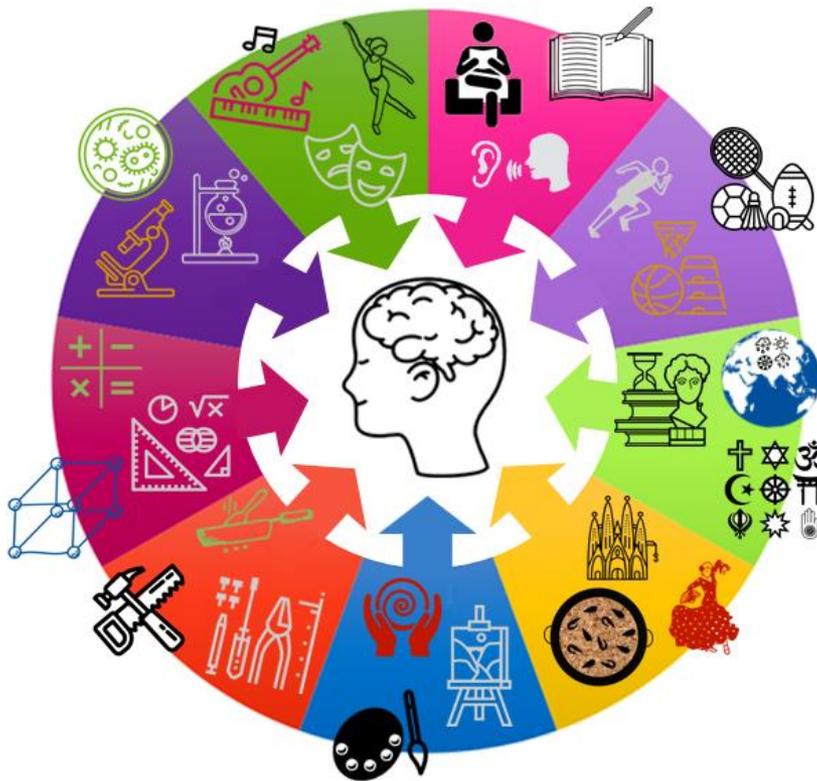


100% book - Year 11 Mainstream

Aim to memorise 100% of the knowledge on these Knowledge Organisers.



Term 3

Swindon Academy 2023-24

Name:	
Tutor Group:	
Tutor & Room:	

"If you are not willing to learn, no one can help you.

If you are determined to learn, no one can stop you."

How to use your 100% book of Knowledge Organisers and Quizzable Organisers

Knowledge Organisers

Knowledge Organisers contain the essential knowledge that you **MUST** know in order to be successful this year and in all subsequent years.

They will help you learn, revise and retain what you have learnt in lessons in order to move the knowledge from your short-term memory to long-term memory.

Quizzable Knowledge Organisers

These are designed to help you quiz yourself on the essential Knowledge.

Use them to test yourself or get someone else to test you, until you are confident you can recall the information from memory.

Top Tip

Don't write on your Quizzable Knowledge Organisers! Quiz yourself by writing the missing words in your prep book. That way you can quiz yourself again and again!

Expectations for Prep and for using your Knowledge Organisers

1. Complete all prep work set in your subject prep book.
2. Bring your prep book to every lesson and ensure that you have completed all work by the deadline.
3. Take pride in your prep book – keep it neat and tidy.
4. Present work in your prep book to the same standard you are expected to do in class.
5. Ensure that your use of SPAG is accurate.
6. Write in blue or black pen and sketch in pencil.
7. Ensure every piece of work has a title and date.
8. Use a ruler for straight lines.
9. If you are unsure about the prep, speak to your teacher.
10. Review your prep work in green pen using the mark scheme.

How do I complete Knowledge Organiser Prep?

Step 1

Check Epraise and identify what words /definitions/facts you have been asked to learn. Find the Knowledge Organiser you need to use.

The image shows a screenshot of the Epraise website. On the left is a 'Planner' for the week of 20th May to 26th May 2020, with a grid for different subjects. On the right is a 'Knowledge Organiser' for 'Particle Theory'. It contains various questions and answers, such as 'What is particle theory?', 'What is the law of conservation of mass?', and 'Describe the arrangement and movement of particles in the three states of matter.' There are also diagrams of particle arrangements for solid, liquid, and gas.

Step 2

Write today's date and the title from your Knowledge Organiser in your Prep Book.

This image shows a printed page from a knowledge organiser with handwritten notes. The date '29th May 2020' and the title 'Particle theory' are written at the top. The page includes questions like 'What is particle theory?' and 'What are the differences between the three states of matter?'. A diagram shows the particle arrangements for solid, liquid, and gas, with arrows indicating energy changes: 'Gaining energy' for melting and evaporation, and 'Losing energy' for freezing and condensation.

Step 3

Write out the keywords/definitions/facts from your Knowledge Organiser in FULL.

Handwritten notes on lined paper. At the top, the date '29th May 2020' is written. Below it, the title 'Properties of the states of matter' is underlined. The notes define particle theory as 'all matter is made of particles'. It then describes the three states: 'Solid = regular pattern particles vibrate in fixed position', 'Liquid = particles are arranged randomly but are still touching each other particles can slide past each other and move around', and 'Gas = Particles are far apart and are arranged randomly. Particles carry a lot of energy'.

Step 4

Read the keywords/definitions/facts out loud to yourself again and again and write the keywords/definitions/facts at least 3 times.

Handwritten notes on lined paper showing the definition of 'Solid' written three times: 'Solid = regular pattern particles vibrate in fixed position'.

Step 5

Open your quizzable Knowledge Organiser. Write the missing words from your quizzable Knowledge organiser in your prep book.

This image shows a printed page from a quizzable knowledge organiser with handwritten answers. The questions are 'What is the law of conservation of mass?' and 'What are the differences between the three states of matter?'. The answers are 'Self quizzing' and 'Arrangement/movement of matter'. There are also boxes for 'Solid', 'Liquid', and 'Gas' with handwritten definitions: 'Solid = regular pattern pa', 'Liquid =', and 'Gas ='. A diagram at the bottom shows the particle arrangements for solid, liquid, and gas.

Step 6

Check your answers using your Knowledge Organiser. Repeat Steps 3 to 5 with any questions you got wrong until you are confident.

Handwritten notes on lined paper, similar to Step 3, but with corrections and checkmarks. The definition of 'Solid' is 'regular pattern particles vibrate in fixed position' with a checkmark. The definition of 'Liquid' is 'particles are arranged randomly but are still touching each other particles can slide past each other and move around' with a checkmark. The definition of 'Gas' is 'Particles are far apart and are arranged randomly. Particles carry a lot of energy' with a checkmark. There are also some corrections to the original text, such as 'far apart' and 'are X'.

Make sure you bring in your completed Prep notes to demonstrate that you have completed your prep.

AN INSPECTOR CALLS Traditional

1. Context

<p>Playwright: John Boynton Priestley (1894-1984)</p> <p>Dates: Written in 1945</p> <p>First performed: In Moscow, Russia, in 1945</p> <p>Era: Edwardian</p> <p>Genre: Drama</p> <p>Set: Fictional town Brumley 'an industrial city in the north Midlands' in 1912</p> <p>Structure: Three Act Play</p>	<p>Biography of Priestley</p> <ul style="list-style-type: none"> Born in Yorkshire in 1894. Fought in the first world war and became politicised by the suffering of it Became concerned with the effects of social inequality in Britain in 1930s Set up a new political party in 1942, The Commonwealth Party. It merged with the labour Party and was integral in developing the welfare state
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<p>Pre and Post War – Before the first world war there was deemed to be a general air of complacency regarding the prospect of any war taking pace. There were strong distinctions between upper and lower classes, society was deeply patriarchal. After the second world war ended in 1945, class distinctions had been greatly reduced by the two wars and women had earned a more valued place in society After 1945 there was a desire for more sweeping social change.</p>	<p>Socialism – Socialism is an approach to economic and social systems that is characterised by social ownership, democratic control and high levels of equality. Socialism is generally concerned with ensuring that disparities between wealth and social status are erased from society. After the two World Wars British society was far more open to socialist ideas. In <i>An Inspector Calls</i>, the Inspector harbors socialist attitudes.</p>
---	--

