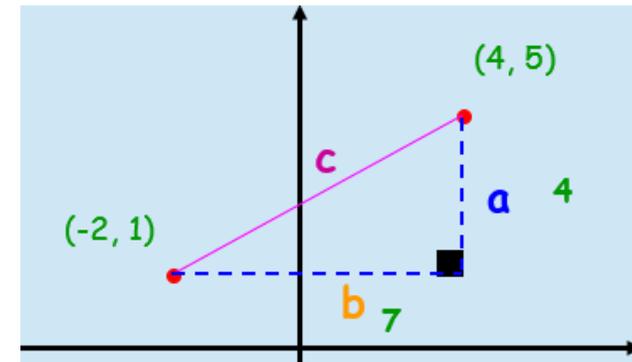
$$c^2 = a^2 + b^2$$

$$10^2 = 9^2 + b^2$$

$$100 - 81 = b^2$$

$$b = \sqrt{\square}$$

Finding the length of a line segment



$$c^2 = a^2 + b^2$$

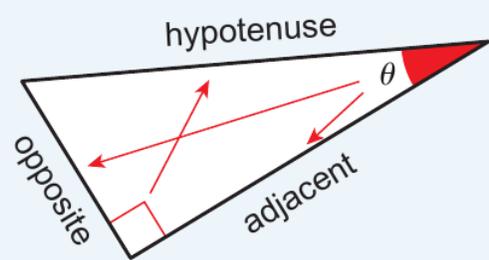
$$c^2 = 4^2 + 7^2$$

$$c^2 = 65$$

$$c = \sqrt{65}$$

$$c = 8.06 \text{ (2 dp)}$$

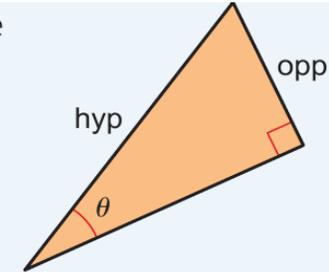
Week 2: Trigonometry and Sine



In a right-angled triangle the sine of an angle is the ratio of the **opposite** side to the **hypotenuse**.

The sine of angle θ is written as **sin θ** .

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

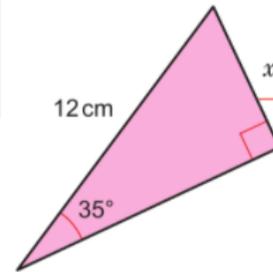


The side opposite the right angle is called the **hypotenuse**.

The side opposite the angle θ is called the **opposite**.

The side next to the angle θ is called the **adjacent**.

Use the sine ratio to work out the value of x .



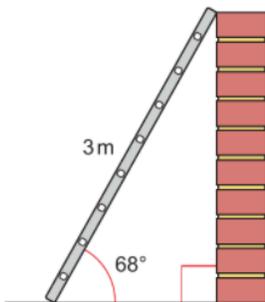
Sketch the triangle.
Label the hypotenuse, the opposite and adjacent sides.

Real world example

A ladder of length 3 m leans against a vertical wall.

The ladder makes an angle of 68° with the horizontal ground.

How far is the top of the ladder from the ground?



h = height of wall

$$\sin 68^\circ = \frac{h}{3}$$

$$h = 3 \times \sin 68^\circ$$

$$h = 2.78\text{m}$$

$$\theta = 35^\circ$$

$$\text{opposite} = x$$

$$\text{hypotenuse} = 12 \text{ cm}$$

$$\sin(\text{angle}) = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 35^\circ = \frac{x}{12}$$

$$x = 12 \times \sin 35^\circ$$

$$x = 6.8829\dots$$

$$x = 6.9 \text{ cm (to 1 d.p.)}$$

Identify the information given: angle, opposite and hypotenuse.

Write the sine ratio.

Substitute the sides and angle into the sine ratio.

Multiply both sides by 12. Use your calculator to work out $12 \times \sin 35^\circ$

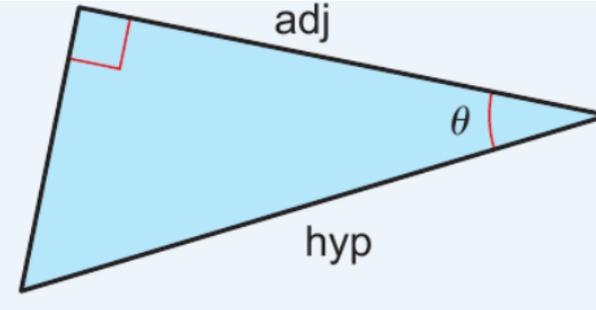
Round your answer to 1 decimal place.

Week 3: Trigonometry and Cosine

In a right-angled triangle the **cosine** of an angle is the ratio of the **adjacent** side to the **hypotenuse**.

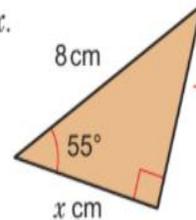
The cosine of angle θ is written as **cos θ** .

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$



Finding the length of the adjacent side

Use the cosine ratio to work out the value of x .



Sketch the triangle.
Label the hypotenuse, the opposite and adjacent sides.

$$\text{angle} = 55^\circ$$

$$\text{adjacent} = x$$

$$\text{hypotenuse} = 8 \text{ cm}$$

$$\cos(\text{angle}) = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 55^\circ = \frac{x}{8}$$

$$x = 8 \times \cos 55^\circ$$

$$x = 4.5886\dots$$

$$x = 4.6 \text{ cm (to 1 d.p.)}$$

Identify the information given: angle, adjacent and hypotenuse.

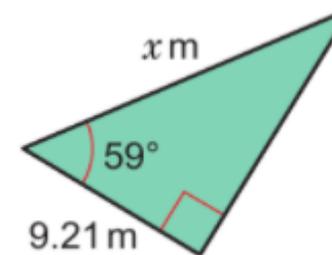
Write the cosine ratio.

Substitute the sides and angle into the cosine ratio.

Multiply both sides by 8. Use your calculator to work out $8 \times \cos 55^\circ$.

Round your answer to 1 decimal place.

Finding the length of the hypotenuse



$x = \text{hypotenuse}$

$$\cos 59^\circ = \frac{9.21}{x}$$

$$x = \frac{9.21}{\cos 59}$$

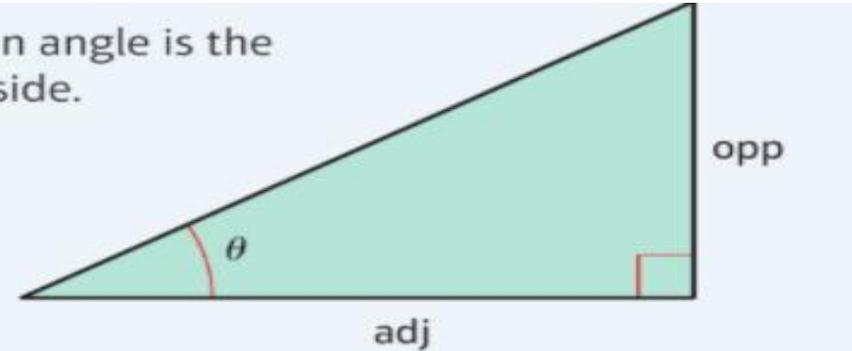
$$x = 17.88 \text{ m}$$

Week 4: Trigonometry and Tangent

In a right-angled triangle the **tangent** of an angle is the ratio of the **opposite** side to the **adjacent** side.

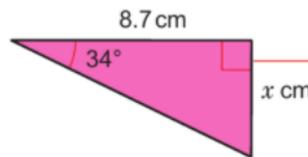
The tangent of angle θ is written as **tan θ** .

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$



Finding the length of the opposite side

Use the tangent ratio to work out the value of x .



Sketch the triangle.
Label the hypotenuse, the opposite and adjacent sides.

angle = 34° Identify the information given: angle, opposite and adjacent.

opposite = x cm

adjacent = 8.7 cm

$\tan(\text{angle}) = \frac{\text{opp}}{\text{adj}}$ Write the tangent ratio.

$\tan 34^\circ = \frac{x}{8.7}$ Substitute the sides and angle into the tangent ratio.

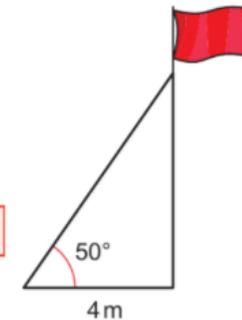
$x = 8.7 \times \tan 34^\circ$ Multiply both sides by 8.7 Use your calculator to work out $8.7 \times \tan 34^\circ$.

$x = 5.8682\dots$

$x = 5.9$ (to 1 d.p.) The final answer will be $x = \underline{\quad}$ without units as the unknown side is labelled x cm not simply x .

Real world example

A flagpole is secured to the ground by a rope. The end of the rope is 4 m from the base of the flagpole. The rope makes an angle of 50° with the ground. At what height does the rope attach to the flagpole?



h = height of rope
(opposite side)

$$\tan 50^\circ = \frac{h}{4}$$

$$h = 4 \times \tan 50^\circ$$

$$h = 4.77\text{m}$$

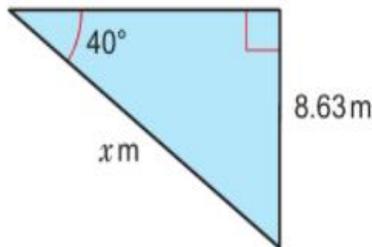
Week 5: Trigonometry – choosing the correct ratio

You need to know these ratios and be able to choose the one you need to solve a problem.

$$\sin(\text{angle}) = \frac{\text{opp}}{\text{hyp}} \quad \cos(\text{angle}) = \frac{\text{adj}}{\text{hyp}} \quad \tan(\text{angle}) = \frac{\text{opp}}{\text{adj}}$$

Some people use the mnemonic SOHCAHTOA to help them remember the ratios, you can use the phrase **Silly Old Harry Chased A Horse Through Our Attic**

Calculate the value of x . Give your answer correct to 3 significant figures.



Identify the information given.

angle = 40° opposite = 8.63 m hypotenuse = x m

$$\sin(\text{angle}) = \frac{\text{opp}}{\text{hyp}}$$

$$\sin 40^\circ = \frac{8.63}{x}$$

$$x \times \sin 40^\circ = \frac{8.63}{x} \times x$$

$$x \times \sin 40^\circ = 8.63$$

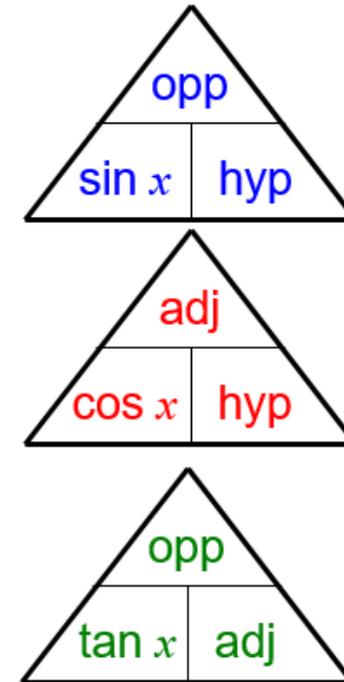
$$x = \frac{8.63}{\sin 40^\circ} = 13.4258\dots = 13.4 \text{ (to 3 s.f.)}$$

Decide on the ratio (sin, cos, tan) you need to use. You are given 'opp' and 'hyp' so use the sine ratio.

Substitute the sides and angle into the sine ratio.

Multiply both sides by x .

Divide both sides by $\sin 40^\circ$. Then round to 3 significant figures.



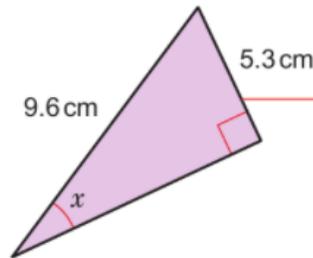
Week 6: Trigonometry – finding an angle

When you know the value of $\sin \theta$, you can use \sin^{-1} on a calculator to find θ .

$$30^\circ \rightarrow \sin 30^\circ \rightarrow \frac{1}{2}$$

$$30^\circ \leftarrow \sin^{-1} \frac{1}{2} \leftarrow \frac{1}{2}$$

Calculate the size of angle x .



Sketch the triangle.
Label the hypotenuse, the opposite and adjacent sides.

angle = x — Identify the information given: angle, opposite and hypotenuse.

opposite = 5.3 cm

hypotenuse = 9.6 cm

$\sin(\text{angle}) = \frac{\text{opp}}{\text{hyp}}$ — Write the sine ratio.

$\sin x = \frac{5.3}{9.6}$ — Substitute the sides and angle into the sine ratio.

$x = \sin^{-1}\left(\frac{5.3}{9.6}\right)$ — Use \sin^{-1} to find the angle.

$x = 33.5^\circ$ (to 1 d.p.) — Round your answer to 1 decimal place.

Hint:

To find a missing angle you need to identify which trig ratio to use then use the inverse function on your calculator.
You press shift to use

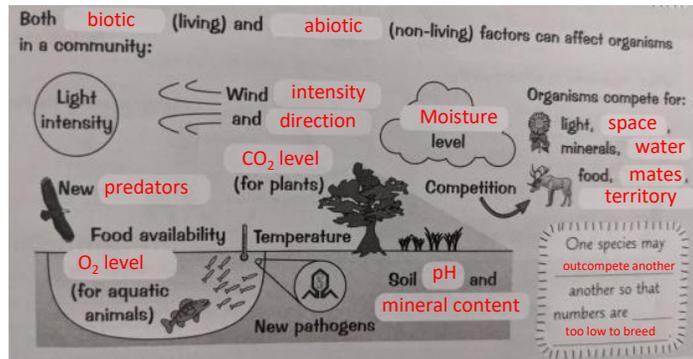
\sin^{-1}
 \cos^{-1}
 \tan^{-1}

Week 1-2

Definitions of Ecological Terms

Population	All the organisms of one species living in a habitat.
Community	The populations of different species living in a habitat.
Stable community	A community in which all species and environmental factors are in balance, so the population sizes are roughly constant.
Ecosystem	The interaction of a community of organisms and the parts of their environment that are non-living.
Adaptation	A feature that enables an organism to survive in the conditions of its normal habitat.
Interdependence	Each species in a community depending upon other species for things, e.g. pollination, food, shelter or seed dispersal.

Factors affecting communities

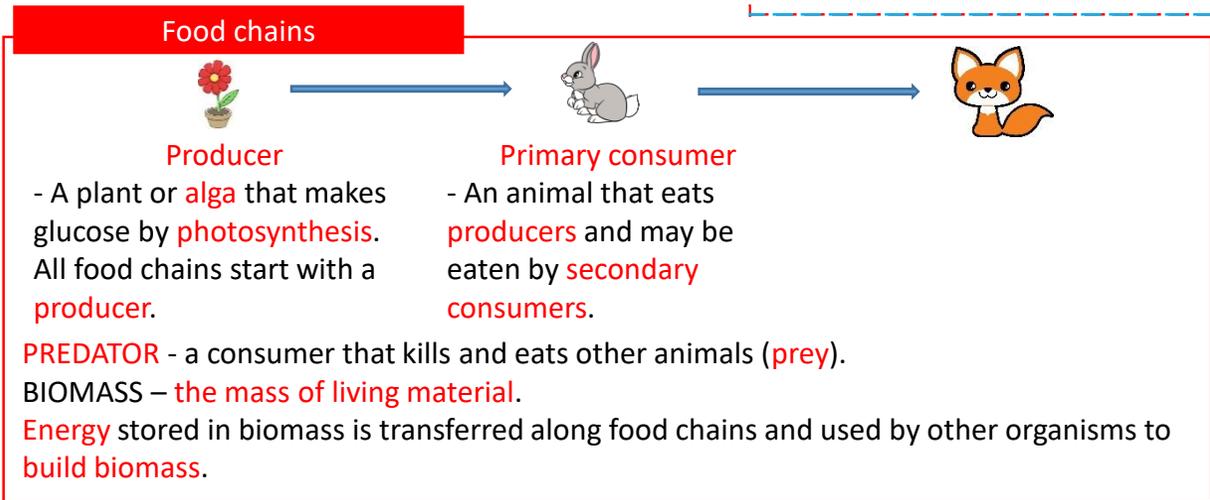


Three types of adaptation

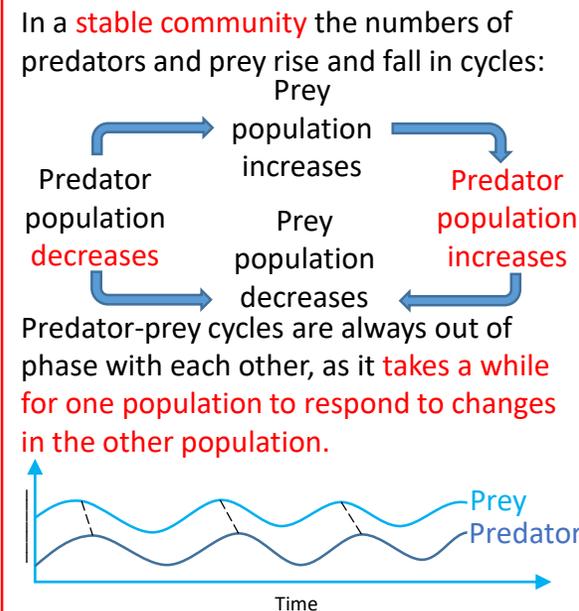
- Structural**
 - Behavioural**
 - Functional**
- EXTREMOPHILES** - organisms that are adapted to live in extreme conditions, such as high temperature, high pressure or high salt concentration (e.g.. bacteria in deep sea vents).

Week 3-4

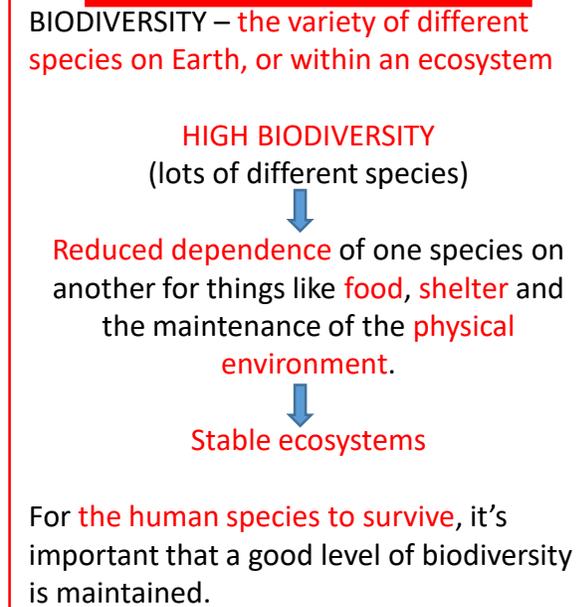
Food chains



Predator-Prey Cycles



Biodiversity



Week 5

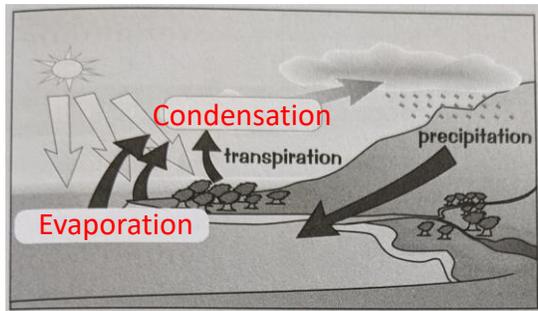
Recycling materials

Materials are cycled through the **abiotic** and **biotic** parts of an ecosystem.



Materials decay because they're broken down by **microorganisms**.
Decay puts materials like **mineral ions** back into the soil.

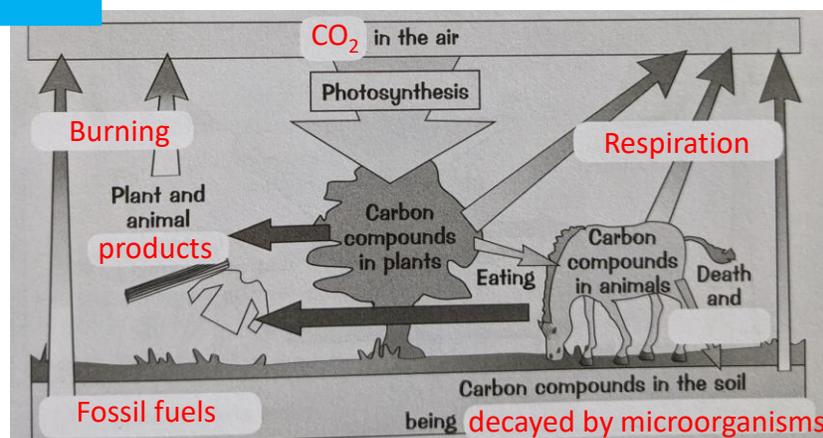
Four uses of Glucose in plants



Precipitation provides fresh water for plants and animals on land.

The Carbon cycle

- Missing words:
- Fossil fuels
 - CO₂
 - Burning
 - Respiration
 - Waste
 - Products
 - Decayed by microorganisms



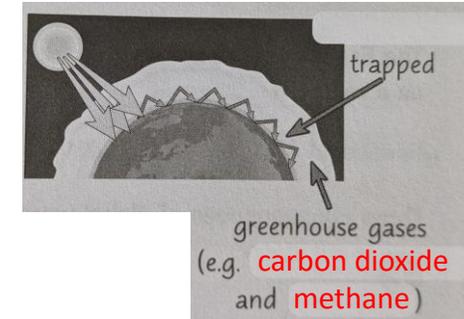
Week 6

Global warming

The Earth is gradually heating up as a result of **increasing levels of greenhouse gases in the atmosphere**

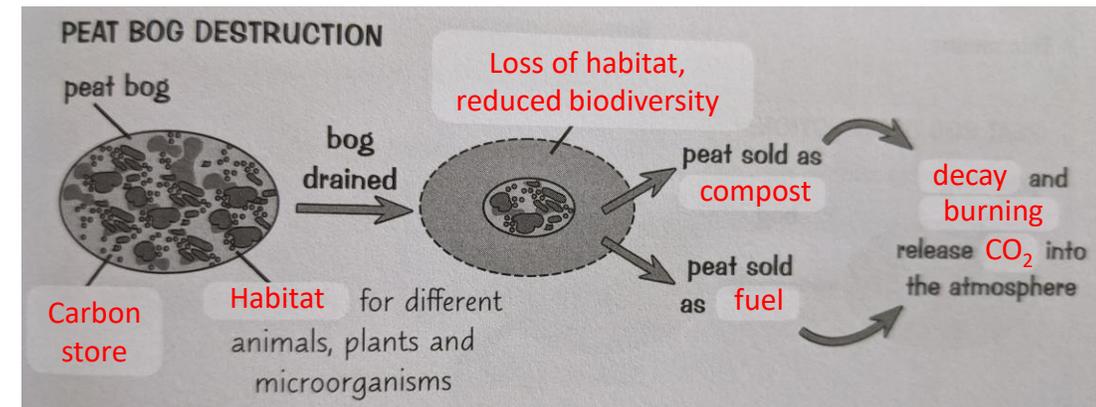
Three consequences of global warming could be:

- 1) Rising sea levels (so **low-lying places may flood**).
- 2) A change in the **distribution** of some organisms.
- 3) A decrease in **biodiversity** (as some species may become extinct).



Aerobic respiration

Humans use land for things like **building, quarrying, farming** and **dumping waste**. This means there's **less land available for other organisms**.



DEFORESTATION - the cutting down of forests.

- It has been done on a large scale in **tropical** areas in order to:
- clear land for **rice fields** and **farming cattle**.
 - grow crops to make **biofuels**.

Week 7

Crude oil

Crude oil – a mixture of many hydrocarbons. It's a finite resource found in rocks and formed from dead plants and animals that have spent millions of years buried in mud.

Combustion

Complete combustion – an oxidation reaction that occurs when a fuel reacts with plenty of oxygen:



Hydrocarbons are used as fuels because combustion releases a lot of energy.

Hydrocarbons

As the length of the hydrocarbon chain increases, the....

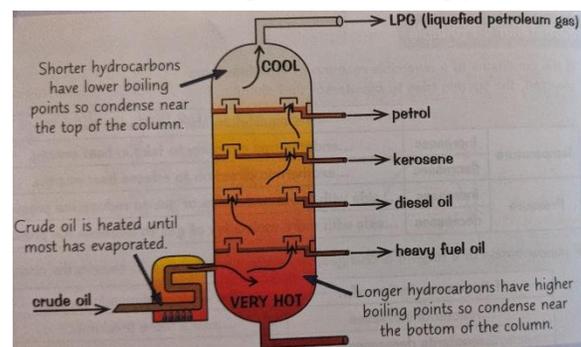
... boiling point increases

...viscosity increases

...flammability decreases

Fractional distillation

Fractional distillation – a process used to separate the hydrocarbons in crude oil into fractions according to their boiling points.



Alkanes

Alkanes – the simplest type of hydrocarbon, containing only single covalent bonds (they are saturated). The general formula for the homologous series of alkanes is C_2H_{2n+2} .

Number of carbon atoms	1	2	3	4
Name	Methane	Ethane	Propane	Butane
Formula	CH_4	C_2H_6	C_3H_8	C_4H_{10}
Structure	$\begin{array}{c} H \\ \\ H-C-H \\ \\ H \end{array}$	$\begin{array}{c} H & H \\ & \\ H-C & -C-H \\ & \\ H & H \end{array}$	$\begin{array}{c} H & H & H \\ & & \\ H-C & -C & -C-H \\ & & \\ H & H & H \end{array}$	$\begin{array}{c} H & H & H & H \\ & & & \\ H-C & -C & -C & -C-H \\ & & & \\ H & H & H & H \end{array}$

Two methods of cracking

Cracking – breaks down long-chain hydrocarbons into shorter, more useful ones.



1. Catalytic cracking: hydrocarbon vapour is passed over a hot powdered aluminium catalyst
 2. Steam cracking: hydrocarbon vapour is mixed with steam and heated to a very high temperature
- Alkenes turn bromine water from orange to colourless. This is because alkenes are more reactive.

Week 8

Purity and formulations

A **pure** substance is one that is made up of just one substance. That substance can be either an element or a compound.

Formulations – useful mixtures with a precise purpose. Each component in a formulation is present in a measured quantity, and contributes to the properties of the formulation.

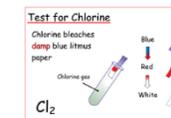
Testing for gases

Positive test for hydrogen: a lighted splint 'pops'

Positive test for oxygen: glowing splint relights.

Positive test for carbon dioxide: limewater turns milky (cloudy white)

Positive test for chlorine: damp blue litmus paper turns white (as it gets bleached).

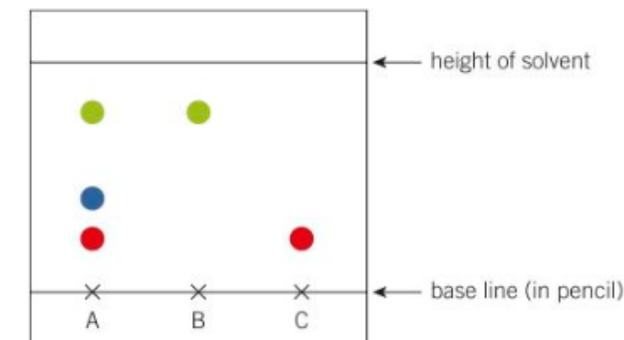


Chromatography

Chromatography uses a mobile phase and stationary phase. The mobile phase moves through the stationary phase, carrying the components of the mixture under investigation with it.

We can use the chromatogram to calculate the R_f (Retention factor), which is more effective way of analysing the distance a substance has travelled:

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



Topic 1: -Resource Management

Resources

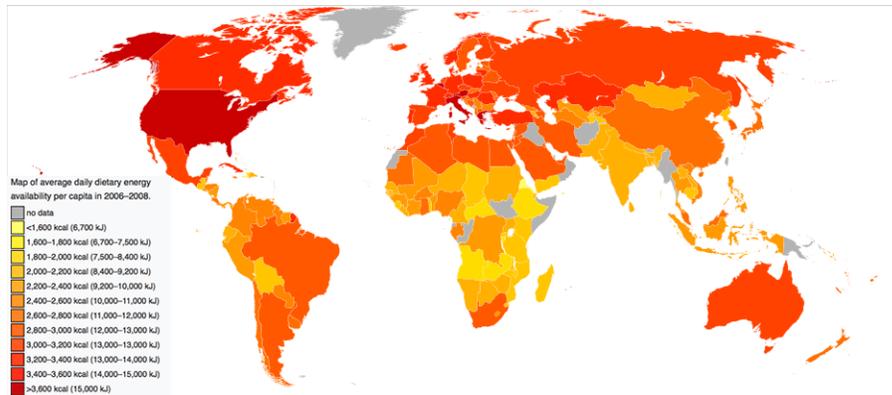
The significance of food, water and energy to economic and social are **fundamental** to human well-being.

The supply and consumption of resources

The **consumption** of resources across the world varies significantly. Typically, **high-income countries (HICs) consume** more than **low-income countries (LICs)**. The main challenge is not having enough resources but that the resources that do exist are **unevenly distributed**. As a **LIC** develops so too does its demand for resources. This growth in demand, along with population growth, leads to a shortage of resources.

GLOBAL INEQUALITIES IN THE SUPPLY AND CONSUMPTION – FOOD

The average calorie **consumption** in the UK is 3450 kilocalories. However, in a LIC such as Eritrea, it is 1590 kilocalories. There is a clear relationship between areas of greatest population growth and the areas that have the highest levels of **undernourishment**.



Topic 2: HOW WELL OFF IS THE UK IN TERMS OF RESOURCES?

The UK has a **resource surplus**. This helps explain the UK's early and continued **economic development**, and the relatively high level of wellbeing most people experience.

Food – The UK has a moderate climate, largely influenced by the Atlantic Ocean, which supports plenty of rainfall and mild temperatures. The UK is one of the most efficient producers of food in the world, benefitting from generally **fertile soils**, gentle relief in the south and east and advanced technologies.

Water – The west of the country is typically wetter than the east, however, water can be transferred from areas of surplus to areas of deficit. Despite this imbalance of supply and demand water supply is rarely an issue.

Energy – The UK has considerable fossil fuel resources. In the past coal was the main source of energy, however, oil and gas is now more widely used. There are considerable reserves of oil and gas beneath the North Sea. The UK has a number of nuclear power plants, such as Hinkley Point and Sizewell, which use imported **uranium**. The UK has **significant potential for renewable energy**, with considerable investments are being made in **off-shore wind farms** such as those off the coast of the East Riding of Yorkshire. The UK has around 35% of global offshore wind capacity installed and seven of the ten largest **offshore wind farm** in the world.

Topic 3: HOW HAS DEMAND FOR FOOD IN THE UK CHANGED?

Seasonal food refers to the times of year when the harvest or the flavour of a given type of food is at its peak. This is usually the time when the item is harvested. Before supermarkets, most food eaten in the UK was sourced in the UK and **seasonal**. Fruit and vegetables were available according to the season. For example, during the summer months, lettuce and strawberries were widely available, whereas during the winter parsnips and cabbage were sold. Food was also preserved by being bottled, frozen and pickled.

Today, we are used to enjoying seasonal fruit and vegetables throughout the year. However, because some food cannot be grown throughout the year in the UK, it has to be imported from other countries, along with food that is not **native** to the UK such as avocado and mango. Therefore, there has been an increase in food being imported into the UK.

Even seasonal fruits and vegetables are **imported** from other countries. It can be cheaper for food to be grown in **low income countries** and transported to the UK, despite the increased **food miles**. 47 percent of the UK's food was imported in 2013.



Topic 4: How has the increase in demand affected LICs?

The increase in demand for **non-seasonal products** has brought both challenges and benefits for **low-income countries (LICs)** such as Kenya and the Caribbean.

The main benefits are:

- Jobs are created for local people in farming, transport and packaging;
- Jobs provide a valuable source of income for local people;
- Taxes, made from wages can be used to improve the transport infrastructure, healthcare and education opportunities in the LIC.

The challenges associated with the growth in demand for out of season fruit and vegetables include:

- land previously used by local people, to meet their own needs, is now used to grow produce for people living in the UK;
- large amounts of water are used to farm food, this is often in areas of water scarcity;
- people employed on farms are often exposed to chemicals such as pesticides.

Topic 5: HOW AND WHY HAS THE DEMAND FOR ORGANIC PRODUCE CHANGED?

Organic produce

There has been an increasing demand for **organic** food in the UK. Organic food is produced without the use of chemicals such as **fertilisers and pesticides**. **Organic** produce includes meat, fruit and vegetables.

Organic farmers operate without chemical **pesticides** by using natural predators to consume pests such as ladybirds eating blackfly. Crops are **rotated** to maintain nutrients. Also, natural **fertilisers** are used. In order to combat weeds, **mechanical weeders** are used instead of chemicals. Animals are reared without the use of drugs, such as **hormones** to promote growth.

Organic food has grown in popularity since the 1990s for a number of reasons. These include:

- It contains fewer **pesticides and chemicals**;
- It is natural;
- It is positive for the environment and results in less water pollution.

Demand for **organic food** declined between 2009-11 which is due to the **global recession** leading to households having reduced incomes. Organic food is more expensive because **yields** (crops) are lower than on farms that use chemicals. However, people are prepared to pay the extra as they believe organic produce tastes better. Supermarkets now sell 75% of organic food in the UK. The remaining 25% is sold at farmers markets and **vegetable box schemes** (where organic vegetables are delivered to the customer's door). The most popular organic products are dairy produce including milk, cheese and yoghurt.

Topic 6- WHAT ARE FOOD MILES AND CARBON FOOTPRINTS?

The distance that food travels from producer to consumer is called **food miles**. This does not include the distance food travels from the airport to the **distribution** centre, or distribution centre to the supermarket. Food in the UK travels over 30 billion kilometres each year by air, ship, train and road.

A carbon footprint is the amount of **carbon dioxide and** other greenhouse gases released into the atmosphere as a result of the activities of humans. A carbon footprint can be based on the activities of an individual, business or country.

HOW DOES IMPORTING FOOD INCREASE THE UK'S CARBON FOOTPRINT?

19 million tonnes of carbon dioxide are released into the atmosphere by transport used to import food increasing the UK's carbon footprint. The further food travels the greater the food miles and carbon footprint. However, the food production techniques used also affect these, for example, the use of heated greenhouses increases **carbon emissions**.

17% of **carbon dioxide emissions** in the UK are linked to food. Only 11% of this is linked to transport.

EMISSIONS

sometimes, emissions can be greater producing food in the UK compared to importing produce from other countries. For example, tomatoes grown in a heated greenhouse in the UK release more CO₂ emissions than those imported by air from Spain where greenhouses are not needed.

Week 1-7

Key question 1: How did William control England?

The English did not like their new foreign king, so William had to use many methods to keep order and to control his new country:

1. **Feudal System** (William changed landownership and the barons now helped him to run the country)
2. William built **castles** to intimidate and control areas, for example the **Welsh border**
3. **Domesday Book**
4. Use of his sons
5. **A new legal system** with some old and some new laws of punishment for people who committed crimes (see for example **ordeal by combat** as a new punishment)
6. **Harrying of the North**: terror to control people



Key question 2: How did most people live in Norman England?

Most people were village folk. They lived in **clusters of houses controlled by a manor house** and a **lord of the manor**. The church was also a very important building in the village.

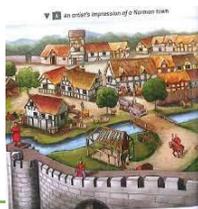
People worked the land, had long days of hard labour and usually short lives. While 90% were peasants, there were other jobs, such as **bailiffs, priests, millers** etc..

The peasant year was organised around **the seasons**, harvests and growing of crops. People had a plain diet and a poor harvest was a disaster, which caused starvation for a year to come.

People also had to pay a **tithe** to the lord and to the church.

People had new opportunities in towns. They **could trade their wares** on the markets and trade metals, salt and wool with far away countries

Many things changed during the Norman conquest, including **language, castles, laws and land**.



Week 7-12

Key question 3: How religious were people?

Religion was a very important part of life in Norman England and people believed in God and went to church (all Roman Catholic at this point)

Heaven and hell were seen as real places and people were scared to do wrong/ they aimed to be **virtuous** so they could go to heaven

People found out about heaven and hell via **doom paintings, the Bible, stained glass windows** etc.

Religion had an impact on many areas of life, e.g. education, law, politics and economics

Priests were important in society

People went **on pilgrimages to abbeys, monasteries, Jerusalem and Rome**

William I was very religious and he built many churches, abbeys and monasteries

He totally changed the church, the law, architecture and organization in England: England had changed forever!

Bishop Lanfranc was important in this restructure and he had also secured the papal banner for William, which helped him to win at Hastings.

Further reading and research:

Reading:

<https://www.bbc.co.uk/bitesize/guides/zdvdmp3/revision/1>

<https://www.bbc.co.uk/bitesize/guides/z87vdmn/revision/1>

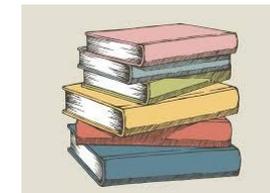
<https://www.bbc.co.uk/bitesize/guides/z97vdmn/revision/3>

<https://www.bbc.co.uk/bitesize/guides/z9g2ycw/revision/2>

Viewing:

<https://www.youtube.com/watch?v=KGDu-vi8sg> (how William controls England)

<https://www.youtube.com/watch?v=bxpTxuPTkIA> (life after the Norman conquest)



Term 1 Week 1 & 2 -

- Describing the sort of person you are.
- Using adjectives of personality and the verb 'to be'

¿Qué tipo de persona eres?

Creo que soy...

comprensivo/a
 creativo/a
 fuerte
 inteligente
 paciente
 práctico/a
 trabajador(a)
 valiente

What type of person are you?

I think I'm...

understanding
 creative
 strong
 intelligent
 patient
 practical
 hardworking
 brave

This is CORE
 vocabulary for this
 topic.



- Describing the work you and/or someone else does
- Using infinitives with 'tengo que'
- Giving opinions, using adjectives, modifiers and using a range of vocab

¿En qué trabajas?

Trabajo en...

un hotel / un instituto
 un taller / una oficina
 una tienda / una peluquería
 Ayudo a los pasajeros /
 los clientes.

Corto el pelo a los clientes.