<p>Social and Moral Responsibility – Attitudes towards social and moral responsibility changed rapidly in the time between when the play was set (1912) and the time the play was written (1945). In 1912 the general attitude of those with social status and wealth was towards looking after one's own. By the mid-1940s however, the Labour party under Attlee won a landslide election reflecting a wave of enthusiasm towards communal responsibility for everyone in society.</p>	<p>The Titanic – RMS Titanic was a British passenger liner that sank in the North Atlantic ocean in the morning hours of 15th April 1912, killing around 1500. The Titanic was designed to be the pinnacle of both safety and comfort, and due to its enormous size and quality was frequently labeled 'unsinkable'. In <i>An Inspector Calls</i> Birling claims this, thus immediately losing the respect of the audience. It can serve as a symbol of the hubris and arrogance of man.</p>
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FORM – The play fits into three possible forms:

<p>Well-Made Play</p> <ul style="list-style-type: none"> A popular type of drama from the 19th century The events build to a climax Primarily concerned with events that happened before the play Plot is intricate and complex 	<p>Morality Play</p> <ul style="list-style-type: none"> Most popular during 15th and 16th centuries They taught the audience lessons that focused on the seven deadly sins Characters who committed those sins were punished 	<p>Crime Thriller</p> <ul style="list-style-type: none"> Involves a gripping tale based around a crime The audience receives clues and must guess what has happened before the end All is revealed by the climax
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2. Key Characters

<p>Inspector Goole: An enigmatic (mysterious) figure who serves as Priestley's mouthpiece and advocates social justice. He serves as the Birling's conscience and exposes their sins.</p>
<p>Mr Arthur Birling: A capitalist and business owner who opposes social change and greater equality. He is a self-made man and lacks the refined manners of the upper classes. Made a fool by Priestley to highlight the arrogance and absurdity of his views.</p>
<p>Mrs Sybil Birling: Her husband's social superior, Mrs Birling is involved in charity work but contradictorily believes in personal responsibility and looking after one's-self. Fails to understand her own children.</p>
<p>Sheila Birling: Young and initially enthusiastic, Sheila grows and changes throughout the play, embracing the views of the Inspector and challenging the social indifference of her parents. She becomes wiser and more cautious in her relationship with Gerald.</p>
<p>Eric Birling: In his early twenties, he drinks too much and forces himself upon Eva Smith. Whilst she is pregnant with his child, he steals from his father to attempt to support her. Grows and changes, realises his own wrongs along with everyone else's. Critical of parents.</p>
<p>Gerald Croft: A businessman engaged to Sheila, Gerald a relationship with Daisy Renton (Eva Smith). Even though he sits between the two generations he is politically closest to Birling and fails to embrace the Inspector's message, instead seeking to prove he wasn't real.</p>
<p>Eva Smith: Doesn't appear in the play, but her suffering and abuse represents that of all the working classes. She also calls herself both Daisy Renton and Mrs Birling. The older characters begin to question whether she really is one person.</p>

3. Central Themes

<p>Social Responsibility</p>	<p>Priestley advocates a socialist message of collective responsibility for one another. The Inspector serves as his voice in conveying this ideology, but the younger generation also come to embrace it. The suffering of Eva Smith highlights the powerlessness of the working classes and the need for a society that protects its most vulnerable.</p>
<p>Age and the Generational Divide</p>	<p>Priestley presents a view that there is hope for change and that it lies with the younger generation. Both Sheila and Eric change for the better, maturing and becoming more empathetic as they come to embrace the Inspector's message. They also become vocal critics of their parents' indifference to Eva's suffering.</p>
<p>Class and Power</p>	<p>Priestley highlights the immense power that business owners wielded over their workers and presents them as arrogant and lacking in empathy. He demonstrates Edwardian society's preoccupation with wealth and status at the cost of the individual as a way of promoting change in post-WW2 Britain.</p>
<p>Gender</p>	<p>At the time the play was first performed, women had just played a pivotal role in World War 2 and were empowered by the freedom work provided them. In the 1912 setting, we see Sheila's growing independence vs her mother. However, the play still highlights the awful vulnerability of women and the outdated stereotyping of them.</p>

4. Key Vocabulary

Capitalist	Believing in private wealth and business aimed at making profit for business owners. Independent and self-reliant.
Socialist	Believing in shared ownership, collective responsibility for one another and social equality for all.
Ideology	A political viewpoint or set of beliefs, for example socialism.
Responsibility	Being accountable or to blame for something, or having a duty to deal with something.
Hierarchy	A ranking of status or power e.g. the strict class hierarchy of Edwardian England.
Patriarchy	A society in which power lies with men.
Prejudice	An opposition to or opinion about something/someone based upon what they are e.g. working class, female etc.
Morality	The belief that some behaviour is right and some is wrong.
Proletariat	The working class.
Bourgeoisie	The capitalist class in possession of the means of acquiring wealth.
Aristocracy	The highest class in society and often holding titles passed from father to son, for example Lord and Lady Croft.
Façade	A false front or surface-level illusion, for example the façade of family happiness in the opening scene of the play.
Catalyst	Someone or something that speeds up or triggers an event.
Antithesis	When something is the opposite of something else.

5. Key Terminology, Symbols and Devices

Dramatic Irony	When the audience is aware of something that a character is not aware of, for example Birling believing war won't happen.
Plot Twist	When a story suddenly departs from its expected path and something very unexpected happens. The final phone call.
Cliffhanger	Each act ends on a particularly dramatic, revealing moment that creates a sense of tension and anticipation.
Stage Directions	When the playwright instructs actors/director to perform in a particular way. Priestley's are unusually detailed.
Entrances/Exits	Characters frequently leave or enter the stage at dramatic moments. Some characters miss important events.
Lighting	Priestley uses stage directions to indicate how the stage should be lit. Changes to 'brighter and harder' for Inspector.
Props	Physical objects used in the play. The photograph plays a key role in identifying Eva. The doorbell interrupts Birling.
Contrast and Juxtaposition	Deliberately placing two very different things alongside one another to draw comparisons e.g. Birling and the Inspector.

AN INSPECTOR CALLS Traditional

1. Context			2. Key Characters		4. Key Vocabulary				
<u>Playwright:</u> <u>Dates:</u> <u>First performed:</u> <u>Era:</u> <u>Genre:</u> <u>Set:</u> <u>Structure:</u>	<u>Biography of Priestley</u> • • • •		Inspector Goole:		Capitalist				
			Mr Arthur Birling:		Socialist				
			Mrs Sybil Birling:		Ideology				
			Shelia Birling:		Responsibility				
Pre and Post War –	Socialism –		Eric Birling:		Hierarchy				
			Gerald Croft:		Patriarchy				
			Eva Smith:		Prejudice				
			3. Central Themes		Morality				
Social and Moral Responsibility –		The Titanic –		5. Key Terminology, Symbols and Devices		Dramatic Irony			
						Social Responsibility		Plot Twist	
						Age and the Generational Divide		Cliffhanger	
						Class and Power		Stage Directions	
FORM – The play fits into three possible forms:			Gender		Entrances/Exits				
Well-Made Play	Morality Play	Crime Thriller			Lighting				
					Props				
					Contrast and Juxtaposition				

T3 Y11 Mainstream P7 Electromagnetism

Magnets

- Have two poles - **north** and **south**.



- **Like poles** will **repel** each other (e.g. N-N or S-S)
- **Opposite poles** will **attract** (e.g. N-S)
- Magnetism is a **non-contact** force – magnets do not need to be touching for effect to be observed.

Magnetic materials: only **iron/steel, cobalt** and **nickel** are magnetic.

Types of magnets

Permanent magnet

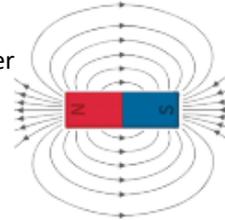
- Produces its own magnetic field.
- Magnetism cannot be turned on or off.

Induced magnet

- Induced magnet = a material which becomes magnetic when placed in a magnetic field.
- Induced magnets only attract other materials and lose magnetism when removed from the magnetic field.

Magnetic Fields

Magnetic field = the area surrounding a magnet where the force will act on another magnet or magnetic material.



- Magnet field is strongest at the **poles** where the field lines are **closest together**.
- Field lines always go away from **magnetic north** and towards **magnetic south**.

Earth's Magnetic Field

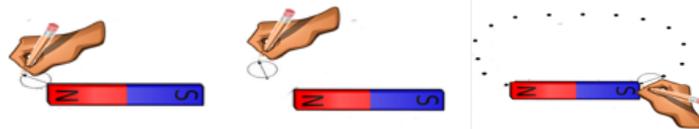
- Earth produces a magnetic field.
- Magnetic compasses use this to help navigation.
- The core of the Earth is made of **iron** (magnetic).

Plotting Magnetic Field Lines

A magnetic compass can be used to plot and draw the magnetic field lines around a magnet.

You need to be able to describe this method!