Cuido los jardines / a los pacientes.

Enseño a los niños.

Hago entrevistas.

Preparo platos distintos.

Reparo coches.

Sirvo comida y bebida.

Vendo ropa.

Es aburrido / interesante / fácil /
 difícil / importante / repetitivo /
 variado.

Soy... / Es...

Me gustaría ser...

What is your job?

I work in...

a hotel / a school
 a garage / an office
 a shop / a hair salon
 I help the passengers /
 the customers.

I cut customers' hair.

I look after the gardens / the patients.

I teach (the) children.

I do interviews.

I prepare different dishes.

I repair cars.

I serve food and drink.

I sell clothes.

It's boring / interesting / easy /
 difficult / important / repetitive /
 varied.

I am... / He/She is...

I would like to be...

This is CORE
 vocabulary for this
 topic.



[MODULE 7](#)
[QUIZLET LINK -](#)
[ALL VOCAB](#)

Term 1 Week 3 & 4 -

Saying what you would like to do/be in the future
 Describing future plans. Using jobs vocabulary.

Soy... / Es...

Me gustaría ser...

azafato/a
 bombero/a
 camarero/a
 cantante
 cocinero/a
 dependiente/a

diseñador(a)

electricista

enfermero/a

fontanero/a

fotógrafo/a

ingeniero/a

jardinero/a

mecánico/a

médico/a

músico/a

peluquero/a

periodista

pintor(a)

policía

profesor(a)

recepcionista

socorrista

soldado

veterinario/a

I am... / He/She is...

I would like to be...

a flight attendant
 a firefighter
 a waiter/waitress
 a singer
 a cook
 a shop assistant

a designer

an electrician

a nurse

a plumber

a photographer

an engineer

a gardener

a mechanic

a doctor

a musician

a hairdresser

a journalist

a painter

a police officer

a teacher

a receptionist

a lifeguard

a soldier

a vet

This is CORE
 vocabulary for this
 topic.

**SER – to be (permanent)**

Soy	I am
Eres	You (s) are
Es	He/She/It is
Somos	We are
Sois	You (p) are
Son	They are
Era	I was
Eras	You (s) were
Era	He/she/it was
Eramos	We were
Eráis	You (p) were
Eran	They were

Make sure you practise to be able to use and recognise the vocab. Practise using 'look, cover, write, check'. Add other things you may wish to say to your list.

Week 5 & 6 -

- Saying if you earn pocket money.
- Describing what tasks/chores or part-time jobs you do to earn money
- Using narrative description to talk about what you do, using frequency and opinions
- Talking about skills and careers
- Adding 6W details to extend answers

This is CORE vocabulary for this topic.

¿Qué haces para ganar dinero? What do you do to earn money?

¿Tienes un trabajo a tiempo parcial?	Do you have a part-time job?
Reparto periódicos.	I deliver newspapers.
Hago de canguro.	I babysit.
Trabajo de cajero/a.	I work as a cashier.
Ayudo en casa.	I help at home.
Cocino.	I cook.
Lavo el coche / los platos.	I wash the car / the dishes.
Paseo al perro.	I walk the dog.
Paso la aspiradora.	I do the vacuuming.
Plancho la ropa.	I iron the clothes.
Pongo y quito la mesa.	I lay and clear the table.
Lo hago...	I do it...
antes / después del insti	before / after school
cuando necesito dinero	when I need money
los sábados	on Saturdays
todos los días	every day
una vez / dos veces a la semana	once / twice a week
Gano... euros / libras a la hora / a la semana.	I earn... euros / pounds an hour / a week.
No gano nada.	I don't earn anything.
Tengo que lavar los platos.	I have to wash the dishes.
Suelo trabajar los lunes.	I tend to work on Mondays.
(No) me gusta mi jefe/a.	I (don't) like my boss.
Mis compañeros son amables.	My colleagues are nice.
El horario es flexible.	The hours are flexible.

Tengo que + inf – I have to...

Tenía que + inf – I had to...

Tendré que + inf – I will have to...

TENER – to have

Tengo	I have
Tienes	You (s) have
Tiene	He/She/It has
Tenemos	We have
Tenéis	You (p) have
Tienen	They have
Tenía	I was
Tenías	You (s) were
Tenía	He/she/it was
Teníamos	We were
Teníais	You (p) were
Tenían	They were



Week 7 & 8 -

- Using the preterite tense to describe single past actions.
- Talking about what you did in work experience.
- Adding opinions and justifications. Adding variety of expression.
- Using the imperfect tense to give descriptions and narrative in the past.
- Understanding the difference between preterite and imperfect and where to use them

This is CORE vocabulary for this topic.

Mis prácticas laborales	Work experience
Hice mis prácticas laborales en...	I did my work experience in...
un polideportivo	a sports centre
una agencia de viajes	a travel agency
una granja	a farm
una escuela	a school
una fábrica	a factory
una tienda benéfica	a charity shop
la empresa de mi madre	my mum's company
Arreglé los estantes / los folletos.	I tidied the shelves / the brochures.
Atendí a los clientes.	I served the customers.
Ayudé en las clases de educación física.	I helped in PE classes.
Contesté el teléfono.	I answered the phone.
• Di clases de natación.	I gave swimming lessons.
Escribí cartas.	I wrote letters.
Hice reservas.	I made reservations.
Mandé correos electrónicos.	I sent emails.
Pinté y leí libros.	I painted and read books.
Saqué fotocopias.	I did photocopying.

The preterite is the simple past tense.

It is used to talk about single completed actions in the past. **It translates as 'ed.'**

Form this by taking the infinitive, chopping off AR/ER/IR and adding these endings....

AR -é, -aste, -ó, -amos, astéis, -aron

ER/IR -í, -iste, -ió, -imos, -istéis, -ieron

The Imperfect is another past tense.

It is used to talk about repeated actions in the past, past actions with no specific start/end point, interrupted/unfinished past actions or general description in the past. **It translates as 'was/were -ing' or 'used to ...'.**

Form this by taking the infinitive, chopping off AR/ER/IR and adding these endings....

AR -aba, -abas, -aba, -ábamos, -abáis, -aban

ER/IR -ía, -ías, -ía, -íamos, -íais, -ían

Trabajé en el gimnasio.	I worked in the gym.
Vendí ropa.	I sold clothes.
Me encantó.	I loved it.
Me gustó (mucho).	I (really) liked it.
No me gustó (nada).	I didn't like it (at all).
Fue...	It was...
divertido / interesante / útil	fun / interesting / useful
una experiencia positiva	a positive experience
aburrido / duro / repetitivo	boring / hard work / repetitive
una pérdida de tiempo	a waste of time
Aprendí mucho.	I learned a lot.
No aprendí nada.	I didn't learn anything.
Mi jefe / jefa era...	My boss was...
Mis compañeros eran...	My colleagues were...
Los clientes eran...	The customers were...
alegre(s)	cheerful
severo/a(s)	strict
agradable(s) / desagradable(s)	pleasant / unpleasant
educado/a(s) / maleducado/a(s)	polite / rude
El banco era moderno / antiguo.	The bank was modern / old.

Term 2 Week 1 & 2 -

- Talking about the advantages of learning a language
- Using infinitive structures

¿Por qué aprender idiomas?	Why learn languages?
Hablo (un poco de) alemán / árabe / español / francés / inglés / italiano / mandarín / polaco / ruso / urdu	I speak (a bit of) German / Arabic / Spanish / French / English / Italian / Mandarin / Polish / Russian / Urdu
(No) domino el inglés.	I (don't) speak English fluently.
Estudio francés desde hace... años.	I've been studying French for... years.
Aprender un idioma te permite... descubrir nuevas culturas.	Learning a language allows you to... discover new cultures.
encontrar un buen trabajo.	find a good job.
hacer nuevos amigos.	make new friends.
trabajar o estudiar en el extranjero.	work or study abroad.
viajar a otros países.	travel to other countries.

This is CORE vocabulary for this topic.



- Talking about different forms of transport
- Using 'ir + a + infinitive' structure to form the compound future and talk about near future plans
- Describing the benefits and disadvantages of different types of transport
- Using more advanced opinions and complex structures
- Using 'puedes + infinitive' and a modal verb structure
- Using transactional language with transport

¿Cómo vas a viajar?	How are you going to travel?
Voy a viajar en autobús / autocar / avión / tren.	I am going to travel by bus / coach / plane / train.
Lo bueno / malo / es que...	The good / bad thing is that...
Lo mejor / peor es que...	The best / worst thing is that...
es barato / cómodo / rápido.	it's cheap / comfortable / quick.
hay poco tráfico en las autopistas.	there isn't much traffic on the motorways.

Puedes...	You can...
ver películas mientras viajas.	watch films whilst you travel.
dejar tu maleta en la consigna.	leave your suitcase in the left-luggage office.
Lo peor es esperar en la parada de autobús.	The worst thing is waiting at the bus stop.

Viajando en tren	Travelling by train
Quisiera un billete de ida a...	I would like a single ticket to...
Quisiera un billete de ida y vuelta a...	I would like a return ticket to...
¿De qué andén sale?	From which platform does it leave?
¿A qué hora sale / llega?	What time does it leave / arrive?
¿Es directo o hay que cambiar?	Is it direct or do I have to change?
el tren con destino a...	the train to...
sale de la vía / del andén dos.	leaves from platform two.
el tren AVE	high-speed train
la taquilla	the ticket office

This is CORE vocabulary for this topic.



Term 2 Week 3 & 4 -

- Writing a letter
- Using formal and informal modes of address (usted and tú)
- Describing yourself to others
- Applying for a job
- Describing skills
- Using the PERFECT tense



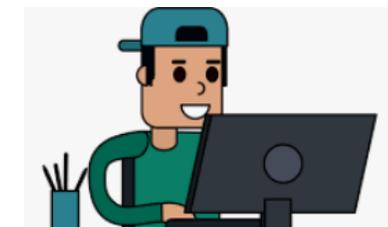
Solicitando un trabajo

Muy señor mío
Le escribo para solicitar el puesto de...
Le adjunto mi currículum vitae.
Le agradezco su amable atención.
Atentamente
He ayudado (en una escuela).
He estudiado (dos idiomas).
He hecho prácticas (en una oficina).
He servido comida y bebida.
He trabajado (en equipo).
Me interesa este trabajo porque...
tengo buen sentido del humor.
me encanta trabajar con...

Applying for a job

Dear Sir
I'm writing to apply for the post of...
I'm enclosing my CV.
Thank you for your kind attention.
Yours sincerely / faithfully
I've helped (in a school).
I've studied (two languages).
I've done work experience (in an office).
I've served food and drink.
I've worked (in a team).
I'm interested in this job because...
I have a good sense of humour.
I love working with...

This is CORE vocabulary for this topic.



The PERFECT Tense

Is another past tense
Used to describe very recent events, or to talk about something with emphasis
Is a compound tense
It translates as 'have... -ed'

FORMATION:

You need to take the verb 'Haber' (to have) and the past participle. (AR → ADO / IR → IDO)

HABER:			
He	Hemos		+ -ADO
Has	Habéis		+ -IDO
Ha	Han		

Term 2 Week 5 & 6 -

- Extending descriptions of future plans. Using different future tenses.

El futuro

Espero...	<i>I hope to...</i>
Me gustaría...	<i>I would like to...</i>
Quiero...	<i>I want to...</i>
Voy a...	<i>I am going to...</i>
aprender a conducir	<i>learn to drive</i>
aprobar mis exámenes	<i>pass my exams</i>
buscar un trabajo	<i>look for a job</i>
casarme	<i>get married</i>
tener hijos	<i>have children</i>
trabajar como voluntario/a	<i>work as a volunteer</i>
El matrimonio...	<i>Marriage...</i>
El paro...	<i>Unemployment...</i>
La familia...	<i>Family...</i>
La independencia...	<i>Independence...</i>
Sacar buenas notas...	<i>Getting good grades...</i>
es esencial / importante / preocupante /	<i>is essential / important / worrying /</i>
algo especial / un gran problema.	<i>something special / a big problem.</i>
Me gusta ayudar a otras personas.	<i>I like helping other people.</i>
Me encantan los niños.	<i>I love children.</i>
Si...	<i>If...</i>
saco buenas notas	<i>I get good grades</i>
tengo dinero	<i>I have money</i>
tengo éxito	<i>I'm successful</i>
tengo suerte	<i>I'm lucky</i>
trabajo mucho	<i>I work a lot</i>
me caso	<i>I get married</i>
encontraré un trabajo como...	<i>I will find a job as...</i>
compartiré piso con...	<i>I will share a flat with...</i>
compraré un coche	<i>I will buy a car</i>
haré el bachillerato	<i>I will do A Levels</i>
iré a la universidad	<i>I will go to university</i>
seré rico/a y famoso/a	<i>I will be rich and famous</i>
tendré hijos	<i>I will have children</i>

The future

This is CORE vocabulary for this topic.

**The NEAR FUTURE**

Means 'going to...'

Voy	Vamos	+ INFINITIVE
Vas	Vais	
Va	Van	

The SIMPLE FUTURE

Means 'will – verb'

Take the stem (usually the INFINITIVE)
Do **NOT** chop anything off!!
Add...

é	emos
ás	éis
á	án

**Un año sabático**

Me tomaré un año sabático.	<i>I will take a gap year.</i>
Ayudaré a construir un colegio.	<i>I will help to build a school.</i>
Haré un viaje en Interrail por Europa.	<i>I will go Interrailing around Europe.</i>
Mejoraré mi nivel de inglés.	<i>I will improve my level of English.</i>
Pasaré un año en Latinoamérica.	<i>I will spend a year in Latin America.</i>
Trabajaré en un proyecto medioambiental.	<i>I will work on an environmental project.</i>
Viajaré por el mundo.	<i>I will travel around the world.</i>

A gap year

This is CORE vocabulary for this topic.

- Talking about gap years and benefits/disadvantages

Week 1 – Business Growth

Internal growth (organic)

Business growth is important to meet objectives as it can:

- Help **increase market** share
- Lead to **lower costs**
- Result in more profit

Methods of internal growth (organic)

New markets – expanding overseas

New products – innovating or adapting existing designs

New Technology

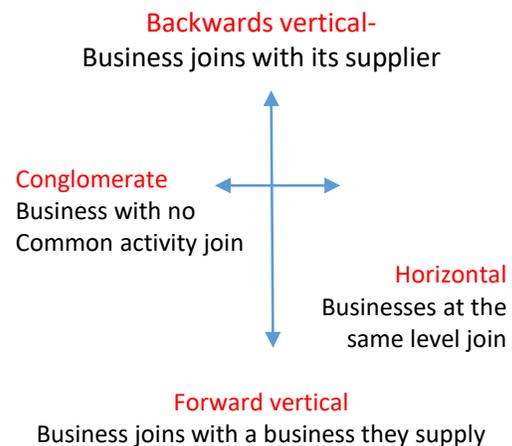
External growth (inorganic)

External growth is a much faster method of growth

Mergers – two or more companies join in an agreed manner

Takeover – one business buys another

Methods of external growth (inorganic)



Week 4 – Public Limited Companies (PLCs)

Public Limited companies – raise money through the stock exchange. This can help businesses access the necessary finance for growth

Shares are sold to the public on the **stock market**. People who own shares are called '**shareholders**'. They become part owners of the business and have a voice in how it operates. A **chief executive officer** (CEO) and board of directors manage and oversee the business' activities.

When a business sells shares on a stock market, this is known as '**floating on the stock exchange**'.

To do this they must have the company valued before an **Initial Public Offering** can take place.

If a business wants to avoid a take over they need to avoid selling more than 49% of their shares

Advantages of being a Plc include:

- ✓ the business has the ability to raise additional finance through **share capital**
- ✓ the shareholders have **limited liability**
- ✓ there are increased negotiation opportunities with suppliers in terms of prices because larger businesses can achieve **economies of scale**

Disadvantages of being a Plc include:

- it is **expensive** to set up
- Shareholders have more influence
- there are more **complex accounting and reporting** requirements
- there is a greater risk of a **hostile takeover** by a rival company
- Increased media and attention



Financing Growth

Business Finance

A business needs to compare the sources of finance for the following options:

- Risk** – selling shares means owners lose control
- Cost** – different options will have different interest rates
- Availability** – some sources of finance might not be accessible

Selling shares
A **share** is a part ownership of a business. A **limited company** can sell parts of the company to individuals who become **shareholders**

Short-term finance options are repaid quickly (in **under a year**) these might be used to buy stock or pay utility bills.

Source of finance	Description	Benefit	
Bank overdraft	Overdraft financing is provided when businesses make payments from their business current account exceeding the available cash balance (going below 0)	Covers short-term expenses that will be repaid quickly Flexible – can choose to use or not	External
Trade credit	An agreement in which a customer can purchase goods on account without paying cash up front, paying the supplier at a later date	Can pay for materials after you have sold your items Can help build good relationships with trade creditors meaning you can negotiate better rates	External

Long-term sources of finance – repaid over a period of time **longer than a year**.

FOR GROWTH	Description	Impact	
Selling personal assets	May have assets that are no longer needed	No need to be repaid	Internal
Venture capital	Raising capital from investors to fund a new business idea	Can raise finance quickly Can benefit from experienced entrepreneurs depending on how sources	External
Share capital	Raising large amounts of money by selling a percentage of your business	Raises large sums HOWEVER – shareholder get dividends each year (percentage of the profit) and can influence decisions	External
Loan Capital	Taking money often from a bank and repaying with added interest	Interest rates can be low No loss of control	External
Retained profit	Reinvesting finance raised from profits of the business	Nothing to pay back and no interest rate!	Internal
Crowd funding	Raising small amounts of money from a large number of people in return for some sort of reward (product involvement or ownership). Often used by start-ups	Can raise large sums May not need to pay back depending on agreement	External

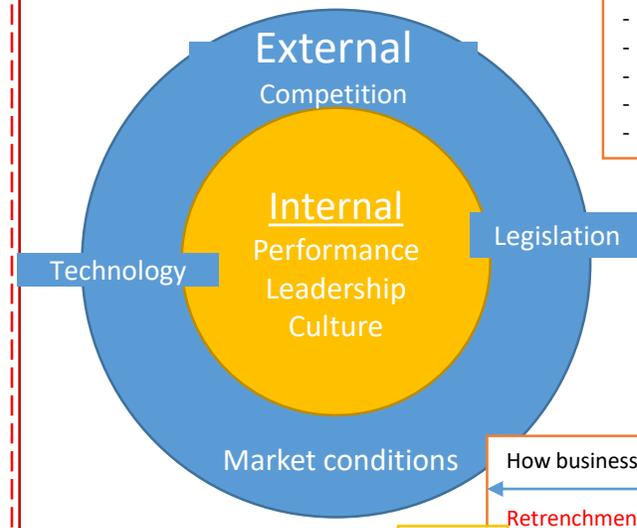
Changing business objectives

As businesses grow the change and adapt to both internal and external pressures.

A small start-up business may aim to **survive** in the first year. Once successful, the business then sets itself the objective of **increasing profits** or **growing in size**.