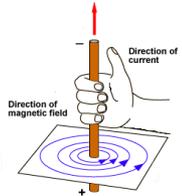
1. Place the bar magnetic in centre of paper.
2. Place a plotting compass at one end of the magnet.
3. Put a pencil dot at the place the compass arrow is pointing to
4. Move the compass to line up the tail of the compass needle to the dot you just made.
5. Repeat until you reach the other end of the magnet



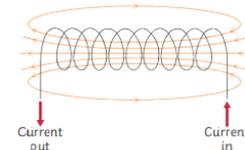
6. Join the dots using a line – this is the magnetic field line. Mark on the direction the arrow pointed – it should run N→S

Electromagnetism

- When a current passes through a wire, a **magnetic field** is produced
- The direction of the field can be found by the right hand thumb rule
- curl the fingers of the right hand around the wire and point the thumb in the direction of the current (+ to -)
- The direction of the circular field is shown by the fingers
- Strength of magnet can be increased by increasing the current
- When the current is switched off, the magnetic field is lost



Coiling the wire will form a **solenoid**.



To increase strength of magnetic field around a solenoid you can:

- Add an **iron core**
- **Increase number of turns** in coil
- **Increase the current** passing through wire

Electromagnets

- Electromagnet is a solenoid with an iron core.
- Are **induced magnets** (can be turned on and off)

Uses = electric motors, loudspeakers, electric bells, scrapyards.

T3 Y11 Mainstream P7 Electromagnetism

1. Name the two poles on a magnet.
2. What will like poles do?
3. What will opposite poles do?
4. Why is magnetism a 'non-contact' force?
5. Which metals are magnetic?

1. What is a magnetic field?
2. Where is the magnetic field the strongest?
3. Which direction do the field lines go?
4. Draw the magnetic field around a bar magnet.
5. What is the Earth's core made of?
6. What can the Earth's magnetic field be used for?

1. What is produced when a current flows through a wire?
2. How can you increase the strength of a magnetic field of a straight wire?
3. What is produced when you coil the wire?
4. How can you increase the magnetic field around a solenoid? (3 ways)

1. What are the two types of magnets?
2. Name two differences between these two types of magnets.

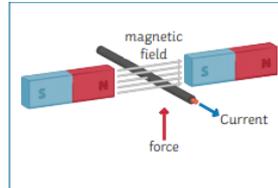
1. Describe a method to plot the magnetic field of a bar magnet.

5. What is an electromagnet?
6. What is meant by induced magnet?
7. State 2 uses of electromagnets.

T3 Y11 Mainstream P7 Electromagnetism

The Motor Effect (HT only)

- When a wire carry a **current** is placed in a magnetic field, the two magnetic fields interact and a **force** is exerted on the wire. .
- This is called **motor effect**.
- The force produced by the motor effect can be calculated using:



$$\text{Force (N)} = \text{magnetic flux density (T)} \times \text{current (A)} \times \text{length (m)}$$

$$F = B \times I \times l$$

For example:

A current of 8A is flowing through a wire that is 75cm long. The magnetic field acting at a right angle on the wire is 0.5T. Calculate the force.

Remember: the equation uses length in m. The question has given you the length in cm so you need to convert it before you answer.

$$F = 0.5 \times 8 \times 0.75$$

$$F = 3\text{N}$$

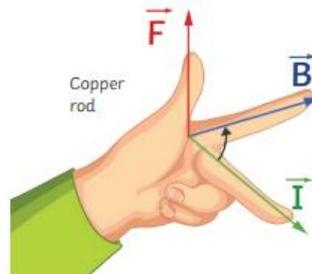
- If current flowing through wire is **parallel** to magnetic field, **no force** is produced.

Fleming's left-hand rule.

- You may be asked a diagram and asked to indicate direction of force.
- You can use Fleming's left-hand rule to do this (picture)

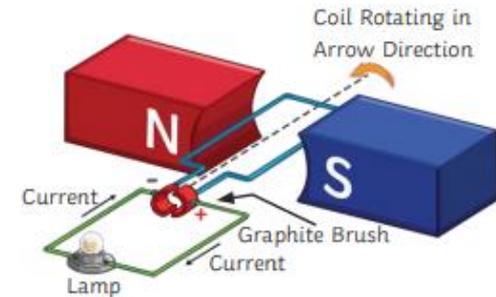
Remember (**F B I**):

- Use your **left hand!**
- The angle between index and middle should be **right angle**.
- Thumb = direction of **force**
- First finger = direction of **magnetic field**
- Second finger = direction of **current** through wire.



Electric Motors (HT only)

- When wire carrying current is **coiled**, the motor effect causes wire to **rotate**.
- This is how an **electric motor** works.



- Current flows force produced acts in **opposite directions** causing coil to **rotate** overall.

- When coil reaches a **vertical position**, force is parallel so would be zero – stops rotating.

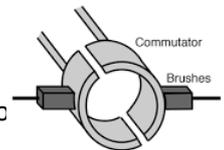
- A gap in the **split ring commutator** in the motor cuts the current temporarily.

- Momentum ensures the coil carries on mo

- The commutator reconnects and **changes the direction of the current** to maintain a **constant rotation** in one direction overall.

- Increase speed of rotation by increasing the:

- current
- strength of magnet
- number of turns on the coil



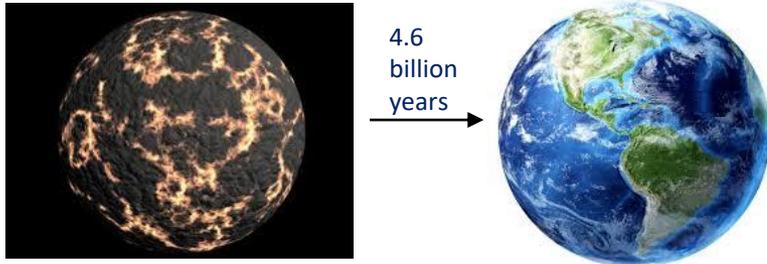
T3 Y11 Mainstream P7 Electromagnetism

- | | |
|--|---|
| <ol style="list-style-type: none">1. What is the 'motor effect'?2. State the equation for calculating the force produced by the motor effect.3. What happens to the force if the current flowing through the wire is parallel to the magnetic field?4. What is Fleming's left-hand rule used to indicate?5. What does your thumb represent?6. What does your first finger represent?7. What does your second finger represent? | <ol style="list-style-type: none">1. What happens when a wire carrying a current is coiled?2. How does an electric motor work?3. Why is a split ring commutator used?4. How can we increase the speed of rotation of the motor? |
|--|---|

T3 Y11 Mainstream C9 – The Earth's Atmosphere

Early Atmosphere vs modern atmosphere:

Gas	Levels in earth's early atmosphere	Percentage in air today
Nitrogen	None	78
Oxygen	None	21
Others – CO ₂ and argon	Very High	1
Water vapour	Very high	Varies – but usually only around 1%
Ammonia	High	None



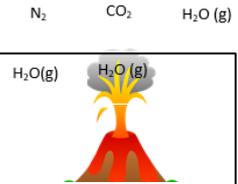
We think that the atmosphere on Earth was once like that of Mars or Venus is today

When Earth was formed it was so hot it was molten on the surface, and the atmosphere was full of toxic gases like methane and ammonia.

We cannot be sure about exactly what the Earth's early atmosphere as we have no evidence from so long ago

How did the atmosphere change?

1. Volcanoes released nitrogen, carbon dioxide and water vapour



2. The earth cooled and solidified

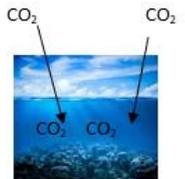


3. Water vapour in the atmosphere condensed and fell as rain



4. Oceans, lakes and rivers formed

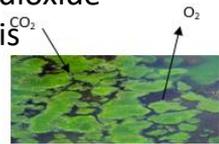
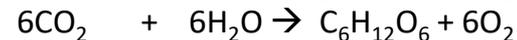
5. Carbon dioxide from the air dissolved in the oceans



6. Some of this reacted to form sedimentary rocks like limestone

7. Algae and then plants evolved, removing carbon dioxide from the air and produced oxygen by photosynthesis

Carbon dioxide + water → glucose + oxygen



8. Many early plants and marine organisms were buried and decayed underground, locking up carbon in fossil fuels like coal (plants) and oil (animals)



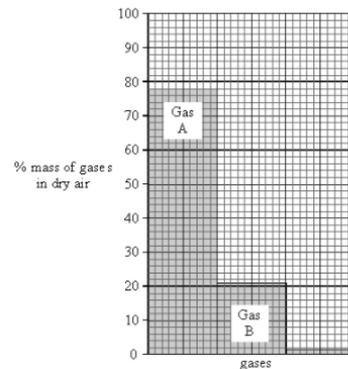
T3 Y11 Mainstream C9 – The Earth's Atmosphere

1. Name two gases that were present in large quantities in Earth's early atmosphere
2. What is the most abundant gas in today's atmosphere?
3. Which two planets do we think Earth's early atmosphere was similar to?
4. Why can we not be sure about the Earth's early atmosphere?
5. Give two differences between the early atmosphere and today's atmosphere.
6. The data for today's atmosphere is shown on the chart below:

Use the table on page 1 to name:

Gas A

Gas B



1. How did nitrogen form in the atmosphere?
2. How did water vapour levels decrease?
3. Name 2 ways carbon dioxide was removed from the early atmosphere before plants evolved.
4. Which organisms were the first to photosynthesise?
5. Why did oxygen levels rise?
6. Write the equation for photosynthesis
7. What is 'locked up carbon'?
8. Describe how carbon dioxide in the air ended up in rocks like limestone
9. How was coal formed?

T3 Y11 Mainstream C9 – The Earth's Atmosphere

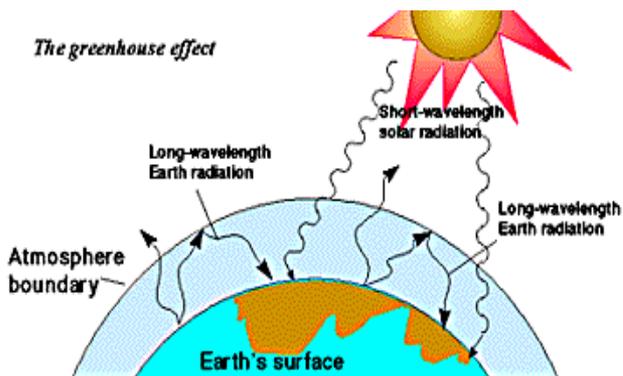


The greenhouse effect

The greenhouse layer is a layer of gases in the atmosphere made of:

- carbon dioxide
- methane
- water vapour

The greenhouse effect



1. Short wavelength infrared radiation from the sun reaches Earth
2. Some energy is absorbed by the Earth
3. Longer wavelength IR is reflected by the Earth
4. Longer wavelength IR cannot get through the greenhouse layer as easily so some is trapped, warming the Earth

The thicker the layer of gases, the more heat is trapped

Global warming

The greenhouse layer is getting thicker, because:

- CO₂ released from fossil fuels to generate electricity
- CO₂ released from fossil fuels in vehicles
- Methane released from cattle
- Methane released from rotting landfill sites

Many scientists believe that human activities are causing the warming of the Earth.

Potential consequences:

- Melting ice caps
- Loss of habitats for animals and plants
- Damage to coral reefs caused by warmer oceans
- Changes to animal migration patterns
- Extreme weather patterns – more hurricanes, heat waves, droughts, snow and ice
- Difficulty growing crops so reduced food supply

Carbon footprint

The total amount of CO₂, CH₄ and water vapour released by of a product or service.

E.g for a concert:

- electricity in performance
- Fossil fuels used by people travelling there
- Plastics used and disposed of in refreshments etc

Carbon footprints can be reduced by recycling, reducing energy use or eating vegetarian diets but this is hard to get people to do.

Pollutants :

Pollutant	Source	Effects
Carbon dioxide	Combustion	Global warming
Carbon monoxide	Incomplete combustion of fuels	Toxic gas, can be fatal
Sulfur dioxide	Traces of sulfur in coal react with oxygen when burned	Acid rain
Nitrogen oxides	Hot engines provide the energy for N ₂ to react with O ₂	Acid rain
particulates	Incomplete combustion	Global dimming, breathing problems

T3 Y11 Mainstream C9 – The Earth's Atmosphere



The greenhouse effect

1. What is the 'greenhouse' layer?
2. Name the 3 greenhouse gases

The diagram illustrates the greenhouse effect. It shows a cross-section of the Earth with the sun above it. Short-wavelength solar radiation (represented by red arrows) travels from the sun to the Earth's surface. From the Earth's surface, long-wavelength Earth radiation (represented by wavy arrows) is emitted. Some of this radiation is reflected away from the Earth, but some is absorbed by the atmosphere, which then re-emits it back towards the Earth's surface, trapping heat. Labels include: 'Short-wavelength solar radiation', 'Long-wavelength Earth radiation', 'Atmosphere boundary', and 'Earth's surface'. The title 'The greenhouse effect' is written in the top left of the diagram area.

Global warming

1. Name two human activities that release CO₂
2. Name two sources of methane

Carbon footprint

1. What is the 'carbon footprint'?
2. Name two ways a person can reduce their carbon footprint.
3. Why is it difficult to get people to reduce their carbon footprint?

Pollutants :

1. What sort of radiation is emitted from the sun?
2. How is the wavelength of the radiation reflected from Earth different than that from the sun?
3. Why is some heat trapped?
4. What is the relationship between the thickness of the layer and the amount of heat trapped?

1. Name two impacts of global warming on animals
2. Why might coral reefs be damaged by global warming?
3. Why might our food supply be under threat?

Pollutant	Source	Effects
Carbon dioxide		Global warming
	Incomplete combustion of fuels	Toxic gas, can be fatal
Sulfur dioxide		
Nitrogen oxides		Acid rain
particulates		

T3 Y11 C10 The Earth's resources Vocabulary: potable, finite, desalination, effluent, sustainable

Earth's Resources

We use Earth's resources to provide **warmth, shelter, food and transport.**

E.g.:

- metals from the Earth's crust to build buildings and cars
- Timber and oil to burn for warmth
- Crop plants for food
- Products from crude oil to serve as fuels in cars, trains and planes

Finite resources – ones that will run out as they are being used much faster than they can be replaced, e.g. oil

Renewable resources – resources that will not run out, e.g. wood, wind etc.

Chemistry plays an important part in finding improvements or alternatives to **current resources.**

Natural	Improved or replaced by....
Wood for furniture	Plastic/polymers
Food crops	Fertilisers/artificially grown foods such as Quorn
Oil for fuel	Ethanol/hydrogen fuel cells
Rubber for tyres	Polymers

Life-Cycle Assessments (LCA)

- These assess the environmental impact of a product in these stages:

Stage 1 – extracting raw materials needed to make products.

- Energy cost and effect on habitats of extraction
- Are the raw materials finite/renewable?

Stage 2 – Manufacturing and packaging product

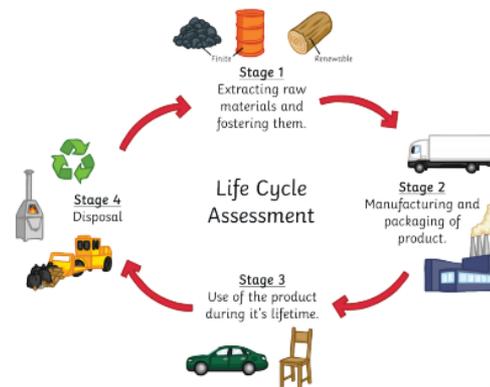
- How much energy and resources are needed?
- What waste products/pollution are released?
- Transportation of goods from factories to user need considering.

Stage 3 – Use of product during its lifetime

- E.g. a car has a significant impact as needs filled up with petrol which is a finite resource.

Stage 4 – Disposal at end of product's life.

- 1) Landfill – high environmental impact
- 2) Incineration – burning of product
- 3) Recycling – e.g. batteries contain metals that are harmful to environment – recycling means no new compounds need to be taken out of the ground.



Example LCA for plastic vs paper bags:

Stage of Life Cycle Assessment	Plastic Bag	Paper Bag
Stage 1 – raw material	Uses finite resource. Process of fractional distillation, cracking and polymerisation all require energy.	Made from trees/recycled paper. Making paper from trees required more energy than recycled paper. Less energy than plastic bags.
Stage 2 – Manufacture	Cheap to make	More expensive to make
Stage 3 – Use	Low environmental impact as can be re-used many times. Much stronger product.	Only be reused a limited number of times – short lifetime.
Stage 4 - disposal	Do not biodegrade easily in landfill.	Paper bags degrade easily in landfill sites.

- Different people have different opinions and so depends on who completes the LCA. Bias may be added.
- Some companies may only discuss some of environmental impacts of their product.
- Accurate numerical values should be used where possible – for example to show how much energy has been used.