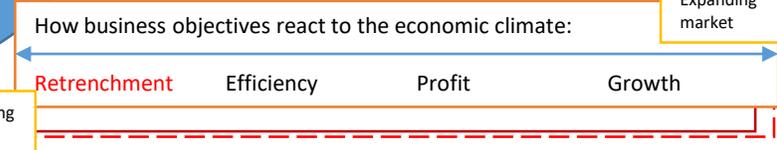
Alternatively, a profitable business that is hard hit by an economic recession may struggle to maintain the same level of **output**. Faced with declining sales, a business may change its objective from growth or making a profit, to simply surviving.

Factors that can affect objectives:



- Targets for a **growing business**:
- Expand product range
 - Enter new markets
 - Increase sales
 - Increase profits
 - Gain a larger market share
 - Take over another
 - Open new stores
 - Increase the workforce

- Targets for a **struggling business**:
- Decrease the product range
 - Exit market
 - Achieve enough sales to break even
 - Improve efficiency
 - Maintain market share
 - Reduce costs e.g. close the workforce



Business and globalisation

Globalisation is where businesses operate internationally and gain a lot of influence.

Globalisation affects business in 3 ways

1. Imports –

Globalisation allows businesses to import products and raw materials at lower prices than they would be able to produce them for sale in the UK.

However, importing increases competition as foreign businesses can sell directly to UK customers.

3. Location

- Globalisation brings with it the opportunity for businesses to relocate.
- They may do this because they benefit from **lower labour costs**, being closer to raw materials to decrease transport costs or closer to their target market

Benefits of globalisation for businesses

- ✓ New market opportunities
- ✓ Access to technology and resources

Imports:

The flow of goods in to the country

Exports:

The flow of goods out of the country to another country

2. Exports –

Exporting opens up international markets for businesses and gives them the potential to grow.

However there may be **barriers** etc. – language, culture or legislation

Multinationals – an MNC is a large company with facilities in different markets around the world. This is a benefit for large businesses but can mean that smaller local companies can lose out in **less economically developed companies (LEDCs)**

Drawbacks of globalisation for businesses

- ❖ Threat from foreign competition
- ❖ Challenge of adapting to meet the needs of foreign consumers

International Trade

International trade is exchanging goods between countries. There is often charges that make **exporting** goods and services to other countries more expensive – these are called **tariffs**. Some countries that have **high tariffs** and **quotas** on goods can be said to be pursuing a **protectionism** strategy.

Reasons for **barriers to trade**:

- Protecting **jobs**
- Raising **revenue from tariffs**
- Protecting domestic goods from international competition

Domestic = home country

Free trade = no barriers

Trade Blocs – countries that group together and promote trade amongst themselves. Barriers are lower for the countries in the bloc but higher for those outside e.g. EU, NAFTA & ASEAN



Competing internationally

Competing internationally

E-commerce
Companies can trade 24/7
They can access worldwide markets without need of physical presence
Mobile trading is increasing particularly through social media

Globalization
Selling to international markets but adapting to their tastes and legal requirements

Customers may have different needs in different countries for example consumer beef is illegal in many states in India so McDonald's do not sell beef burgers



Element	Strategy
Product	- make sure the plugs are relevant – change for tastes –meet legislation
Price	- include tariffs – know tax laws – understand exchange rates
Promotion	- think about differences in culture and language
Place	-think about shopping preferences in other countries e.g. open til 8pm?

Ethics and Environment

Ethics are the standards and morals a business or person that guides their decisions

Companies need to decide between the **opportunity cost/trade-off** between focusing on **profits or ethics**. Being ethical usually means costs rising as you need to **pay fairer wages/prices** to suppliers

Pressure groups
Organisations that lobby and pressure companies to make changes that will benefit others.

Pressure groups can impact the marketing mix

Ethical behaviour includes:
Being fair to employees
Sourcing **fair trade** and **sustainable materials**
Producing things in line with **legislation**
Being conscious of the **environment**

Product – sustainably sourced and safe
Price – increase price to cover increased costs e.g. fair trade
Promotion – conform to laws
Place – source local products and use local distribution channels

It is important for businesses to minimise their impact on the environment e.g. reducing short term traffic for a long-term positive impact on climate change

This becomes more of a concern as a company grows

How can a business **reduce its impact** on the environment?
- reducing distribution miles
-Using renewable energy
- minimising plastic use
- supporting social causes

Being **ethical** and **environmental** has led to **new business opportunities** by being 'greener' for example. Companies can **charge higher prices** by doing so!

Papers & Boards

What you need to know:

- Know the primary sources of materials for producing papers & boards
- Be able to identify a range of papers & boards.
- Understand their properties and the functions they provide and how they are used?

Papers and boards are used for a variety of purposes from writing, drawing, packaging and model making. They are made from cellulose fibres found in wood or grasses which are all renewable.

Paper & boards can be plain, textured and can be laminated with other materials like plastic to make them waterproof.

Paper and board is measured in sizes from A0 to A6 and in weight by grams per square metres (gsm). Boards (card or cardboard) are always greater than the 200gsm



Types of papers

Papera	Example	Properties	Uses
Bleed proof		A smooth paper often used with water and marker pens which prevents bleed (e.g. when ink runs through the paper).	Presentation drawings
Cartridge paper		Good quality white paper with a slight texture.	Can be used for paints, markers and drawings
Grid		Paper printed with grids as guideline for drawing (e.g. isometric).	Quick model 3D drawings
Layout		Strong and lightweight	Initial sketching and tracing
Tracing		Fluted plastic – light, strong weather resistant material	Tracing copies of drawings

Types of boards

Boards	Example	Properties	Uses
Corrugated card		Strong lightweight material Made from two or more layers and has a fluted middle	Packaging such as pizza boxes, large boxes that are used to protect heavy items
Duplex board		Thin board that often has one side printed. This board can also be coated with wax so it can be used with food and drink	Packaging
Foil lined board		Board covered with one side of aluminum foil making it a good insulator	Packaging such a takeaway and ready meal packaging.
Foam core board		Two pieces of board with a foam core to increase the thickness but retain its light weight property.	Model making such as architectural models.
Solid white board		High quality cardboard, smooth on both sides which makes it good for printing.	Book covers, cards and packaging.

Week 1 -

Processing paper & card:

This involves turning raw materials into usable products. In the case of paper, the raw material is usually wood.



In the first stage of paper manufacture, the wood is mashed up to make wood pulp.

This is done in one of two ways.

By machine

The wood is physically ground up. Paper made from machined pulp is weaker and turns yellow over time. It is used for newspapers.

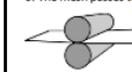
By chemicals

Wood chips are mixed with chemicals that dissolve the bonds between the fibres. Chemical pulp is used for writing and printing paper.

The wood pulp is then bleached to make it white, and fed into a Fourdrinier machine. This machine makes the pulp into paper.

1. Firstly, dyes and other chemicals are added to the pulp.

2. The pulp is then spread onto a moving wire mesh conveyor belt.



The first rollers squeeze out the water.

3. The mesh passes through a series of metal rollers. The second rollers are heated to dry the paper.



4. The calendar rollers then smooth the paper and determine the thickness.

Selecting Papers & Boards

The type of paper & board used to make a product depends on the following factors:

- Aesthetics
- Size of product
- Where and how the product will be used?
- Stability
- Cost
- Size
- Weight
- Finish required
- Lifetime of the product
- Desired properties.

Sustainability

The UK use over 12 million tonnes of paper each year and it takes approximately 25 trees to make one tonne of paper. Trees take in Carbon Dioxide (CO²) and produces oxygen but it takes a lot of energy to cut them down and make paper.

An alternative is to recycle paper and this is becoming more common as this uses between 40% to 70% less energy to produce.



Timbers & Manufactured Boards

Week 2 -

What you need to know:

- Know the primary sources of materials for producing papers & boards
- Be able to identify a range of natural timbers & manufactured boards.
- Understand their properties and the functions they provide and how they are used?

Natural Timbers		Manufactured Boards
Hardwood	Softwood	
Hardwoods are usually obtained from deciduous trees, which lose their leaves in autumn.	Softwoods are usually obtained from coniferous trees, which keep their leaves in winter and are also known as evergreens. These grow quickly which makes them sustainable as they are renewable. This also makes them cheaper when compared to hardwoods.	Manufactured boards are made from the waste sections of felled trees – the parts which are of little use as planks. The wood is reduced to pulp, particles or thin strips and bonded together using special adhesives or resins. Manufactured boards are made as alternative to natural timber.
<ul style="list-style-type: none"> <input type="checkbox"/> usually grow in warmer more humid climates, mainly in South America and Asia <input type="checkbox"/> grow slowly (80+ years) <input type="checkbox"/> are more difficult to sustain than softwoods <input type="checkbox"/> are more expensive than softwoods <input type="checkbox"/> are strong and hardwearing. 	<ul style="list-style-type: none"> <input type="checkbox"/> Usually grow in colder climates and are mainly grown in Scandinavia and Northern Europe <input type="checkbox"/> Grow thin, needle-like leaves <input type="checkbox"/> Grow relatively quickly (30 years) <input type="checkbox"/> Are easier to sustain than hardwood trees <input type="checkbox"/> Are easy to cut and shape <input type="checkbox"/> Are usually cheaper than hardwoods 	<ul style="list-style-type: none"> <input type="checkbox"/> Come in sheet form (usually 1.2 x 2.4m) <input type="checkbox"/> Are extremely stable and of uniform thickness <input type="checkbox"/> Are less expensive than laminating planks of timber <input type="checkbox"/> Can be covered with veneers <input type="checkbox"/> Are available in a variety of thicknesses (3, 6, 9, 12, 15, 18, 22mm)

Sustainable Timber

Wood is considered to be sustainable material as trees can be grown to replace those used for timber or fuel. A big issue is in many parts of the world timber is being used faster than trees are being replanted. This causes deforestation which is seen as a key factor to global warming.

To regulate this The Forest Stewardship Council (FSC) are dedicated to ensuring that timber supplies are regulated and sustainably harvested.



Types of Hardwoods

	Example	Properties	Uses
Ash		Tough and flexible, wide grained, shock resistant and finishes well	Sports equipment, hand tools and ladders
Beech		Strong, dense close grain but is prone to warping and splitting	Furniture, children's toys, bench tops
Mahogany		Strong and durable, easy to work with finishes well.	High end furniture
Oak		Strong and lightweight	Flooring, furniture and timber framed buildings.
Balsa		Strong and durable but very lightweight. If too thin can snap & break.	Model making, floats and rafts

	Example	Properties	Uses
Medium Density Fibreboard (MDF)		This compressed board is rigid and stable and is easy to work with. It has a smooth surface but it is very absorbent.	Flat pack furniture, kitchens and toys
Plywood		This is a laminated board it is stable due to its alternate layering a 90°. It has good water resistance.	Furniture, shelving, skateboards and exterior fencing
Chipboard		This compressed board not as strong as MDF or plywood	Furniture kitchen units & cupboards

Types of Softwoods

	Example	Properties	Uses
Larch		Tough and durable, good water resistance and finishes well	Fencing, cladding, decking, furniture
Pine		Lightweight easy to work with but can be knotty	Interior joinery and furniture and window frames.
Spruce		Easy to work with and is lightweight	Furniture, musical instruments and construction

Plastics (Polymers)

Week 3 -

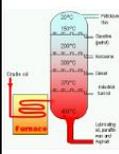
What you need to know:

- Know the primary sources of materials for producing polymers
- Be able to recognise and characterise different types of polymers
- Understand the physical working properties for a range of thermosetting and thermoplastics.

Man made (synthetic) plastics have replaced wood and metal in the manufacture of a wide range of products. The 1st synthetic plastic was celluloid. It was made from cotton and camphor and used for table tennis balls and film.

Commercial production of plastics really started after the 2nd World War. The raw materials used were either coal or oil. They contain a number of different chemicals which can be separated into parts by a process called **Fractional Distillation**.

Some of the fractions contain chemicals that are small molecules (**Monomers**). The monomers are chemically joined together to make longer molecular 'chains' called **Polymers**



There are many different types of plastic and can be split into four groups:

THERMOPLASTICS are made from long chain polymers, joined by weak chemical bonds. When the plastic is softened by heat the bonds break making the plastic 'semi fluid' and able to be shaped. As the plastic cools, new weak bonds form and the shape will be fixed. Because no chemical reaction has taken place this process can be repeated many times, making them recyclable, however excessive heat will permanently damage the chemical structure.



THERMOSETS or thermosetting plastics are plastics which are converted into their final form by heat. Once set, they cannot be softened by further heating as they undergo a chemical change. They have strong chemical bonds that hold the long chains together. These make thermosets heat resistant but not recyclable. It is difficult to make products by extrusion or injection moulding as they harden as soon as heated. Manufacturing methods include casting, moulding and laminating.



ELASTOMERS are a type of thermoset. The bonds between the chains are 'springy' giving them a rubbery quality. Natural rubber is an example it can be vulcanised to make a rigid (ebonite). Latex is a stretchy elastomer used to make surgical gloves. Lycra is an elastomer used to make stretchy clothing.



Ebonite is an early form of plastic that was used to simulate ebony and is hard and used for bowling balls

COMPOSITES are when materials are combined to achieve specific advantages. Examples of composites are Kevlar, GRP (Glass reinforced plastic), Graphite and Carbon Fibre. These are used extensively for sporting uses e.g. Bike parts, motor racing car bodies and tennis rackets.



Thermoplastics

Acrylonitrile Butadiene Styrene (ABS) is strong, tough, scratch resistant and resists heat and chemicals. It is injection moulded to make Lego bricks and is used extensively for household appliances like Kettles, vacuum cleaners and housings for cameras and telephones.



High Density Polythene (HDPE) is tough and can be blow moulded (bottles for bleach and shampoo) injection moulded (toys and buckets) and extruded (piping)



Polystyrene (PS) is used to make vending cups and model kits. It is light, transparent but quite brittle. It is vulcanised to make **High Impact Polystyrene (HIPS)** This is used for Vacuum forming in thin sheets, which are cheap and easy to work with. Expanded **Polystyrene (EPS)** is used as thermal insulation for packaging and food cartons. It is 90% air.



Low Density Polythene (LDPE) is made into thin film (Carrier bags, wiring insulation and squeeze bottles)



Thermosetting plastics

Polyester Resins which are combined with fibreglass to produce GRP

Phenol Formaldehyde is tough and heat resistant often black in colour. (Used for saucepan handles)

Epoxy Resins which are mixed with a hardener and left to set. They can be used to make adhesives and flooring.



<p>Plasticisers are added to make plastic bendy.</p>	<p>Pigments are added to change colour.</p>	<p>Antistatics are used to reduce static charge</p>
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<p>Antioxidants to reduce attack by air</p>	<p>Flame retardants to reduce burning</p>
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Problems of using plastics

Plastic products have a long shelf life, however it also means that they are difficult to dispose of

- Because they do not rot or corrode they are difficult to dispose of
- If burnt they produce black choking gasses
- When molten they are sticky and can cause severe burns
- Thermoplastics can be recycled by melting them down and reforming their shape, but usefulness can be become limited with frequent heating
- Plastic production itself can be polluting
- PVC contains many nasty pollutants and it is one of the most difficult plastics to recycle.

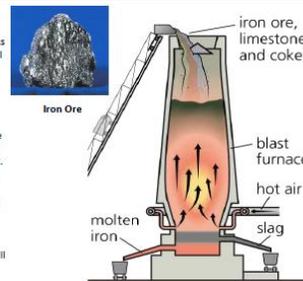
Metals and Alloys

Week 4 -

What you need to know:

- Know the primary sources of materials for producing metals and alloys
- Be able to recognise and characterise different types of metals and alloys
- Understand how the physical working properties of a range of metals and alloys affect their performance

Metal bearing rocks are called **ORES**, these are mined or quarried from the earth's surface. Metals are obtained from raw ores by a process called smelting. Raw ore is mixed with charcoal and other chemicals, and air is blown into a furnace. The molten metal trickles from the bottom of the furnace and this can be cast or extruded into shapes.



The more the reactive the metal the higher the temperature needed to extract it from its ore. Copper needs 1100°C but iron requires 1500°C. A metal like aluminium cannot be extracted by smelting. It is dissolved in a 'cryolite solution' and electrolysed (electricity is passed through) at a temperature of around 650°C.

A few metals can be mined from the earth as pure metals. These include gold and some small amounts of copper and silver

Recycling Metals

Metal ores are either mined or quarried which has an environmental impact. METAL extraction from ore demands a lot of energy, a great deal of which is lost as heat to the surroundings. The high cost has meant that recycling is becoming more and more important. Today the scrap metal industry has a vital role in the provision of metals for the future. Automated disassembly lines for recycling of metal parts for cars are coming ever closer. At present vehicles are collected sorted and shredded, and then materials are collected from them.

It takes 95% less energy to recycle aluminium cans than it does to produce new cans from aluminium ore. It is possible that future cans will be made from recycled material. Stainless steel can be made from as much as 70% of recycled material. Recycled copper can be refined to be as pure as new. Copper and its alloys have a high scrap value as they are relatively easy to recycle.



SECTIONS - Solids and tubes available



Ferrous Metals:

FERROUS METALS are those which are iron based. They contain iron and carbon in varying amounts. As iron is extracted from its ore in a furnace it contains a relatively high amount of carbon. This makes the iron hard but brittle this is known as **cast iron**. It resists compression but may break if dropped, hit or stretched. It is used to make car brake drums, railings and manhole covers. Cast iron has 4% carbon content.



High Carbon Steel is often referred to as **Tool steel** contains 0.6 - 1.5% Carbon. It is very hard and is used to make tools such as metalwork files and saw blades.



Mild Steel is very tough, can be bent or twisted and can resist strong impacts without breaking. It is easy to weld. Mild steel is used to make washing machines, construction girders, nuts and bolts and nails. It contains between 0.15 - 0.35% carbon.



Stainless Steel Contains about 1% carbon. It also contains other metals, mainly **chromium**. There are over 200 different types of **Stainless Steel**. They contain a minimum of 11% chromium and also contain **nickel**. Manganese is another metal often included. **Stainless steel** is often used for medical instruments, kitchen surfaces and pots and pans as it resists scratching and biofouling.



Wrought iron is the most pure iron, containing few imperfections. It is difficult to cast although it makes excellent material for forge work because it is tough. It has less than 0.1% carbon. It is used for gates and railings



Non-Ferrous Metals:

NON-FERROUS METALS do not contain iron. There are many different metals that fall into this group.

Aluminium Pure aluminium is malleable and ductile but has a low tensile strength (aluminium foil). To improve strength it is usually alloyed with copper or magnesium. Because it resists corrosion it is used extensively outdoors in satellite dishes and window frames. Aluminium is very light metal and has a density a 1/3 that of copper and steel. It is a good conductor of heat and electricity. Aluminium alloys are used extensively in the aircraft industry and in motor cars. Approx 150,000 million aluminium cans are produced every year.



Lead is a metal that was once in common use for plumbing, roof flashing and car batteries. It has been replaced by copper, plastics and alloys in many cases but is still used in car batteries. Lead is a soft malleable metal. It is also an accumulative poison.

Alloys:

An **ALLOY** is a material of a mixture of metals or a metal and a non metal intermixed. Metal alloys have advantages. The alloy may contain the properties of two or more metals or other elements.

Brass is an alloy of copper and Zinc. Copper is malleable, resists corrosion and is a good conductor of electricity. Zinc is hard but brittle. Brass is used in musical instruments, Valves and in electrical plugs and sockets.



Different combinations of tin, lead and other metals are used to create **solder**. The combinations used depend on the desired properties. The most popular combination is 60% tin, 39% lead, and 1% alloys. This combination is strong, has a low melting range, and melts and sets quickly.





Textile Fibres & Fabrics

Week 5 -

What you need to know:

- Know the primary sources of materials for textile fibres & fabrics.
- To be able to identify a range of textile fibres & fabrics.
- Understand their properties and the functions they provide and how they are used?

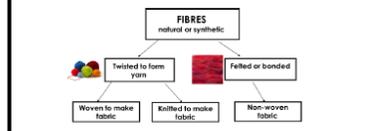
Natural fibres can come from plant or animal sources

Synthetic fibres are manufactured from oil based chemicals.

Types of Fabrics

Origins	Example	Properties	Uses
Cotton Cotton comes from the fine hairs on the seed pod of a cotton plant.		Soft and strong, absorbent, cool to wear and easily washable. Cotton fabrics can be given a brushed finish to increase their thermal properties	Most clothing, especially shirts, underwear and denim can be made from cotton. Also used for towels and bed sheets
Wool Wool comes from a sheep's coat is known as fleece.		Warm and absorbent, does not crease easily and has low flammability. Has natural resilience to water, but when wet does take a long time to dry. Is difficult to launder as it can shrink (felt).	Jumpers, coats, suits and accessories worn for warmth. Specialist wools are very soft and expensive. Felt products and carpets
Silk Silk comes from a cocoon of the silkworm.		Very soft and fine finish, gentle on skin, can feel cool in summer yet warm in winter, drapes well, absorbent, strong when dry (weaker when wet), tricky to wash, can hangings	Luxury clothing including nightwear and underwear, soft furnishings, bed sheets, silk
Polyester		Tough, strong, hard wearing, very versatile, holds colour well, non-absorbent so quick drying, machine washes well often blended with other fibres. Easily coloured	Clothing, fleece garments, bed sheets, carpets, wadding, rope, threads, backpacks, umbrellas and sportswear
Polyamide (Nylon)		Good strength, hard wearing, non-absorbent, machine washes well, easily and frequently blended	Clothing, ropes and webbings, parachutes and sports material. Used as a tough thread on garments
Elastane (Lycra)		Added to fabric to enhance working properties, particularly to add stretch. Allows freedom of movement, quick drying, holds colour well, machine washable	Sportswear, exercise clothing, swimsuits, general clothing, surgical and muscular supports

Fibres are the starting point from which all fabrics are made.



Blended Fibres
This is a combination of two or more fibres spun together into a yarn.

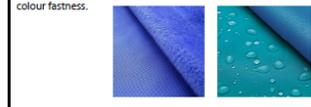
- Reasons for blending and mixing fibres:**
1. Improve the appearance of a fabric in terms of colour or texture.
 2. Improve the quality of the fabric e.g. more durable, stronger and longer lasting
 3. Easier to wash and care for the fabric e.g. crease resistance.
 4. Improve the feel (handle) of a fabric.
 5. Improve the profitability of a fabric so that it is cheaper to produce and is more desirable to consumers.

Fabric Finishes

Once a fabric has been produced it often goes through a process to improve its appearance and/or properties. The main fabric finishes are:

- Physical – machines are used to change the fabric
- Chemical – chemicals used to change the fabric
- Biological – bacteria & enzymes used on regenerated fibres
- Coating – where fabrics are coated on one side

Why are fabrics finished?
To enhance: colour, pattern, lustre, texture, softer, firmer, drape, care properties, stain resistance, waterproof, flammability, colour fastness.



The type of fabric used to make a product depends on the following factors:

<input type="checkbox"/> Aesthetics	<input type="checkbox"/> Cost	<input type="checkbox"/> Lifetime of the product
<input type="checkbox"/> Size of product	<input type="checkbox"/> Size of material	<input type="checkbox"/> Desired properties.
<input type="checkbox"/> Where and how the product will be used?	<input type="checkbox"/> Weight	<input type="checkbox"/> Workability
<input type="checkbox"/> Stability	<input type="checkbox"/> Finish required	<input type="checkbox"/> Fabric availability

Smart & Modern Materials

Week 6 -

What you need to know:

- To be able to identify a range of smart & modern materials.
- Understand what they do, their properties and the functions they provide.

What is a SMART material?

- A 'smart material' can be defined as a material whose physical properties change in response to an input e.g. making them simpler or safer to use.
- A smart material reacts to external stimulus / changes in the environment without human intervention.

Designers and manufacturers are utilising SMART materials in a whole range of mass consumer products which often makes them simpler or safer to use.

SMART Material	Property
Hydrochromic Ink	Changes colour with water
Thermochromic Pigment/ Paint	Changes colour with heat
Photochromic Material/ Dye	Changes colour with light
SMA - Shape Memory Alloy	Changes shape with heat
Phosphorescent Material	Glow in the dark
QTC - Quantum Tunneling Composite	Soft Electrical Switch
Polymorph	A thermoplastic use for prototyping which can reheated and reused

Hydrochromic paint is added to the charger socket of the Apple iPhone so apple knows when there has been water damage which voids the warranty.

Phosphorescent Materials absorb day light, store it and release it during periods of darkness. This has been extensively used for safety lighting, signage, watch faces and those glow in the dark stars kids have on their bedroom ceilings.

Thermochromic paints can be added to any surface like these mugs or a textiles or card based product to react to heat.

Polymorph is a clever thermoplastic which we can use for prototyping and is especially useful when it comes to modelling ergonomic grips. As it is thermoplastic you can reheat and reuse this material as many times as you wish.

QTC (Quantum Tunneling Composite) is a simple soft switch material that allows an electrical current to flow when compressed. We can use it in children's toys or in many textiles products such as the jacket right >

Photochromic pigments react to changes in light. One example is reaction lenses where they darken with sunlight.

What is a MODERN material?

- Modern materials are technical materials which have been manufactured for function.

A good designer will utilise and exploit these materials where appropriate and keep up-to-date with the latest technological developments.

Modern Material	Property
Graphene	Is stronger than steel, flexible, conducts heat and electricity
Titanium	Is strong compared to its weight and is anti-corrosive
Metal foams	Are strong, lightweight, electrically & thermally conductive
Nanomaterials	Nanomaterials are between 1and 100 nanometres.
Fibre Optics	A hair like strands of pure glass designed to transmit signals
Corn Starch Polymers	Compostable plastics which are biodegradable

Shape Memory Alloys change shape easily but always return to their original shape when they are heated. There are many applications such as dental braces and unbreakable spectacles.

Titanium is a very versatile metal. It is usually alloyed with other metals to enhance the properties. Pure titanium does not react to the human body and is used extensively in medical procedures such as artificial joints and dental implants. It is strong compared to its weight and is anti-corrosive.

Nanomaterials are between 1and 100 nanometres (A nanometre one thousand-millionth of a metre). Nanomaterials include carbon nanotubes, fullerenes and quantum dots. Nanomaterials are used in car manufacturing to create cars that are faster, safer and more fuel efficient. They can also be used to produce more efficient insulation and lighting systems. They are also used as thin films or surface coatings, on computer chips.

Compostable plastics are biodegradable which are compostable & come from renewable raw materials like starch (e.g. corn, potato or tapioca). Polylactic acid (PLA), is made from fermented sugars, found in starch.

Thermochromic pigments are added to plastics and react to specific temperatures. One use is enhancing the safety of a babies bowl.

Metal foams are porous metal structures made from aluminium and titanium. They are strong, lightweight, electrically & thermally conductive and absorb sound well. They are made by injecting gas into the liquid metal but still retain many properties of the original metal including being recyclable.



If it was not for the innovative technology of the fibre optical cabling the internet would not be possible. If your parents subscribe to Virgin this is what connects your broadband router or Tivo box to virgin. Without this cable we would not be able to download our music from iTunes or have a Skype conversation with family in Australia.



Graphene is a 2D material a honeycomb lattice carbon structure only one atom thick (a million times finer than a human hair) it is 200 times stronger than steel, very flexible, conducts heat and electricity, and is almost transparent. It is impermeable to all known substances. Electronics and energy storage could be revolutionised

Composite Materials & Technical Textiles

Week 7 -

What you need to know:

- To be able to identify a range of composite materials and technical textiles..
- Understand what they do, their properties and the functions they provide.

What is a Composite material?

- Composite materials are formed when two or more distinctly different materials are combined together to create a new material with improved properties.

Composite Material	Property
Carbon Fibre	As a very high strength-to-weight ratio, and is extremely rigid, waterproof but very expensive.
Glass reinforced plastic	A very high strength-to-weight ratio, resists corrosion, water resistant and is light weight.



Carbon fibre components are manufactured by laying up sheets of carbon fibre (fabric) and joining them together with a thermosetting resin (which makes them solid). We use them extensively in the automotive and aviation industries. It has a very high strength-to-weight ratio, and is extremely rigid, waterproof but very expensive.



Glass reinforced plastic (fibreglass) is made from fine glass fibres which are combined with a thermoset plastic resin and is moulded. It has a very high strength-to-weight ratio, resists corrosion, water resistant and is light weight. The fibre glass fibres are soaked in liquid plastic, and then pressed or heated until the material fuses together.

What are Technical Textiles?

- Technical textiles are manufactured for a specific use e.g. the function. As this is more important than the aesthetic quality.

Modern Material	Property
Kevlar®	Is five times stronger than steel, flexible and lightweight.
Nomex®	Can withstand high temperatures (thermal stability) strong & flexible.
Gore-Tex®	Waterproof & breathable as it prevents sweating.
Microencapsulation	Substances are trapped into fibres and are released through friction.
Conductive fabrics	Electrical signals can pass through them to power devices.

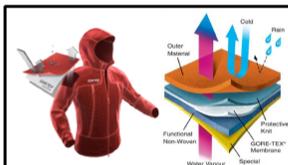
Types of Technical Textiles



Kevlar® can be a woven or knitted structure and has many applications, ranging from bicycle tyres, racing sails to body armour because of its lightweight, has high tensile strength-to-weight ratio; by this measure it is 5 times stronger than steel. It is also used to make components that need to withstand high impact.



Nomex® was developed to withstand high temperatures and reduce combustion when exposed to a naked flame. Nomex has many applications, ranging from protective clothing (fire service & military), racing suits and aerospace applications this is because of its strength, thermal stability, flexibility and resilience.



Gore-Tex® is a waterproof fabric that is 'breathable' it lets water vapour from perspiration (sweat) pass to the outside, but it stops rain drops from passing to the inside. Clothing or footwear made of Gore-Tex® is very useful to people who work or like outdoor pursuits and sports.



Microencapsulation traps liquid or solid substances within the fibres which embedded in to the fabric. When the fabric is rubbed or heated the substances can be released. Micro capsules can hold a variety of substances depending on the fabrics intended purpose such as:

- Scents and smells are children's toys fused with a scent of chocolate or scratch and sniff T-shirts.
- Antibacterial solutions are added to fabrics to cuts down on bugs (used in anti-bacterial dressings).
- Insect repellent clothing, chemicals are added to fabrics to prevent mosquito bites.



Conductive textiles are also known as e-textiles these are highly conductive threads and fabrics which allow an electrical signal to pass through them to power LED's headphones and microphones.

EXTENSION MAP :Energy Generation

What you need to know:

- To understand how power is generated from renewable and non-renewable sources and be aware of the arguments for and against.

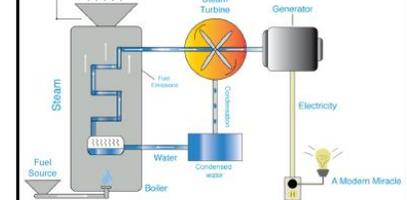
Energy generation

There are many ways to convert energy the two main categories are:

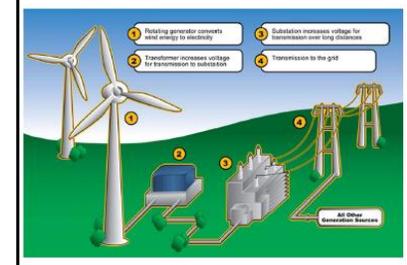
- Fossil fuels (finite)
- Renewables (non-finite)

Turbines & generators

Most forms of electricity production involve a rotating turbine which turns a generator. Fossil fuels are burned, this heats the water resulting in steam which turns the turbine which is linked to a generator to create electricity.



Renewable energy the energy is harnessed from the wind (wind turbines), wave (tidal) or falling water (hydroelectric) is converted into mechanical energy which rotates the turbine. A generator converts the mechanical energy into electricity.



Non-Renewable Resources

Traditionally designers have made products from raw materials that come from non-renewable (finite) resources that are in limited supply. Examples of these include oil, ores and minerals. They are natural materials but they will eventually run out.



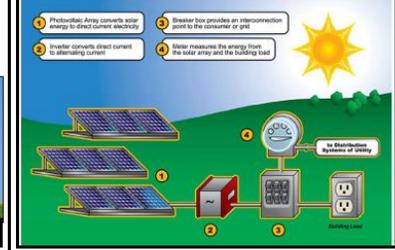
Renewable Resources

Renewable means we can create more as long as they are regrown or replaced this includes materials like paper & wood. Energy that comes from the non-finite resources are considered renewable. This includes wind, wave, solar, geothermal, tidal and biomass.



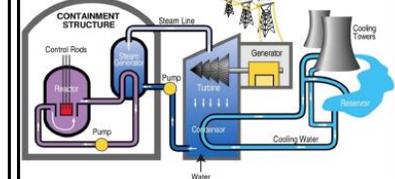
Solar Energy

The photovoltaic effect involves the conversion of solar energy into electrical energy. The solar panel capture the sun's rays and converts them into electrical energy.



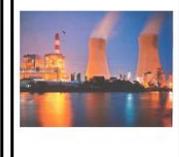
Nuclear power

The controversial method of energy, it is considered clean & efficient. The process takes place in the reactor vessel, control rods in and out of the reactors core to regulate the power generated. The reaction generates vast amounts of heat like other methods and generates power to the and generator. The downside to nuclear power is that the waste product produced from the reaction is radioactive and very dangerous to all forms of life. It must be contained and stored correctly so the radiation doesn't leak. This is usually underground and this waste will be radioactive for years.



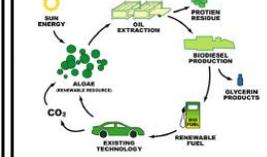
Fossil Fuels

Fossil fuels (coal, oil & gas) are considered finite as they can not be replaced. 55% of Britain's electricity is generated from coal and gas.



Biofuel

Biofuel is a way of producing energy for transportation & heating. Oli and starch producing crops are grown, harvested and refined into a number of products such as biodiesel. This process is known as biomass energy production.



Exploring a Stimulus

Component 2 - Coursework

Starting the Devising ProcessWhat is a stimulus?

A stimulus OR stimuli can be defined as something that gives you an idea – an inspiration, a starting point. It is the beginning of the devising process.

How to use a stimulus for dramatic potentialWhat is Improvisation?

Improvised drama is work that hasn't been scripted but is made up as you go along. It's important not to block members of your group when improvising but accept and try out their ideas. This will encourage you all to run with an idea rather than try and direct or plan the improvisation.

Genre and Style of TheatreGenres of Theatre

- Theatre in education (TiE)
- Physical theatre
- Epic theatre
- Political theatre
- Comedy
- Tragedy
- Melodrama
- Commedia dell'arte

Theatre Styles

Naturalistic – Stanislavski Method

Non Naturalistic – Brechtian Techniques

Devising Drama

Component 2 - Coursework

Creative Process – Getting to know your character

Character Status: The power difference between the characters

Role-on-the-wall: To visually map the relationship between characteristics (emotions) and actions (behaviors) onto a simple outline of a human figure.

Hot Seating: A strategy in which a character or characters are interviewed by the rest of the group. This activity invites students to recount a specific event, explore motivation and multiple experiences related to a theme, topic, event, or idea.

Creative Process – Group Work

Collaboration: working with others to produce a piece of work.

Practising: Is the process of developing a performance and repeating sections to improve and refine the skills used.

Rehearsal: Is the process of practicing your performance as a full performance.

Theatrical Skills

- Learn how to **commit dialogue to memory** for devised performances and/or learn text they are performing for text-based performances
- Develop **the ability to interpret and/or create and perform** a character as appropriate to the demands of the performance
- Develop **a range of vocal skills and techniques** e.g. clarity of diction, inflection, accent, intonation and phrasing; pace, pause and timing; projection, pitch; emotional range; song and/or choral speaking
- Develop **a range of physical skills and techniques** e.g. movement, body language, posture, gesture, gait, co-ordination, stillness, timing, control; facial expression; eye contact, listening, expression of mood; spatial awareness; interaction with other performers; dance and choral movement
- **Develop an appropriate performer/audience relationship and ensure sustained engagement throughout the performance**
- **Adopt the latest safe working practices**

Rehearsal Process

Component 2 - Coursework

Section A – Response to Stimulus**My first response to the stimuli**

- The image of ... led us to the idea of....
- We wanted to show the audienceto make them think/feel...

Our final decision

- This idea was further developed when...
- For my character I...

My Research

- I found out research about...
- This helped develop my understanding because....

Dramatic aims and intentions

- The group's aim was to...
- An example of this would be when...
- One of my main intentions is to...so I will use...

Dramatic Intentions

- What do you want the audience to feel when watching your piece?
- What do you want the audience to learn when watching your piece?
- What do you want the audience to think about after watching your piece?

How do you rehearse effectively for a performance?

Self Discipline: To be able to work independently and stay on task

Repetition: To practice your use of skills over and over again to improve.

Reflection: To look at your work and understand how to improve it and be able to listen and implement feedback from others.

Performance Skills

Physical Skills: body language, posture, gesture, co-ordination, gait, stillness, timing, control; facial expression; eye contact, listening, spatial awareness.

Vocal Skills: Tone, Volume, Pace, Pitch

Interaction with other performers

Proxemics: Use of Space within the stage area.

Component 2 - Coursework

Performance Criteria

This is a practical component in which learners are assessed on their ability to create and develop ideas to communicate meaning for theatrical performance (AO1), apply theatrical skills to realise artistic intentions in live performance (AO2) and analyse and evaluate their own work (AO4). Component 2 constitutes 40% of the GCSE.

Contribute to a final devised duologue or group performance.

The Devising log is marked out of 60.

Each learner's contribution to the final devised performance is marked out of 20.

Band	Mark	Descriptors
4	16–20	Excellent contribution to performance: <ul style="list-style-type: none"> • An extensive range of skills are demonstrated. • Skills are deployed precisely and in a highly effective way. • Personal interpretation is entirely appropriate to the play as a whole. • Personal interpretation is highly sensitive to context. • Artistic intentions are entirely achieved.
3	11–15	Good contribution to performance: <ul style="list-style-type: none"> • Wide range of skills are demonstrated. • Skills are deployed confidently and in a mostly effective way. • Personal interpretation exhibits a good degree of appropriateness to the play as a whole. • Personal interpretation exhibits a good degree of sensitivity to context. • Artistic intentions are mostly achieved.
2	6–10	Reasonable contribution to performance: <ul style="list-style-type: none"> • Fair range of skills are demonstrated. • Skills are deployed with care and with effectiveness in places. • Personal interpretation has some relevance to the play as a whole. • Personal interpretation is sensitive to context in places. • Artistic intentions are partly achieved.
1	1–5	Limited contribution to performance: <ul style="list-style-type: none"> • Narrow range of skills are demonstrated. • Skills are deployed uncertainly with little effectiveness. • Personal interpretation lacks appropriateness for the play as a whole. • Personal interpretation lacks sensitivity to context. • Artistic intentions are achieved to a minimal extent.
0	0	Nothing worthy of credit.