T3 Y11 Mainstream C10 The Earth's resources

- | | |
|---|--|
| <ol style="list-style-type: none">1. What are the 4 main uses of the Earth's materials?2. What is a renewable resource?3. What is a finite resource?4. Give an example of a finite resource5. Give an example of a renewable resource | <ol style="list-style-type: none">1. What does LCA stand for?2. What does an LCA assess?3. What are the 4 stages that are assessed in an LCA?4. Suggest one environmental impact of extraction of raw materials such as metals or oil.5. Name two ways products are disposed of at the end of their 'life' |
| <ol style="list-style-type: none">6. Give an example of a natural product that has been replaced by modern chemistry or farming. | <ol style="list-style-type: none">1. Why might an LCA be inaccurate?2. What are the raw materials for a<ol style="list-style-type: none">a) paper bagb) plastic bag3. Why might the disposal of a plastic bag have a greater environmental impact than the disposal of a paper one? |

T3 Y11 Mainstream C10 The Earth's resources

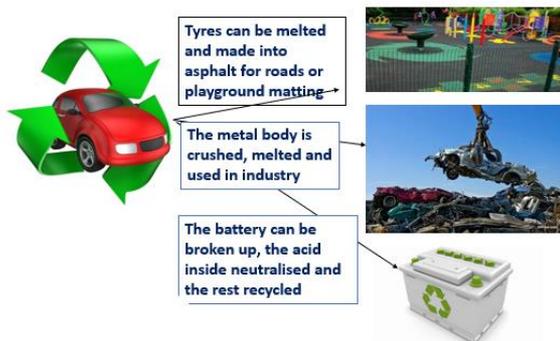
Reducing the use of resources

Metals, glass, ceramics, building materials and most plastics are produced from limited resources. The energy for the processes involved in making/extracting raw materials also comes from limited resources – e.g. oil. We can reduce the use of limited resources by reducing use, reusing materials and recycling materials at the end of their life.

Reduce, reuse, recycle.

E.g.

- Glass bottles can be reused.
- Metals can be melted down and recast and so recycled.
- Scrap steel can be added to extracted iron to reduce the amount of iron that has to be extracted in the blast furnace.



Evaluating methods to reduce, reuse, recycle

Advantages	Disadvantages
Fewer resources such as mines and quarries are needed to extract finite materials	Requires collection and transport of items – involving staff, vehicles and use of fuel
Crude oil does not need to be extracted – avoids high energy costs for fractional distillation etc.	Materials, such as metals, very often have to be separated from other materials first
Less greenhouse gases produced.	Some metals need melting before being reused – energy costs.
Less items in landfill	

Biological extraction techniques (HT only)

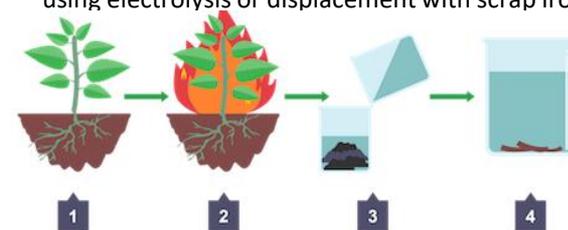
- Earth's supply of metal ores is limited.
- There are fewer sites that give lots of copper (high grade ore sites)
- New ways of extracting from low grade ore sites are:
 - Phytomining
 - Bioleaching

Disadvantage = **slow processes**

Advantage = reduce need for the traditional mining methods of digging, moving and disposing of large amounts of rock.

Phytomining (HT only)

- 1) Plants are grown on a low-grade ore
- 2) The plants absorb metal ions through their roots
- 3) The plants are harvested and burnt
- 4) Ash left behind contains metal compounds
- 5) Ash is dissolved in acid and copper is extracted using electrolysis or displacement with scrap iron.



Bioleaching (HT only)

- Uses **bacteria** to produce a solution called **leachate** – contains copper ions.
- The copper can be extracted by using iron to **displace** the copper from the leachate.
- Does not need high temperatures
- Produces **toxic substances** which can damage the environment.
- Iron is cheaper than copper – use of scrap iron is a cost-effective way to produce copper from leachate.
- Can also undergo **electrolysis** to produce copper.

T3 Y11 Mainstream C10 The Earth's resources

1. Give three ways we can reduce our use of limited resources.

2. Give an example of a product that can be reused

3. What has to be done to metals before they can be recast?

4. How is scrap iron used to reduce the amount of iron needing to be extracted?

1. State two advantages of recycling.

2. State two disadvantages of recycling.

1. What is a 'high grade ore' site?

2. Name the two biological extraction techniques

3. State a disadvantage of biological extraction techniques.

1. What organisms are used in phytomining?

2. What happens to the plants once they've grown?

3. What is used to displace the copper ions from solution?

4. What organisms are used in bioleaching?

T3 Y11 Mainstream C10 The Earth's resources

Potable Water

- Water is **essential** for life.
- **Potable water** is water that is safe to drink.
- Potable water is not pure as it contains some dissolved substances.

In the UK – rain water provides water with low levels of dissolved substances that collects in the ground and in lakes and rivers. This is fresh water.

Most potable water is produced by:

- 1) Choosing an appropriate source of fresh water
- 2) Passing the water through filter beds
- 3) Sterilising to kill bacteria

Sterilising agents used for potable water include:

- Chlorine
- Ozone
- Ultraviolet light



Desalination of Sea Water

- **Potable** water can be made from sea water through desalination.
- Required a lot of **energy** to **remove salt** in sea water.

Can be done by:

Distillation

- Sea water heated until it boils
- Steam is **condensed** to make potable water
- Requires a lot of **energy**

Reverse Osmosis

- Water put under **high pressure** and passed through **membrane** with tiny holes in.
- Holes allow water through but not salt/ions
- Very **expensive**
- Produces **large volumes** of waste water.

Waste Water Treatment

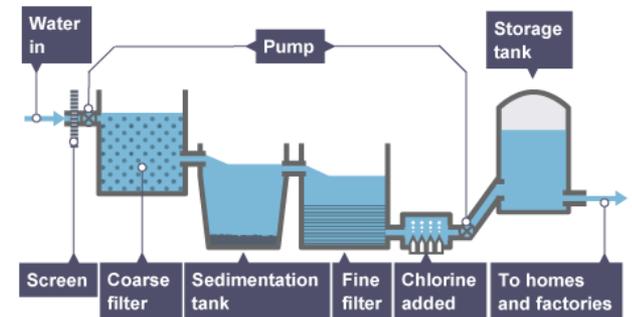
- Waste water needs to be treated before being released back into environment

Pollutants can be present in waste water including:

- Human waste contains harmful **bacteria** and nitrogen – can harm aquatic ecosystems.
- Industrial waste can contain **toxic** substances
- Agricultural waste water can contain **fertilisers** or **pesticides** – disrupt ecosystems.

Sewage treatment involves:

- 1) Screening and grit removal to remove large particles
- 2) Sedimentation – allows tiny particles to settle – produces sewage sludge and effluent (liquid that remains on the top)
- 3) Sewage sludge is digested anaerobically by specific bacteria
- 4) Effluent is treated with aerobic bacteria to reduce volume of solid waste.



T3 Y11 Mainstream C10 The Earth's resources

1. What is potable water?

2. What is fresh water?

3. Where does fresh water collect in the UK?

4. After finding an appropriate source of water, what two stages are needed to make it potable?

5. What are the 3 methods of sterilising water?

6. Why is water treated with chlorine?

1. How can potable water be made from sea water?

2. Give a disadvantage of this technique.

3. Describe the process of distillation.

4. Describe the process of reverse osmosis.

1. State three pollutants that may be present in waste water.

2. Complete the table to explain the steps in treating waste water.

Step	Explanation
Screening	
Sedimentation	
Anaerobic digestion	
Aerobic digestion	

T3 Y11 C10 The Earth's resources– Required Practical – Analysis and purification of water

Analysing the pH of Water Samples

- Test pH of each water sample using pH probe or universal indicator.
- Compare to pH chart if using universal indicator

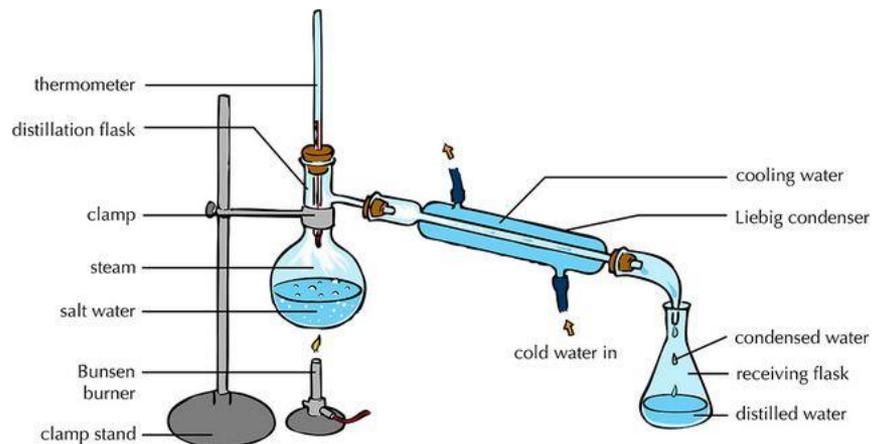
Analysis the Mass of Dissolved Solids

- 1) Measure out 50 cm³ of water sample using measuring cylinder.
- 2) Take the mass of evaporating basin using top pan balance.
- 3) Heat the sample in the evaporating basin gently until all liquid evaporates.
- 4) Let the evaporating basin cool
- 5) Re-take the mass of the evaporating basin.



- 6) Calculate the mass of the solid left behind by doing: final mass – initial mass.
- 7) Repeat with different water samples (e.g. rainwater, salt water, spring water)

Distillation of water Sample

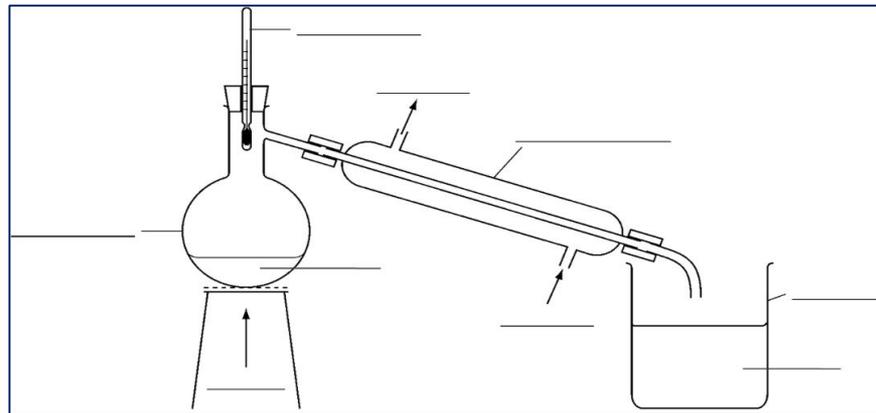


- 1) Set up apparatus as shown in picture with the sample of water in the round bottom flask.
- 2) Heat water sample until it boils gently.
- 3) Water vapour enters the tube at the side (condenser)
- 4) There is cold water surrounding the tube
- 5) The water vapour cools and condenses and collects in the flask.
- 6) The water collected should be **pure**.

T3 Y11 C10 The Earth's resources– Required Practical – Analysis and purification of water

1. Write a method of how to investigate the mass of solids in different samples of water.

1. Label the diagram below to show how to purify salt water.



Bunsen, water sample, water, beaker, condenser,
water in, water out, thermometer, round bottom
flask

2. What is the name of this technique?
3. What two changes of state happen during this?
4. Describe the water that is collected in the beaker

1. The UK's diverse landscapes



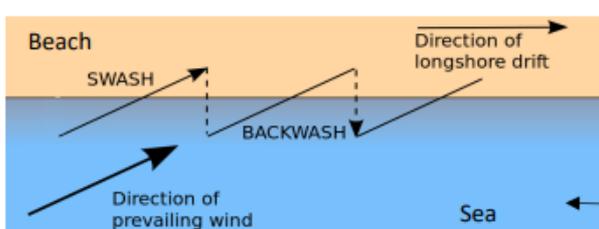
Term	Definition
Relief	Shape of the land.
Upland areas	Land over 200m. Highlands. Steep.
Lowland areas	Land below 100m. Flat or rolling hills

2. Waves

Term	Definition
Swash	Movement of the water UP the beach in the direction of the prevailing wind.
Backwash	Movement of water DOWN the beach at right angles (90°) due to gravity.
Constructive waves	Build up the beach. Strong swash. Weak backwash. Low height, long wave length. Low frequency.



Destructive waves	Erode the coast. Weak swash. Strong backwash. Tall height, short wave length. High frequency.
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3. Processes

Sub-aerial processes (above the sea)

Weathering	
Wearing away of rocks in situ. Material not removed.	
Mechanical weathering	The breaking down of rock without changing its composition. Freeze thaw.
Chemical weathering	The breaking down of rock caused by chemicals. (e.g. weak acid rain).

Mass movement

The downhill movement of material under the force of gravity.	
FALL	
SLIDE	
SLUMP	
Rockfall	Free fall of rocks under force of gravity.
Sliding	Material collapsing in a straight line.
Slumping	Downward rotation of sections of cliff along a slip plane. Worse when saturated.

Marine processes

Erosion	
The wearing away and removal of material by a moving force such as a breaking wave.	
Hydraulic power	The sheer force of the water compressing air into cracks causes bits to break off.
Abrasion	Sediment scraping against the cliff (like sandpaper) removing small pieces.
Attrition	The 'smashing' of sediment against each other to become more rounded.
Solution	Chemical erosion caused by the dissolving of rocks by sea water.

Deposition

Dropping of material	Occurs when there is a loss of energy. e.g.. Sheltered bays, when the wind drops.
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Transportation

Longshore drift	Zig zag movement of sediment along the coastline.
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4. Erosional landforms

Headlands and bays

Step 1	Discordant coastlines have alternating bands of more resistant (chalk) and less resistant rock (clay).
Step 2	The less resistant rock is eroded faster through abrasion , creating bays.
Step 3	The more resistant rock erodes slower and is left jutting out to sea forming a headland.

Wave cut platforms

Step 1	Waves erode cliff base between high+ low tide
Step 2	Abrasion create a wave cut notch which enlarges over time.
Step 3	The rock above the notch is unsupported so will collapse due to gravity (mass movement) .
Step 4	Cliff retreats , leaving a wave cut platform (the un-eroded original cliff left behind).



Cave, arch, stack

Step 1	Hydraulic power enlarges cracks in headland
Step 2	Over time they turn into a cave.
Step 3	Back of cave is deepened by abrasion until it erodes through the headland > arch.
Step 4	Weathering and erosion wear away at the arch until it eventually collapses (gravity).
Step 5	A stack is formed.



Example of a UK coastline. Dorset coastline.

Headlands and bays	Swanage Bay, Durlston Head
Wave cut platform	Kimmeridge
Arch	Durdle Door (concordant)
Stack	Old Harry

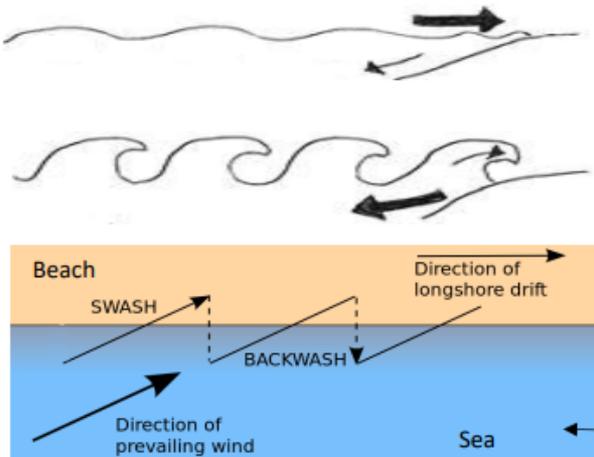
1. The UK's diverse landscapes

Term	Definition
Relief	
Upland areas	
Lowland areas	



2. Waves

Term	Definition
Swash ↗	
Backwash ↘	
Constructive waves	
Destructive waves	



3. Processes

Sub-aerial processes (above the sea)	
Weathering	
Mechanical weathering	
Chemical weathering	
Mass movement	
Rockfall	
Sliding	
Slumping	
Marine processes	
Erosion	
Hydraulic power	
Abrasion	
Attrition	
Solution	
Deposition	
Dropping of material	
Transportation	
Longshore drift	

4. Erosional landforms

Headlands and bays	
Step 1	
Step 2	
Step 3	
Wave cut platforms	
Step 1	
Step 2	
Step 3	
Step 4	
Cave, arch, stack	
Step 1	
Step 2	
Step 3	
Step 4	
Step 5	
Example of a UK coastline. Dorset coastline.	

5. Depositional landforms

Beaches Swanage

Step 1	Beaches form when deposition occurs.
Step 2	There needs to be a source of sediment nearby like soft cliffs.
Step 3	Constructive waves deposit material in sheltered areas like bays.

Sand dunes Studland

Step 1	Wind blows sand up the beach (saltation).
Step 2	Obstacles such as seaweed cause the wind speed to decrease resulting in deposition .
Step 3	Over time sand dunes build up and are colonised by marram and lyme grass.
Step 4	This vegetation stabilises the sand dunes.