Devising Drama
Component 2 - Coursework
Section A – Response to Stimulus
My first response to the stimuli

- The image of ... led us to the idea of....
- We wanted to show the audienceto make them think/feel...

Our final decision

- This idea was further developed when...
- For my character I...

My Research

- I found out research about...
- This helped develop my understanding because....

Dramatic aims and intentions

- The group's aim was to...
- An example of this would be when...
- One of my main intentions is to...so I will use...

Dramatic Intentions

- What do you want the audience to feel when watching your piece?
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Interaction with other performers

Proxemics: Use of Space within the stage area.

Component 2 - Coursework
Devising Drama
Section 2: Development and collaboration

In this section students are expected to explain the process they undertook to refine their initial ideas and intentions into a final devised piece.

The learner must explain:

- how they developed and refined their own ideas and those of the pair/group
- how they developed and refined the piece in rehearsal
- how they developed and refined their own theatrical skills during the devising process
- how they responded to feedback
- how they as individuals used their refined theatrical skills and ideas in the final piece.

Section 3: Analysis and evaluation

This section offers learners the opportunity to demonstrate their analytical and evaluative skills with respect to their own devised work. Learners are expected to analyse and evaluate the ways in which they individually contributed to the devising process as a whole and to the final devised piece, exploring their strengths and the learning opportunities taken from the experience.

Learners should analyse and evaluate:

- how far they developed their theatrical skills
- the benefits they brought to the pair/group and the way in which they positively shaped the outcome
- the overall impact they had as individuals. Students should also appraise those areas for further development in their future devising work (i.e. the aspects that did not go as well as they'd hoped).

In the context of this section:

- to 'analyse' is to identify and investigate
- to 'evaluate' is to assess the merit of the different approaches used and formulate judgements.

Devising Drama

Component 2 Practical Assessment

Creative Process – Getting to know your character

Character Status: The power difference between the characters

Role-on-the-wall: To visually map the relationship between characteristics (emotions) and actions (behaviors) onto a simple outline of a human figure.

Hot Seating: A strategy in which a character or characters are interviewed by the rest of the group. This activity invites students to recount a specific event, explore motivation and multiple experiences related to a theme, topic, event, or idea.

Creative Process – Group Work

Collaboration: working with others to produce a piece of work.

Practising: Is the process of developing a performance and repeating sections to improve and refine the skills used.

Rehearsal: Is the process of practicing your performance as a full performance.

Theatrical Skills

- Learn how to **commit dialogue to memory** for devised performances and/or learn text they are performing for text-based performances
- Develop **the ability to interpret and/or create and perform** a character as appropriate to the demands of the performance
- Develop **a range of vocal skills and techniques** e.g. clarity of diction, inflection, accent, intonation and phrasing; pace, pause and timing; projection, pitch; emotional range; song and/or choral speaking
- Develop **a range of physical skills and techniques** e.g. movement, body language, posture, gesture, gait, co-ordination, stillness, timing, control; facial expression; eye contact, listening, expression of mood; spatial awareness; interaction with other performers; dance and choral movement
- **Develop an appropriate performer/audience relationship and ensure sustained engagement throughout the performance**
- **Adopt the latest safe working practices**

Component 2 Practical Assessment

Devising Drama

This is a practical component in which learners are assessed on their ability to create and develop ideas to communicate meaning for theatrical performance (AO1), apply theatrical skills to realise artistic intentions in live performance (AO2) and analyse and evaluate their own work (AO4). Component 2 constitutes 40% of the GCSE.

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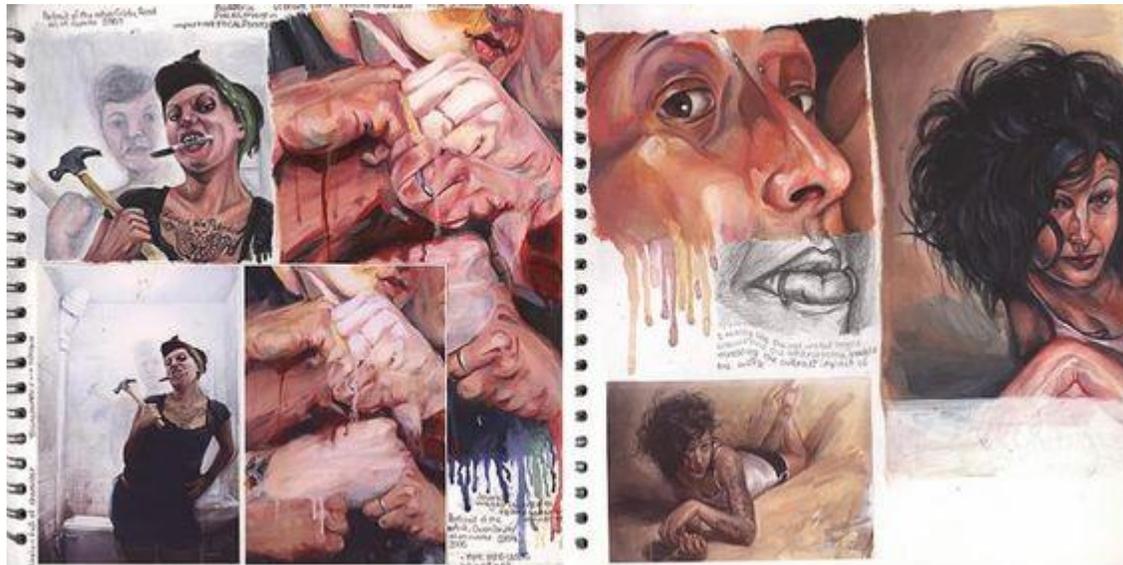
A01

The portfolio is made up of preparatory studies leading to a fully resolved response, or group of responses. The portfolio represents 100% of the final mark.

A01: Develop ideas through investigations, demonstrating critical understanding of sources.

Assessment Objective 1 is about developing ideas from a starting point to a final piece. This is done through mind-mapping, sketches and studies related to the work of other artists.

You need to analyse and understand these contextual sources, and develop your ideas in a personal way. Don't just state facts that you have found out. Relate what you have found out to your own ideas and experience.



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

Check List

A relevant mood board of ideas	
A relevant mind map of ideas	
At least 3 artist pages (A3)	
An artist essay for each artist studied	
Copies of artists' work	
Annotation to explain your ideas	

Make sure you clearly annotate what is *your* work and what comes from other sources

A02

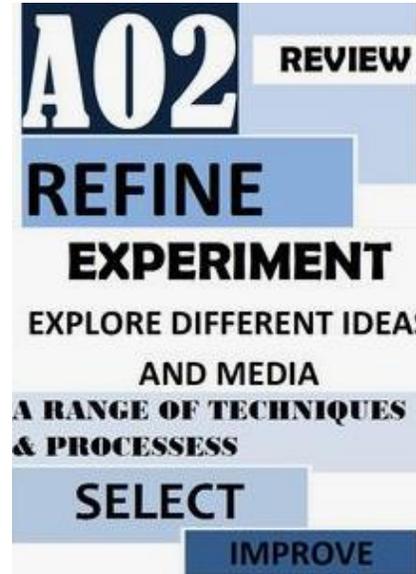
A02: Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

Assessment Objective 2 is about refining your ideas through selecting and experimenting with appropriate resources, media, materials, techniques and processes.

Your choice of resources should be linked to your understanding of the media and materials used by artists and designers. Practical experience and experimentation will help you understand the possibilities of various media and develop your technical skills.

You don't have to use all the different ideas and methods that you have explored, but your final work should be developed from or link with your studies in different media. It is important to show that you have experimented with processes and techniques, so you should present your samples and studies carefully in your workbook, journal or on mounted sheets.

You should make it clear how and why you have selected and used particular materials and working methods. For example, you could present examples of artists' work alongside your own studies. You could explain the connection in written annotations.



Presenting your own work alongside that of inspirational artists and designers can help explain your visual choices

Check List

Experiments with your observation studies, in the style of your artists	
3 designs in the styles of your artists	
Annotation of your work	



A03

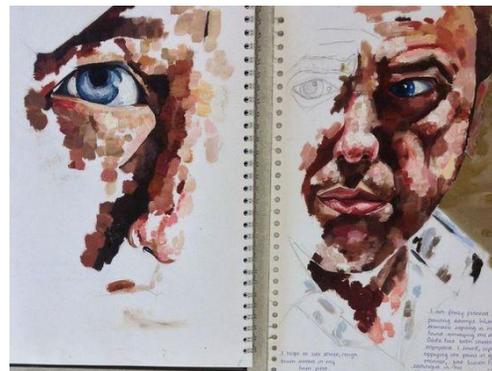
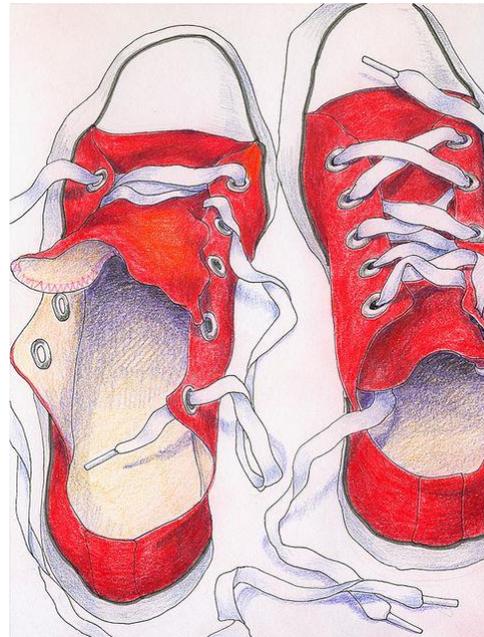
A03: Record ideas, observations and insights relevant to intentions as work progresses

Assessment Objective 3 is about recording your ideas, observations and insights. These can be visual, written and in other forms.

You should work from a range of experiences and stimulus materials, as each of these could lead you to different ways of developing your ideas. You should reflect upon your work, and consider what you have achieved at each stage and what you will do next.

Evidence of your understanding and intentions can be shown by the ways you use media, materials and processes, as well as in the ways that you develop your ideas, skills and techniques.

You should demonstrate that you have reflected on how you developed your ideas. This should be based on your selection of media, sources and contextual material. You need to show you have understood the formal elements in your own work and that of others. You should also consider how you could develop your ideas further on the set brief or theme.



A03 EVIDENCE
RECORD
PRESENT IDEAS
 PRIMARY OBSERVATION
 DRAWING, PAINTING,
 PRINTING, PHOTOGRAPHY
 WRITING,
ANNOTATE
 DIFFERENT MEDIA



Check List

Secondary resources (internet/ magazines etc.)	
Primary resources (your own photos)	
Observation studies	
- tonal/ biro	
- Colour pencil	
- Water colour	
- Other (acrylic/ ink/ oil pastel act)	
Annotation of your work	



AO4

AO4: Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.

Assessment Objective 4 is about presenting a personal, informed and meaningful response, from your initial research through to the final piece. You need to demonstrate analytical and critical understanding as you respond to your theme.

You must show that you have understood the theme, and that you have an understanding of the way artists, designers or craftspeople work. You need to demonstrate this understanding in your research and development studies, as well as in your final piece.

To make a meaningful response it is important to demonstrate that you have selected suitable source material and media. You need to make connections between your work and suitable contextual sources. You should record your ideas as you develop them into a completed final piece.

Organise your projects so that the development of your ideas and the connections between all the elements of your work are made clear. There should be a visual 'journey' from your starting point through to your final piece that demonstrates your understanding of your particular area(s) of art and design.

Showing clear links between your starting point, sources and final piece will help show how successful your project has been

Check List

Experiments with your observation studies, in the style of your artists	
3 designs in the styles of your artists	
1 final design idea (a small scaled version of what you hope your final piece will look like)	
Annotation of your work	

Your work needs to be personal, so make sure you explain what the theme or other starting point means to you, and show how you have developed your own individual visual language

Annotation

AO2: Annotating your work, ideas and concepts

Annotations are written explanations or critical comments added to art or design work that record and communicate your thoughts.

- analyse the work of an inspirational artist or designer
- record a technique
- record ideas
- explain the thinking behind an idea
- analyse the success of a technique, idea or composition
- explain how a particular artist or designer's style or technique has influenced your work#

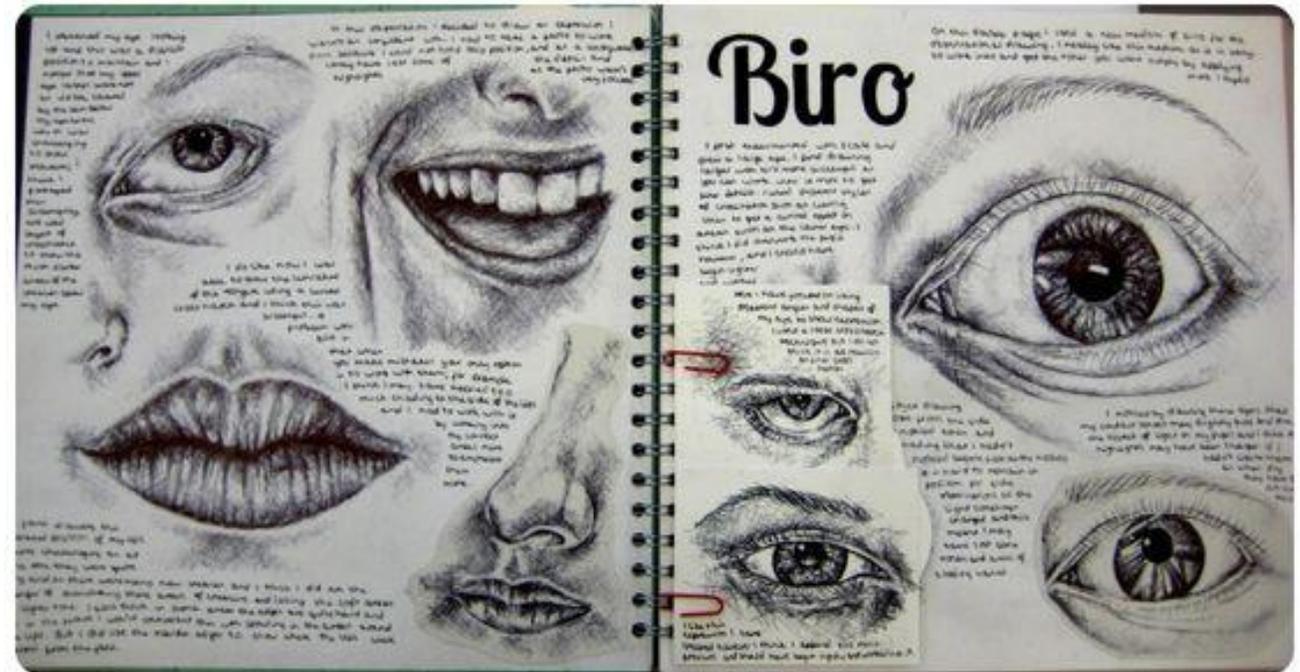
Annotations can be used for your own reference, e.g. to make a note of how you achieved a technique, or to record an idea you might like to try later.

They can also be used to communicate information to the examiner that will help explain your thoughts and decision-making processes.

Using annotations can demonstrate evidence of planning, decision-making and problem-solving ability, which will all contribute towards your assessment.

To annotate your work successfully, you should explain:

- what you have done and why you did it
- how you did it, such as the media and techniques used
- why you chose a particular medium or technique
- how an artwork or design fits in with your project
- what aspects you like
- how you could improve the work
- what you think you will do next



Carefully placed annotation can complement your visual work as well as explaining it

Annotation

AO2: Annotating your work, ideas and concepts: **Vocabulary**

Using the correct vocabulary in your annotation will show that you are developing your knowledge, understanding and skills. Think about using key terms, such as:

Subject –

- what is shown in the artwork?
- who is it a portrait of?
- what objects are in a still life?
- what is your natural or built environment?

Composition –

- how are the elements of the work arranged?
- are they close together or far apart?
- what is the overall shape of the composition?
- what viewpoint is it shown from?

Foreground and background –

- which elements appear close up or further away?

Visual elements –

- how are line, shape, colour, tone, form, texture and pattern used?

Annotations can be added to artwork using a variety of formats:

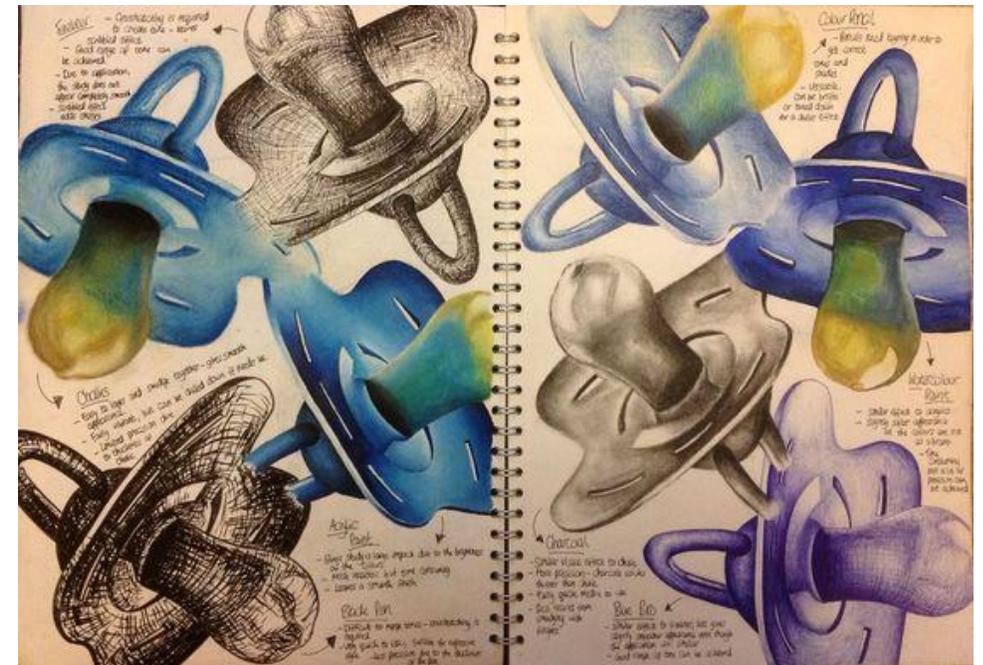
- Writing them next to work produced in a sketchbook
- Writing on tags or post it notes
- Writing them on separate presentation sheets
- taking photographs of the work at different stages and tagging the images with comments

Think carefully about how your annotation looks. It should add to your work and not distract from it.

Make sure handwritten annotation is easy to read. If your handwriting is messy you might be better printing your notes.

If you want to print notes you should use a font that complements your images.

Don't feel you have to write in full sentences. Noting key words or phrases can be just as effective.



Short, simple notes using correct vocabulary can give a clear idea of your understanding and knowledge

Week 1 – Health and wellbeing/ Genetic inheritance

A **holistic** definition of health and wellbeing is a combination of physical health and social and emotional wellbeing. It is not just the absence of disease or illness.