Spits Sandbanks

Step 1	Longshore drift transports sediment along the coast in the direction of the prevailing wind (swash and backwash).
Step 2	Where the coastline changes direction...
Step 3	Sediment is deposited in calm weather out to sea.
Step 4	Can form a hooked end and a salt marsh behind the spit where it is sheltered.



Bar

Step 1	When a spit joins two headlands.
Step 2	A lagoon forms behind the bar.



6. Coastal management

Hard engineering

Man made structures built to control the sea. Reduces flooding and erosion.

Strategy	Explanation	Costs	Benefits
Sea walls	A hard wall made out of concrete that reflects waves back out to sea	Expensive (£2000 per/m). Life span 75 years.	Prevents erosion / flooding. Often protects tourist resorts.
Rock armour	Boulders piled up along the coast. These erode rather than the coast.	Boulders can be moved by waves and need replacing.	Gaps allow water through, reducing wave energy. Cheap
Gabions	Wire cages filled with rocks at the base of cliffs. Absorb wave energy.	Ugly to look at. £100 per/m Metal corrodes over time.	Cheap and easy to build. Reduce erosion.
Groynes	Wooden fences at right angles to the coast, preventing sand moving by longshore drift = wider beach.	Starve beaches further along the coast = more erosion there. Life span only 25 years	Stops longshore drift removing beaches. Fairly cheap.

Soft engineering

Schemes set up using a natural approach to managing the coast.

Strategy	Explanation	Costs	Benefits
Beach nourishment	Sand and shingle from elsewhere is added to beaches. Wider beaches stop erosion and flooding	Needs redoing every 5 years. Sand has to be brought from elsewhere. Expensive.	Blends with existing beach. Larger beaches = tourists.
Reprofiling	Sediment is redistributed from the lower part to the upper part of the beach. Increases gradient.	Only works if wave energy is low. Needs to be redone lots.	Cheap and simple. Reduces energy of the waves.
Dune regeneration	Creating or restoring sand dunes by nourishment or planting marram grass to stabilise the sand	Protects only a small area. Areas zoned off from public which is unpopular.	Sand dunes create a barrier between the sea and land. Stabilisation is cheap.

Managed retreat <small>Coastal realignment</small>	Remove current defences, allow sea to flood the land behind. Over time land becomes a marshland.	Land is lost = conflict (farmers) Salt water can negatively impact existing ecosystems.	Cheap and easy. Doesn't need maintenance. New habitats created.
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7. An example of a coastal management scheme

What?	Reasons for management	Management strategy	Effects and conflicts
Bournemouth Beach Management Scheme. Aim: Hold the line and protect tourism.	Coastline would erode at a metre a year. Beach important for tourism (£413million). 3114 homes at risk from collapsing cliffs.	3 phases costing £50 million. HARD: Replaced or added 53 groynes. SOFT: 3 lots of replenishment, every 5 yrs	✓ Beaches = More tourists = 9000 jobs ✗ Barton on Sea at risk from erosion. ✗ Conflict: locals vs construction.

5. Depositional landforms

Beaches Swanage	
Step 1	
Step 2	
Step 3	

Sand dunes Studland	
Step 1	
Step 2	
Step 3	
Step 4	

Spits Sandbanks	
Step 1	
Step 2	
Step 3	
Step 4	

Bar	
Step 1	
Step 2	

6. Coastal management

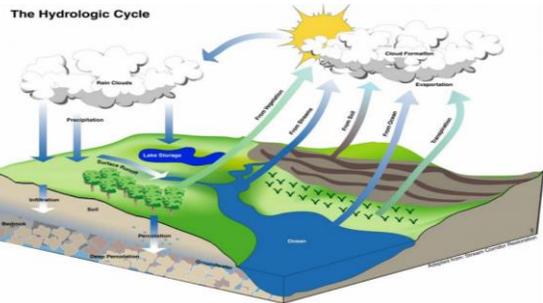
Hard engineering			
Man made structures built to control the sea. Reduces flooding and erosion.			
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Dune regeneration			

Managed retreat Coastal realignment			
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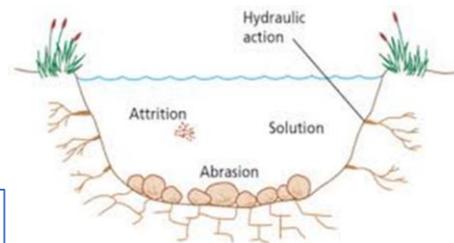
7. An example of a coastal management scheme

What?	Reasons for management	Management strategy	Effects and conflicts



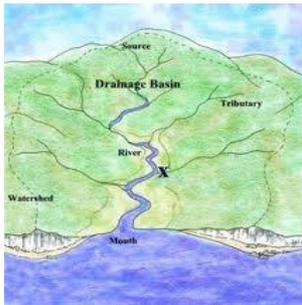
What are we learning this term

A. The Hydrological cycle
 B. Drainage basins
 C. Factors influencing the hydrological cycle
 D. Key terms



Erosion in a river has a number of different forms.

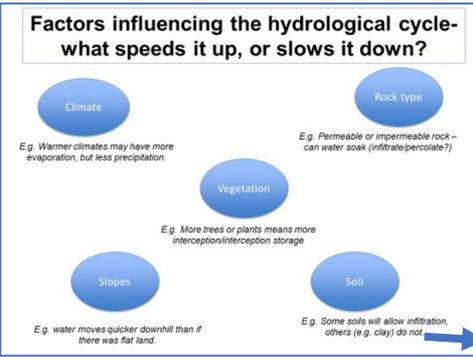
The drainage basin is the area of land drained by a river and its tributaries. Its boundary is the *watershed*. The start of a river is called the *source*, and the end of the river as it enters the sea is the *mouth*. The main river channel may be joined by smaller rivers called *tributaries*, and this meeting point is called a *confluence*.



Some factors will influence the way that water travels to the river – see below.

D	Key terms
Attrition	is the 'smashing' of sediment against each other to become more rounded.
Hydraulic action	is the sheer force of the water breaking down the river banks and bed.
Corrosion (solution)	is the dissolving of material.
Abrasion (corasion)	is the action of sediment scraping against the bed and bank of the river (like sandpaper

A.	The hydrological cycle
The hydrological cycle is a closed system. This means that water never leaves, or enters the cycle of water from sea, land and atmosphere. The cycle is important because it shows us how water can enter the drainage basin, and how water can be responsible for increasing or decreasing our risk of flooding. Key words include:	
Evaporation	the process of water turning from a liquid in to water vapour as it is warmed.
Transpiration	Transpiration – the loss of water from trees and plants
Condensation	water vapour returning to a liquid once cooled.
Interception	water being trapped by tree leaves and plant leaves
Surface run off	water travelling over the land
Infiltration	water soaking into the soil
Throughflow	water flowing downhill in the soil
Percolation	water passing vertically through soil and rock
Groundwater flow	water flowing vertically through rock.
Channel flow	water flowing in a river channel
Channel storage	water being stored in the river



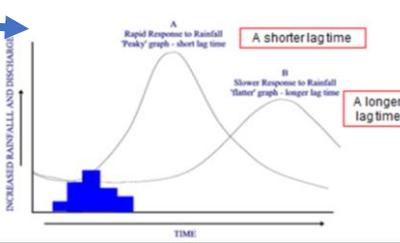
Transportation.

- Transportation happens in one of four ways:
- As solution: dissolved minerals carried in the water.
- Suspension: Small particles of rock and soil are carried along – they make the water look cloudy or muddy.

- As **saltation**: sand grains and small stones just bounce along.
- As **traction**: Larger stones and rocks get rolled along.

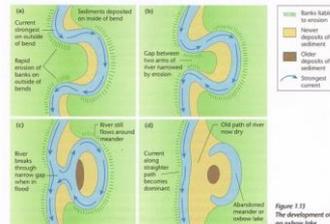
Hydrographs are a method to show us the relationship between rainfall and discharge (the amount of water in the river at a given time). Hydrographs can help us to predict the risk of flooding, but also can help us to understand how water has made it's way the river...

The **lag time** of a hydrograph is the time between the peak rainfall and the peak discharge. If this is long (e.g. b) then it means water will have infiltrated rather than moved through surface run off, as surface run off would cause water to enter the river quickly, and so our hydrograph would have a shorter lag time (e.g. a).