Genetic inheritance – some conditions or diseases are inherited. E.g. Haemophilia – the blood cannot clot properly. Only affects males.

We have 23 pairs of **chromosomes** in each of our body cells. One chromosome from each pair is inherited from our birth mother and one from our birth father.

Chromosomes contain the **genes** inherited from our birth parents. There may be different forms of the same gene (**alleles**) caused by mutations in the **DNA** code. A faulty gene can cause a condition to be inherited.

Dominant gene – a child inherits the condition from only one parent – e.g. Huntington's disease.

Recessive gene – a child would only develop the condition if it was inherited from both parents – e.g. cystic fibrosis or sickle cell anaemia.

Predisposition means someone is likely to suffer from a particular condition due to genetic factors, environmental factors or a combination of both.

Week 2 – Ill health/Diet

Acute illness comes on quickly, is short term and can be cured.

Chronic illness comes on gradually, is long term (more than 3 months) and generally can be treated but not cured.

A balanced diet contains the correct nutrients in the right proportions to keep our bodies and minds healthy.

Obesity can cause people to be more prone to illness, have reduced life expectancy and be less able to exercise effectively.

The essential parts of a healthy balanced diet are: fats, carbohydrates, minerals, vitamins and proteins.

The **Eatwell Guide** outlines what the UK Government suggests we need to eat to keep us healthy. This includes at least 5 portions of fruit and veg per day, starchy foods, dairy, beans, oily fish, eggs, meat and other proteins which also contain vitamins and minerals. Small amounts of oils and spreads, plenty of fluids and a reduced intake of food and drinks high in saturated fat, salt and sugar.

Too much food consumed will be stored in the body as fat that could lead to obesity, heart disease, high blood pressure, strokes, tooth decay and cancer.

Too little food will not provide the body with enough nutrients to grow and develop and could lead to eating disorders, anaemia, stunted bone growth, heart failure, depression, tiredness, cancer and rickets.

Week 3 – Exercise/Substance Use/Personal hygiene

Exercise improves our strength, stamina and suppleness. Exercise is essential and can help prevent heart disease and stroke. Moderate exercise causes the heart to beat faster, increasing breathing rate, lowers blood pressure and cholesterol levels.

Lack of exercise can lead to conditions such as; stiffening of joints, poor stamina, strength and suppleness, obesity, coronary heart disease, poorly developed heart and skeletal muscles, sluggish blood flow, osteoporosis.

Nicotine – a powerful, addictive drug found in tobacco.

Addiction – not having control of doing, taking or using something to the point where it could be harmful to you.

Barriers stop bacteria entering different parts of the body – skin, tears, mucus and stomach acid. If there are too many bacteria, one of the normal barriers will be become damaged and we become infected. Some bacteria attack body tissues or release poisons that make us feel ill. They can cause illnesses such as food poisoning, tetanus, sore throat, TB, whooping cough, meningitis, syphilis.

Week 4 – Social interactions/stress/access to services

Stress occurs when you have to respond to demands made on you. It causes the body to secrete hormones – adrenaline. These hormones trigger a 'flight or fight' response which enables you to respond instantly. Stress is a problem when it becomes very intense or experiences over a long period of time. It can affect you physically, intellectually, emotionally, socially. **Adrenaline** can increase the rate and strength of the heartbeat, increase breathing rate, shift the distribution of the blood from the skin and digestive system to the muscles, dry up secretions responsible for digestion, convert stored glycogen into glucose and increase blood pressure.

Week 5 – Financial resources/ Environmental conditions/Housing

Wealth – having lots of money.

Social class – broad group in society having the same social or economic status, most commonly upper, middle and lower class.

Material possessions – objects that can be brought but not essential to live on.

Income – money people receive from their work, savings, benefits or investment.

Absolute poverty – not enough money to meet basic needs, such as food, clothing or housing.

Relative poverty – have enough money for essentials, but less money than others and can limit life choices.

Pollution – the act of introducing harmful substances or irritants that cause damage to living organisms into the environment. Environmental factors cause by pollution: land contamination, water pollution, air pollution, noise pollution, soil pollution.

Air pollution – mixture of gases and particles that have been emitted into the atmosphere by human beings.

Noise pollution – excessive noise that may harm the activity of human or animal life and affect health and wellbeing. Sustained noise levels can cause high blood pressure, sleeplessness, hearing loss, increase in stress levels.

Week 6 - Life events

Self esteem – how good or bad an individual feels about themselves and how much they value their abilities.

Relationships: marriage, divorce, bereavement can all affect health and wellbeing.

When relationships change, it can affect health and wellbeing. The changes can affect our self esteem, increase levels of stress or anxiety, cause individuals to not function well.

Relationships , marriage, parenthood, divorce & bereavement are all key life events that can affect the PIES of an individual.

Week 1

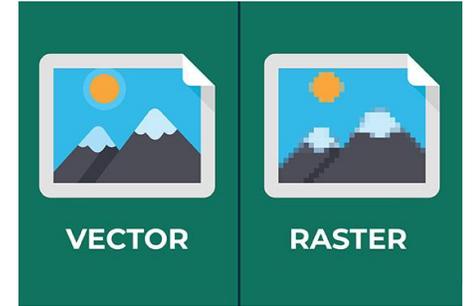
Understanding the purpose and properties of digital graphics

Why digital graphics are used – Entertain, advertise, promote, inform, educate. How digital graphics are used; print publishing labelling and branding of products, advertising, website banners and buttons, presentations and games. Types of digital graphics – bitmap and raster graphics – what is the difference. Image file formats - .jpg .png .gif .tiff .eps .psd .spp .dpp .svg .psp .pdf .bmp .wdp .hdp .jxr.

Compression settings – lossy and lossless compression, and properties of digital graphics including pixel dimensions and DPI.

How different purposes and audiences influence the design and layout of digital graphics.

Extended learning: <https://youtu.be/hbOGp51nYGI>



Week 2

Be able to plan the creation of a digital graphic;

Interpreting client requirements: Before starting work on creating a digital graphic, you must cheque what the client wants. Read the client brief or specification carefully. Then think about how to satisfy the brief using your creative talents and ideas. Write a 250+ words assignment showing your understanding of the client requirements including your initial design ideas including content, layout, composition, house style and image properties.

Understanding the target audience: The expectations, needs and requirements of the target audience must be considered if your digital graphic is to be successful. This is helped by categorising the target audience before thinking about their needs. Once you have a clear idea about who your target audience is, you can consider what they want or need from the digital graphic. For example, do they want information or to be entertained?

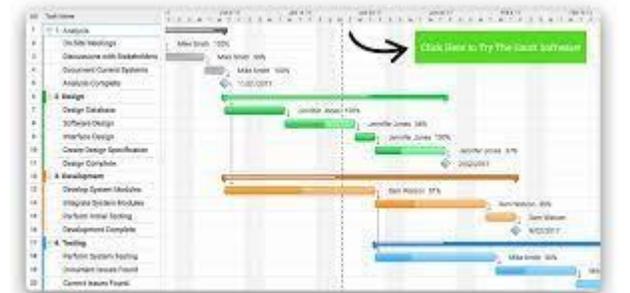


Week 3

Producing a work plan for graphics creation;

Project plans are structured lists of all the tasks and associated activities needed to create the digital graphic, with a time scale for each activity and estimated completion date for the overall project. A work plan does not have to be in any set format but should include a range of activities that must be completed to create the digital graphic. When thinking about the effectiveness of the work plan consider 'could somebody else follow it'? Nearly all learners at WPS make a Gantt chart for this part of the project...

Extended learning: How to make a Gantt chart: <https://www.youtube.com/watch?v=un8j6QqpYa0>



Week 4

Producing a visualisation diagram

A visualisation diagram is a drawing or sketch to illustrate your ideas of what the final graphic could look like. The visualisation diagram can be produced in one of two ways.

1. Hand drawn using paper and pencils or coloured markers. Sketch out what you want the graphic to look like. Annotate this with comments on colours, fonts and layouts.
2. Digitally produced: using a software application. This does not have to be image editing software: you could use desktop publishing applications such as Microsoft publisher / .ppt

Your visualisation diagram should have enough detail to be created by somebody else as well as giving your client a good idea of what you are intending to create. That might need some detailed annotations to illustrate your ideas.

Identifying assets needed to produce a digital graphic

You need ideas about what could potentially be used, but you will also need to comment on their suitability. Assets could be from: photographs, whether taken by yourself or by others and images, from any printed material (think about Copyright restrictions) , image libraries, from web based picture libraries (conditions and costs of used to be identified) graphics and logos, these might be supplied by the client in a vocational or commercial context. Internet images can be found using an image search, but the results do not always show images that would be suitable resolution for print, check the pixel dimensions of the image for suitability. Check the pixel dimensions and divide these by 300 to determine how large they could be (in inches). The second restriction is Copyright - most Internet images will be protected, even if it isn't clearly stated.

Week 5

Identifying resources needed to create a digital graphic

Peripherals for use in creating digital graphics: Mouse, keyboard, computer, monitor, printer, scanner, graphic tablet, using a stylus pen on the tablet is similar to using a brush on paper, so it is popular with creative artists and designers. Digital camera: You may have your own images if you study photography.

Choosing image editing software

Adobe Photoshop: a widely used industry standard application used with photographs and graphic design

Other applications can be used to edit graphics, such as Microsoft publisher, word, PowerPoint ET cetera but they are not considered good choices.

Keep in mind what will be needed and why when planning your digital graphics projects so that you can make informed choices.



Coursework Introduction

Week 1 - 2

CONCEALMENT

Definition:

- 1)The act of hindering or preventing the discovery, knowledge, or sight of something.
- 2)The hiding or placement of an object out of notice or sight.
- 3)Protection from observation or surveillance.

Pinterest:

https://www.pinterest.co.uk/search/boards/?q=concealment%20gcse%20photography&rs=typed&term_meta%5Bconcealment%7Ctyped&term_meta%5Bgcse%7Ctyped&term_meta%5Bphotography%7Ctyped

It will probably lead a basic squirrel life, but it may have a slight advantage at concealment by being able to blend into shadows and shady areas.

That book full of words tried to hide and conceal. Yet, A blank page in the end Still cried and revealed.



Associated Words

- | | |
|----------------|-------------|
| hiding | covering up |
| secret | suppression |
| cover | disguise |
| shelter | camouflage |
| protection | cloak |
| screen | obscure |
| hiding place | smokescreen |
| privacy | illusion |
| seclusion | delusion |
| secrecy | veil |
| keeping hidden | mask |

LIGHT AND DARK

Pinterest:

<https://www.pinterest.co.uk/search/boards/?q=light%20and%20dark%20gcse%20photography&rs=filter>

Definition: Light

- 1) the natural agent that stimulates sight and makes things visible.
- 2) provide with light or lighting; illuminate.

Definition: Dark

- 1) the partial or total absence of light.
- 2) not reflecting much light; approaching black in shade.



Associated Words

- | | | | | | | | |
|--------------|--------------|--------------|--------------|---------------|------------|------------|-----------|
| LIGHT | enkindle | flame | luminosity | radiation | starless | overcast | murkiness |
| ignite | sunlight | taper | glow | aurora | moonless | sunless | shadow |
| kindle | undimmed | beacon | intensity | transparency | dim | darkness | shade |
| burn | brilliant | torch | fluorescence | DARK | dingy | absence of | twilight |
| spark | street light | enlighten | neon | inky | gloomy | light | night |
| fire | lantern | illumination | dawn | unlit | dusky | gloom | opacity |
| torch | candle | beam | dusk | unilluminated | indistinct | dullness | unknown |

CONNECTIONS

Definition:

- 1) A relationship in which a person or thing is linked or associated with something else.
- 2) The action of linking one thing with another.

Pinterest:

<https://www.pinterest.co.uk/search/boards/?q=connections%20photography%20gcse&rs=filter>

HUMAN CONNECTIONS ARE DEEPLY NURTURED IN THE FIELD OF SHARED STORY

We are all now connected by the Internet, like neurons in a giant brain.

Sophia Hawking



Associated Words

- | | |
|-----------------|--------------|
| link | attachment |
| relationship | joint |
| relation | fastening |
| interconnection | contact |
| interdependence | friend |
| association | acquaintance |
| attachment | ally |
| bond | associate |
| tie | relation |
| correspondence | affinity |
| relevance | network |

The first week will be spent exploring possible titles for your personal project. This will then be completed over Term 3 and 4.

To inspire your project you must select a title that suits both your skill level and interests. You will then research artists and processes using what we have learnt over the last year as a bases for this.

A comprehensive exploration of the themes can be found in the shared area. Pinterest is an excellent resource for mind map and moodboard creation. To the left is a list of virtual gallery links to help develop your ideas.

Planning and Preparation

Week 1 - 2

COURSEWORK INTRODUCTION					
CONCEALMENT		LIGHT AND DARK		CONNECTIONS	
ARTISTS	PROCESS	ARTISTS	PROCESS	ARTISTS	PROCESS
1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2. 3. 4.
IDEAS		IDEAS		IDEAS	
DATE					

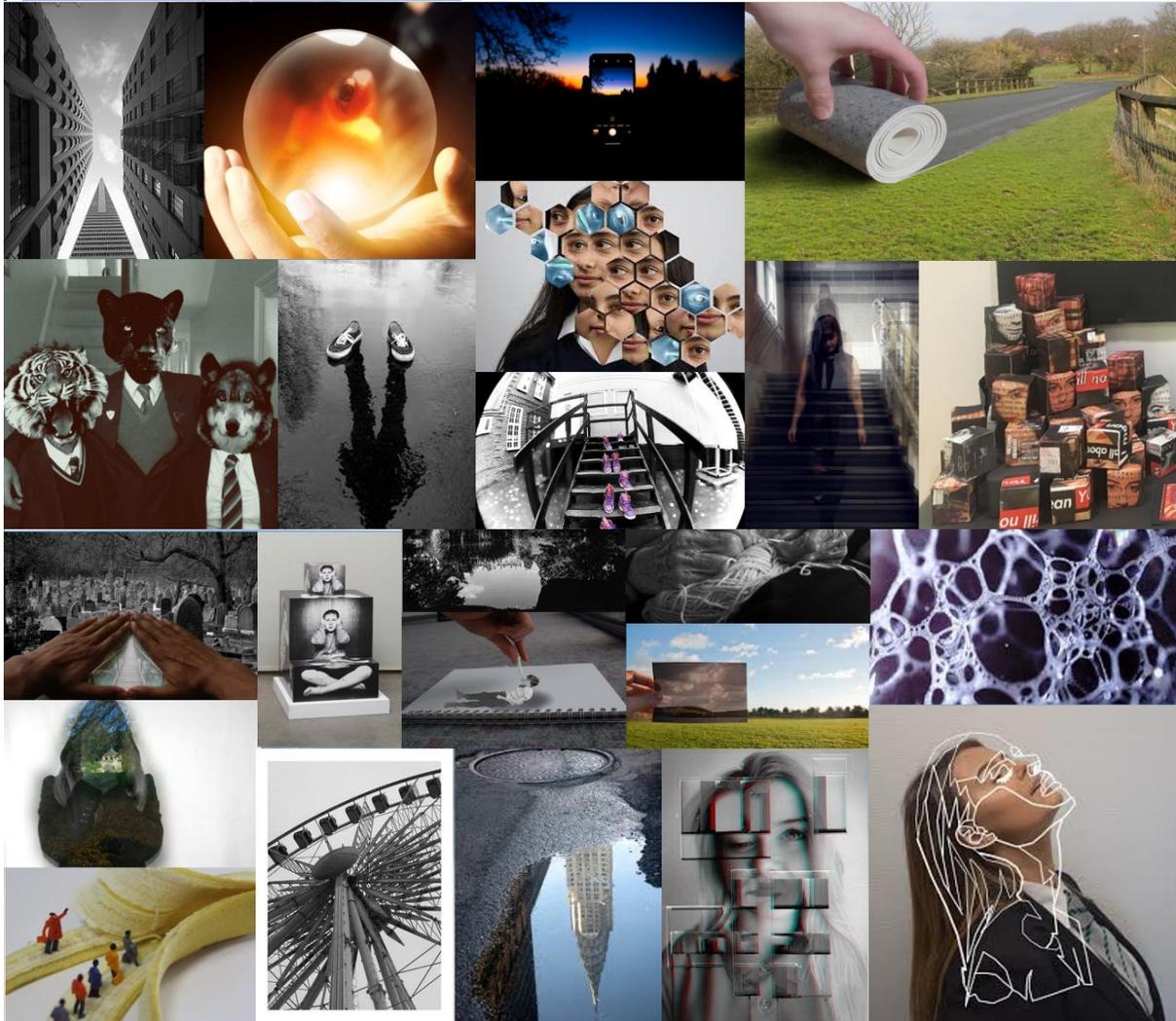


PHOTOSHOOT PLAN 1		
<p>Artist Reference</p> <p>The photographer I have chosen to influence my first photoshoot is...</p> <p>The reason I have chosen this artist is because...</p>	<p>Subject Matter</p> <p>The objects I will photograph are...</p> <p>The background of my image will be...</p> <p>I have chosen this subject matter because...</p>	<p>Compositions</p> <p>I will compose the image...</p> <p>The focus of my composition will be...</p>
<p>Style</p> <p>The elements of the artist style I hope to recreate are...</p> <p>I will do this by...</p>	<p>Developments</p> <p>Changes I would like to make to the artist style are...</p>	<p>Technique</p> <p>The photographic techniques I will need to use to create a successful image are...</p>
DATE		

- [The Photographers Gallery](https://thephotographersgallery.org.uk/viewpoints/photography-and-landscape)
- [The V&A](https://www.vam.ac.uk/articles/introducing-the-photography-collection)
- [Hamiltons Gallery](https://www.hamiltonsgallery.com/exhibitions/past/2020/#/exhibitions/christopher-thomas-bittersweet/overview/)
- [Iconic Images Gallery](https://www.iconicimagesgallery.net/artists)
- [Atlas Gallery](https://www.atlsgallery.com/exhibitions/online)

Week 3 - 4

Artist Recreation

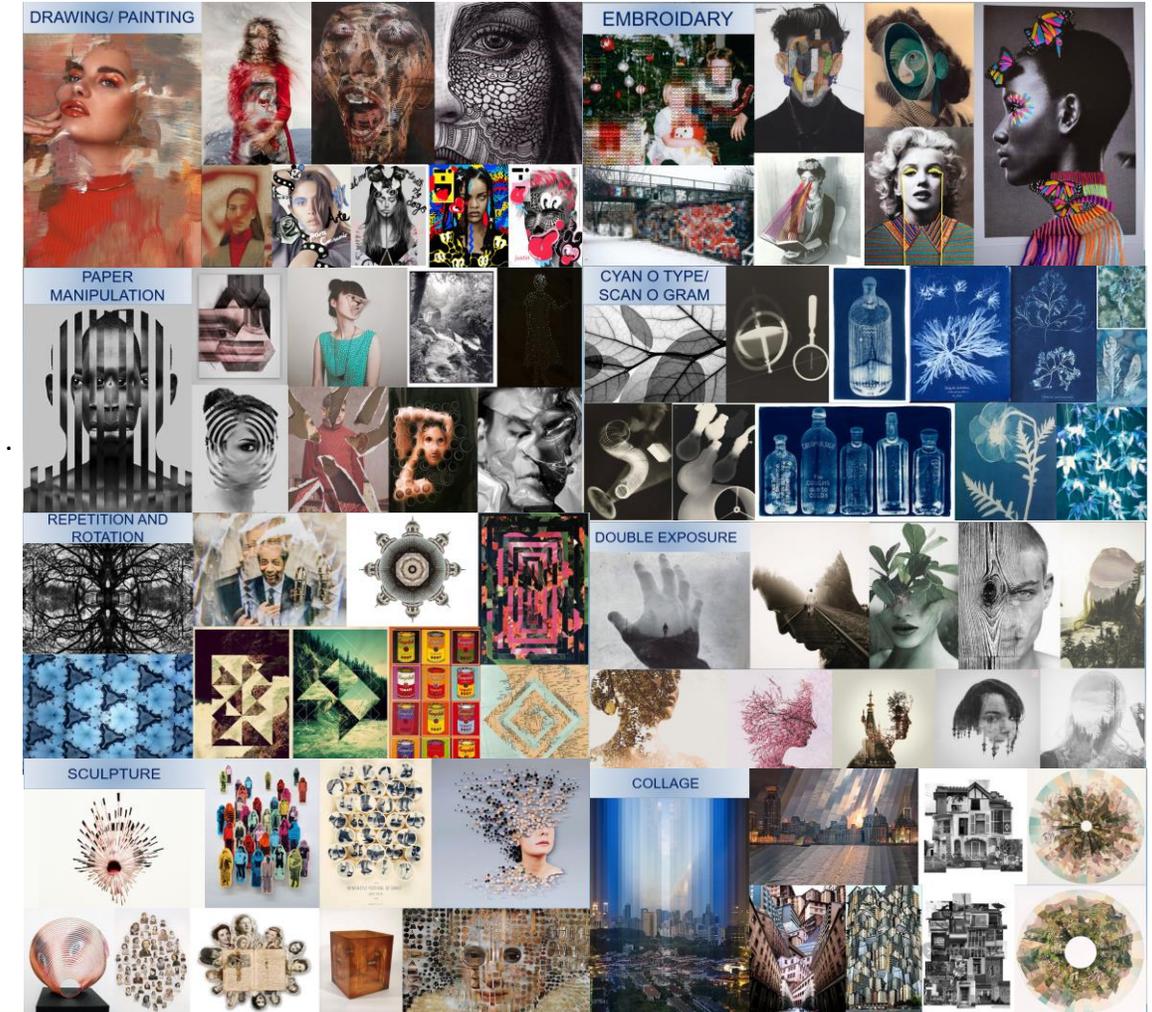


You will spend weeks 3-4 recreating the work of your chosen artists. The above images are photographs or final pieces from past GCSE students. You can clearly see links between some of the artists we have learned about and their work. This will be your aim.

Week 5 - 6

Developments

You will develop your photographs using a range of manual or digital processes. It is important to choose processes that play to your strengths and so you will need to research a broad range of styles before selecting your preferred method.



Week 1 – Defining Mental Health, Prevalence and Incidence

Mental health continuum- a way of defining mental health by looking at it on a scale. Individuals may feel more or less mentally healthy at different times in different situations

Jahoda (1958) suggested good mental health is:

- High self-esteem
- Personal growth and self-actualization
- Autonomy
- Accurate perception of reality
- Mastery of the environment

Prevalence of Mental Health Problems

Prevalence= the number of people with a mental health problem at any one time

¼ British adults report being diagnosed with a mental health disorder

Every year 1/10 children (5-16) are diagnosed

APMS (adult psychiatric morbidity survey)

- 16-24 year olds are more likely to suffer from panic disorders and phobias
- 45-54 are more likely to suffer from anxiety
- Women are more likely to suffer anxiety, depression, phobias and OCD
- LGBTQ are more at risk of experiencing mental health problems

Prevalence Over Time

- This is difficult to track because not all are recorded and diagnosed, symptoms change over time, self-report surveys are not accurate.
- Despite these issues there is clearly a rise in mental health in the UK in particular mood and anxiety disorders.
- There is also a change in attitude and diagnosis over time for example what classes as a symptom and how long someone has to have it
- Changes over time e.g homosexuality which used to be classed as a disorder in the 1990s

How Attitudes Have Changed

- We avoid stigmatized words such as 'insanity' and 'crazy'
- Mental Health Act (1959) used 'mental disorders'
- Mental health treated similarly to physical
- 1970's Mind charity was formed and campaigned
- 1980's rise in community care
- 90's onwards we see more groups such as 'Time To Change'

Week 2 – Changing Attitudes towards mental health

The effects of stigma on individuals before and after diagnosis

- Cognitive factors (stigmas) are hard to measure but self-report methods can try to
- Before diagnosis people can be perceived as 'weird' or 'crazy'
- After diagnosis individual disorders carry their own stereotype such as Schizophrenic= 'violent and dangerous'
- This could lead to a **self-fulfilling prophecy**

The effects of discrimination on individuals before and after diagnosis

- Friendship rejection
- People are often less likely to help you because the 'issue' isn't physical
- After diagnosis family can exclude you and employers may treat you differently or you may be less likely to get a job

The effects of significant mental health problems on the wider society, including care in the community

- Increase in mental health issues= a strain on the NHS
- Lack of funding=more needed from tax payers
- More people needing help=the quality of care reduces
- Community care is often used instead of psychiatric but some argue this is too much pressure for families and communities without the resources or time
- Society has had to pass laws to protect people with disabilities including mental health
- The rise in prevalence means people have to interact with those who have mental health conditions and this can impact attitudes and reduce discrimination
- Campaigns have raised awareness

Week 3 – Schizophrenia- Characteristics and Social Drift Theory

Schizophrenia= A psychotic disorder where people lose their sense of self and reality

International Classification of Diseases= A manual that lists hundreds of mental disorders with their associated symptoms used by medical professionals to diagnose disorders

Classification= Thought disturbances, delusions, hallucinations, disorganized speech, catatonic behaviour, negative symptoms (e.g withdrawal from activities)

Key Statistics= 1% of population diagnosed, normally in those under 40, affects men and women equally but men more likely to be diagnosed in 20s women in 30s, 10 years after diagnosis 25% fully recover

Social Drift Theory

- Mental health issue= drift into bottom of society
- Schizophrenia is most often linked to class as working class people are 5 times more likely to be diagnosed
- Theory suggests that people with Schizophrenia lose touch with reality, opt out of society and are no longer interested in 'normal' activities. They lack motivation for day today life
- This causes a downward spiral into poverty and loss of status as they are unlikely to hold down a job or education
- They 'drop out' of society and experience rejection
- This makes it hard for them to 'get better'

☹ Cause and effect- lower class may cause Schizophrenia (poverty, deprivation, poor diet)

☹ May be a bias in diagnosis- psychiatrists are maybe more likely to diagnose people from a lower class

☹ Ignores bio factors such as high dopamine levels

Week 4 5– Schizophrenia- Biological Theory

Idea that there is a genetic link to Schizophrenia and that the gene affects the brains of those diagnosed with it. The biological theory suggests the brain of a Schizophrenic person:

Brain Chemistry

- Has too much **dopamine** overall which is linked to movement, perception, attention and mood. Too much can cause hallucinations and erratic movement
- Dopaminergic neurons fire too quickly and too often and there are too many dopamine receptors

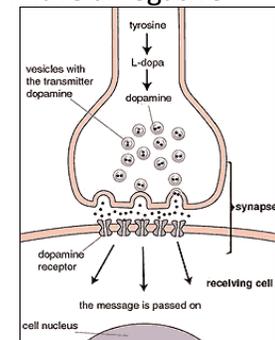
Brain Structure

- There is less blood flow in the frontal cortex (where tasks are carried out)
- The prefrontal cortex has a different structure (making judgements) and there is **low level activity in this area lacking dopamine**
- There is less grey matter in the temporal lobes
- The **hippocampus** is smaller in volume (memories and emotions that go with them)

☹ Ignores nurture- brain has to interact with environment to cause Schizophrenia symptoms such as hallucinations

☹ Could be the effect of, not the cause- it may be that the disorder is caused by something else and the brain structure is changed afterwards

☹ Deterministic- pessimistic to suggest they have no control. This can have a negative impact on recovery



Week 5 – Key Study- Weinberger, Jones et al (1991)

Amphetamines and cerebral blood flow

A01

Studies suggest low level of activity in the prefrontal cortexes of people with Schizophrenia which is linked to dopamine activity

Hyp= A dopamine agonist (amphetamine) should increase activity in the prefrontal cortex during a cognitive task

They used SPECT (single-photon-emission-computed tomography) to scan their brain activity during the task

Iv= If they had the amphetamine or not

DV= level of performance on the Wisconsin card sorting test

Sample= 10 in-patients from the National Institute of Mental Health research wards in Washington USA. Each pp had chronic Schizophrenia but did give consent and were deemed clinically stable. They were free of any illnesses that could have affected their blood flow in the brain.

Procedure

- 5 pps did the BAR task first where they had to match bars on a screen based on their orientation and 5 the WCST (counterbalancing)
- ON the two test days each pp received either an amphetamine or a placebo
- Both tasks were carried out on the computer and images of brain activity were recorded using SPECT technology
- Each pp had two scans 2-4 days apart. They sat in a semi-reclined position in a comfy chair with their head positioned in the scanner

Results

- Amphetamines had a minimal affect on regional cerebral blood flow when pp's completed both tests
- There was no significant differences in the effects of amphetamines and the placebo on brain activity during the BAR task but some when completing the WCST
- Amphetamines had a small but significant positive effect on two measures of the WCST and there was no affect when the placebo was used
- Changes in behaviour due to the amphetamine were variable

Conclusion- as amphetamines increased prefrontal cortex activity during performance on a cognitive task the implication is that some problems with schizophrenia can be reversed with drug treatment

Criticisms

- ⊗ Sample size=unreliable conclusions and also all from USA
- ⊗ May lack temporal validity= may be outdated due to diagnosing system for schizophrenia
- ⊗ Ethics in using scans=this may have caused long term issues which they were unsure of

Learning Outcome 1: Know the areas of employment within the sports industry

Learners must be taught:

- different areas of employment within the sports industry, i.e.
 - administration/organisation (e.g. HR manager at a sports club, receptionist at a gym, health and safety officer at a leisure centre)
 - advertising and marketing (e.g. PR/marketing for a sports club, graphic designer)
 - coaching/leading/instructing (e.g. local/regional/NGB coach, qualified fitness instructor, outdoor activities leader)
 - facilities (e.g. steward at a sports venue, bar staff at a golf club, grounds keeper)
 - finance (e.g. sports auditing, finance officer for sports club/organisation)
 - government (e.g. Department for Culture, Media and Sport, local council/local authority sport)
 - media (e.g. local newspaper reporter, radio presenter, sports commentator/pundit, sports photographer)
 - national governing body (e.g. fund raising, regulation, monitoring)
 - retail (e.g. high street sports shop, internet sports retail)
 - professional sport (e.g. professional performer/athlete, professional coach/manager, professional referee/official, licensed agent)
 - sport development (e.g. sports development officer for a council, elite sport development officer for a university)
 - sports events (e.g. event organising committee, events promoter, specialist sports events travel)
 - sport-related gambling (e.g. book maker, online betting site developer)
 - sport science (e.g. sport medicine, physiotherapist, sport psychologist, personal trainer, nutritionist).

Learning Outcome 2: Know the skills and knowledge required to work within the sports industry

Learners must be taught:

- skills which can be applied to different roles within the sports industry, i.e.
 - sport-specific skills (e.g. professional athlete, coach)
 - literacy and numeracy skills (e.g. finance, administration)
 - information technology skills (e.g. online shopping/gambling, graphic design)
 - people skills (e.g. high street shop, coaching, teaching)
- knowledge which can be applied to different roles within the sports industry, i.e.
 - communication skills (e.g. manager, instructor, TV/radio presenter)
 - organisational skills (e.g. events co-ordinator, HR consultant)
 - team working skills (e.g. fund raising team, marketing team)
- knowledge which can be applied to different roles within the sports industry, i.e.
 - rules and regulations (e.g. coaching, officiating)
 - consumer market (e.g. marketing, sponsorship, gambling)
 - education/training i.e. GCSEs, A Levels, university degree, vocational/industry standard qualifications, coaching award, college certificate (e.g. physiotherapist, grounds keeper)
 - legislation (e.g. relating to Child Protection, licensing in some activities such as outdoor and adventurous, governing minimum standard of facilities)
 - role-related experience (e.g. sales experience, management experience)
 - health and safety (e.g. for practical roles such as coach, instructor).

Learning Outcome 3: Be able to apply for jobs within the sports industry

Learners must be taught:

- sources of information regarding job vacancies in the sports industry, i.e.
 - careers advisers
 - connexion service
 - library
 - internet
 - job centre
 - local newspapers
 - notice board at sports centre
 - people employed in the workplace
 - specialist agencies (e.g. Careers in Sport, Prospects)
 - National Governing Bodies
 - sports organisations (e.g. UK sport, Youth Sport Trust)
- key aspects to consider in researching a specific job role within the sports industry, i.e.
 - job description/specification
 - company or organisation job role is with
 - skills and knowledge required
 - progression available
 - consideration of own suitability for the role and identification of own strengths and weaknesses
- how to create a curriculum vitae i.e.
 - of an appropriate length (e.g. clear and concise, not too short or too long)
 - details all appropriate qualifications, awards, experience
 - relevant and tailored to the job role researched
 - proof read i.e. make sure spelling, grammar and punctuation is correct
 - inclusion of a covering letter
- how to prepare for an interview, i.e.
 - prepare answers for common questions (e.g. why do you want to work here?)
 - consider research undertaken about the job role
 - prepare for assessment tasks (e.g. presentations, role play)
 - prepare your own questions (e.g. are there clear career progression routes within the company?)
- key considerations when producing a personal career plan, i.e.
 - SMART (specific, measurable, attainable, realistic, timely) targets
 - achievements
 - skills gaps
 - training needs.

Learning Outcome 4: Understand the impacts which the sports industry has in the UK

Learners must be taught:

- economic impacts of the sports industry, i.e.
 - tourism (e.g. package holidays to major sporting events, cities with 'world famous' football teams attract tourists)
 - employment (e.g. growing areas increase employment, increase in internet shopping causing high street retailers to go out of business)
 - consumer expenditure (e.g. sports clothing, satellite channel subscription, attendance at live events)
 - foreign investment (e.g. professional football clubs being taken over by foreign companies, television rights)
 - productivity (e.g. sports success either as a participant or spectator can increase productivity in the workplace, employees may need to take time off sick due to sports-related injuries, can teach employees about team work)
- social impacts of the sports industry, i.e.
 - crime/anti-social behaviour (e.g. participation in sport helps decrease anti-social behaviour in youths, gambling can increase debt which can lead to crime, investment in security by sports clubs can lead to reduction in violence/hooliganism)
 - public services (e.g. police/ambulance services can be stretched on match days/local derby days where violence may be expected)
 - education (e.g. professional football clubs aiding education and qualifications, research shows learners involved in sport perform better in the classroom, dreams of becoming a professional athlete may lead to neglect of studies)
 - culture (e.g. sport provision more readily available in cities and towns rather than rural areas, different sports events or clubs target their advertising to different demographics encouraging social divides)
 - identity (e.g. if a sporting event is poorly managed it can reflect badly on the whole town/city, a well-run and well-equipped leisure centre can promote an area)
 - environment (e.g. increased popularity and promotion of sport encourages local councils to maintain green space, sports facilities increasing in number and size also increase their energy consumption and carbon footprint; match days can cause traffic congestion)
- health impacts of the sports industry, i.e.
 - increased awareness (e.g. advertising campaigns by sports clubs or retailers can highlight benefits of sport on health and fitness in order to sell their products, the NHS uses sports events to raise awareness about healthcare)
 - research (e.g. some physical rehabilitation techniques now available on the NHS were first discovered by sports scientists looking to aid athlete's recovery)
 - increased participation (e.g. availability of gyms, sports clubs and youth centres aids participation, specialist clothing and equipment can be purchased easily to aid participation in sport).

Subject: Sport

Term: 1-6

Topic: Unit RO52 Developing Sports Skills

LO1 - Be able to use skills, techniques and tactics/strategies/compositional ideas as an individual performer in a sporting activity (Year 11)

the key components of performance for an individual performer in a sporting activity, i.e.

- o performance of skills and techniques (e.g. a front somersault in trampolining)
- o creativity (e.g. communicating a theme to the audience through performance of a ballet dance)
- o appropriate use of tactics/strategies/compositional ideas (e.g. using a drop-shot against a baseline player in tennis)
- o decision-making during performance (e.g. shot selection from different lies in golf)
- o ability to manage/maintain own performance (e.g. staying composed after two illegal jumps in triple-jump).

LO2 - Be able to use skills, techniques and tactics/strategies/compositional ideas as a team performer in sporting activity. (Year 10)

the key components of performance for a team performer in a sporting activity, i.e.

- o performance of skills and techniques (e.g. a chest pass in netball)
- o creativity (e.g. feint to pass and then dribble in basketball)
- o appropriate use of tactics/strategies/compositional ideas (e.g. when to bowl a bouncer in cricket)
- o decision-making during performance (e.g. choice of pass in rugby union)
- o awareness of role within/contribution to the team (e.g. covering for a team mate who is out of position in football).

LO3 - Be able to officiate in a sporting activity (Year 10)

- how to apply rules and regulations relevant to the activity (e.g. reference to NGB rule books)
- the importance of consistency (e.g. making sure rules are applied consistently in a variety of situations)
- the importance of accuracy (e.g. applying rules correctly)
- the use of signals (e.g. whistles/flags/gestures – how, when, why)
- how to communicate decisions (e.g. with other officials, performers and the audience)
- the importance of positioning (e.g. to gain the best view to make decisions, not obstruct activity).

LO4 - Be able to apply practice methods to support improvement in a sporting activity (Year 10/11)

- how to identify areas of improvement in their own performance in a sporting activity, i.e.
- o what are the key skills in the activity?
 - o which key skills are strengths?
 - o which key skills are weaknesses?
 - types of skills, i.e.
 - o simple skill (e.g. transferable between a number of sports such as running)
 - o complex skill (e.g. tend to be specific to a sport (non-transferable) such as a tennis serve)
 - o open skill (e.g. adaptable depending on the environment such as a pass in football)
 - o closed skill (e.g. performed in a stable environment such as a free throw in basketball)
 - types of practice, i.e.
 - o whole i.e. the whole skill is performed at once (e.g. a triple jump)
 - o part i.e. the skill is broken down into parts which are practised separately (e.g. just the 'hop' phase in the triple jump)
 - o variable i.e. the skill is practised in the range of different situations that could be experienced in a performance
 - o fixed i.e. a specific skill or technique is repeatedly practised in the same way
 - methods to improve own performance, i.e.
 - o different types of practice
 - o altering context of performance (e.g. playing with and against better players can improve performance)
 - o use of tools to aid evaluation (e.g. match analysis, video analysis, etc.)
 - how to measure improvement in skills, techniques and strategies developed, i.e.
 - o completion of proficiency awards
 - o keeping individual logs of performance
 - o keeping video diaries
 - o peer observation
 - o monitoring competition results over time.