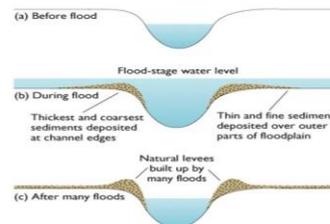


E	Reducing flooding
Rivers flooding can be caused by a number of factors. These could be human factors:	
Farming	ploughing can cause water to collect in the troughs and run directly in to the river.
Urbanisation	building with tarmac and concrete does not allow infiltration so water moves to the river through surface run off, or might sit on the land.
Deforestation	cutting down trees will reduce interception storage and increase surface run off.
Or physical factors:	Or physical factors:
Weather and climate:	hotter weather increases evaporation which will then decrease the amount of discharge. Colder weather will cause more surface run off as frozen ground cannot infiltrate water.
High amounts of rainfall	saturated ground will not infiltrate further rainfall, which increases surface run off, and therefore the discharge in the river.
Steep land	steep land increases surface run off and therefore the discharge in the river

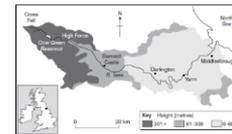


A meander is a bend in a river. Erosion happens on the outside of the bend as the velocity is faster. Deposition happens on the inside of the bend as velocity is slowest. This meander may over time become an oxbow lake as erosion on the outside of the bend exaggerates the bend, and when the river floods, water might take the quickest route – therefore cutting off the bend!

Formation of Natural Levees



The river is 85 miles long, and drains an area of 710 square miles. Its source is in the Pennine hills, and flows in to the North Sea at Middlesbrough.



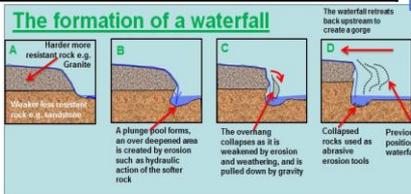
Middle/lower course:

There are good examples of meanders, levees and floodplains along the River Tees. The natural levees have built up over time as the river floods and sediment is deposited on the banks of the river. There are large industries in the lower course of the river, making the most of the flat land and river's flow in to the North Sea. This area of the river needs high levels of management. In Yarn there are extensive flood protection methods.

Upper course: The upper course of the river has impressive waterfalls. The river drops 20m in a single sheet of water – High Force Waterfall (tallest in England). The waterfall has retreated back overtime to form a gorge. There are high v-shaped valleys, and interlocking spurs in the upper course of the river.

The river has been straightened and widened over time to allow navigation for industry and trade.

A waterfall will form when bands of hard and soft rock lie on top of each other. Over time the hard (more resistant) rock will be eroded, and therefore the soft rock will be eroded vertically. This creates a plunge pool – and overtime the waterfall will retreat backwards creating a gorge.



Banbury Floods:

What has been done to reduce flooding?

- A361 raised, and drainage below the road improved.
- Earth embankments built.
- Floodwalls built.
- Pumping station to transfer excess water.
- Creation of new Biodiversity Action Plan to allow nature to 'soak' up excess water.

What were the costs/benefits?

Socially: quality of life has improved, reduced levels of anxiety of flooding, the A361 will no longer need to be closed.
Economically: Cost £18.5m, but benefits of protecting are over £100m!
Environmentally: Small reservoir created from earth taken for embankments, new Biodiversity Action Plan has created new habitats, and floodplain protected for flooding.

Banbury is located in the Cotswolds, north of Oxford.

Impacts of flooding:

In 1998 flooding led to the closure of the railway station, local roads and caused £12.5m damage. More than 150 homes and businesses were affected. In 2007 these impacts were repeated.

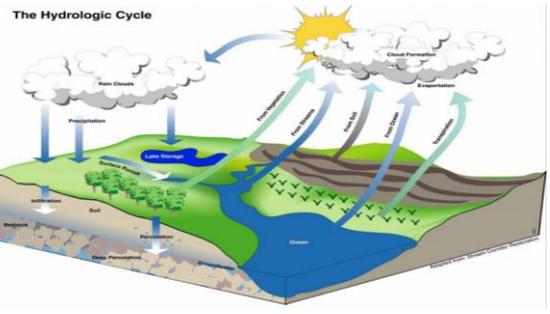
River flooding might bring a lot of effects to an area. They are worse in LICs as the countries are unable to prepare, or protect. These impacts can be social, economic or environmental.

Social: loss of homes, death, loss of possessions etc.



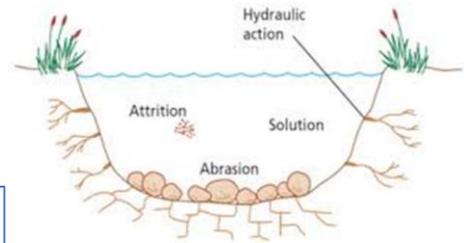
Economic: Cost of repairs, loss of income from flooded farmland, loss of business, loss of jobs etc.

Environmental: Damaged habitats, destroyed land, contaminated water sources etc.



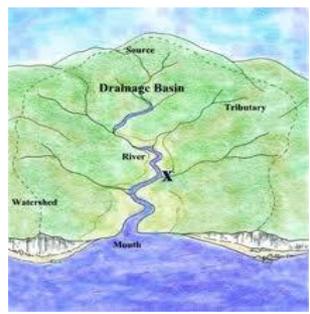
What are we learning this term

A. The Hydrological cycle
 B. Drainage basins
 C. Factors influencing the hydrological cycle
 D. Key terms



Erosion in a river has a number of different forms.

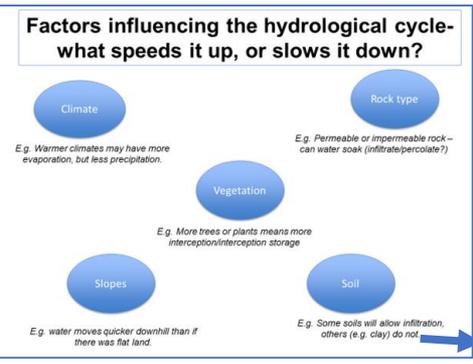
A.	The hydrological cycle
The hydrological cycle is a closed system. This means that water never leaves, or enters the cycle of water from sea, land and atmosphere. The cycle is important because it shows us how water can enter the drainage basin, and how water can be responsible for increasing or decreasing our risk of flooding. Key words include:	
Evaporation	
Transpiration	
Condensation	
Interception	
Surface run off	
Infiltration	
Throughflow	
Percolation	
Groundwater flow	
Channel flow	
Channel storage	



Some factors will influence the way that water travels to the river – see below.

The drainage basin is the

D	Key terms
Attrition	
Hydraulic action	
Corrosion (solution)	
Abrasion (corasion)	



Transportation.

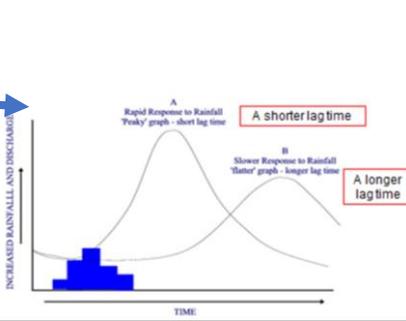
- Transportation happens in one of four ways:
- As solution: dissolved minerals carried in the water.
- As suspension: Small particles of rock and soil are carried along – they make the water look cloudy or muddy.
- As saltation: sand grains and small stones just bounce along.
- As traction: Larger stones and rocks get rolled along.

As **saltation**: sand grains and small stones just bounce along.

As **traction**: Larger stones and rocks get rolled along.

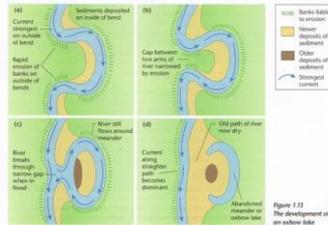
Hydrographs are

The lag time of a hydrograph is

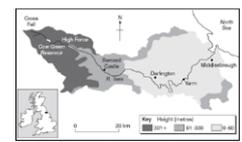




E	Reducing flooding
Rivers flooding can be caused by a number of factors. These could be human factors:	
Farming	
Urbanisation	
Deforestation	
Or physical factors:	
Weather and climate:	
High amounts of rainfall	
Steep land	



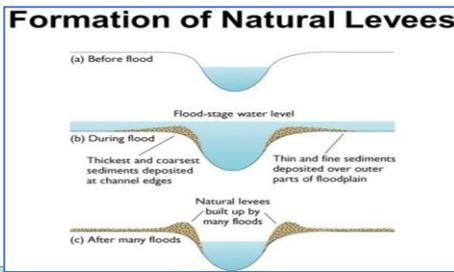
The river is 85 miles long, and drains an area of 710 square miles. Its source is in the Pennine hills, and flows in to the North Sea at Middlesbrough.



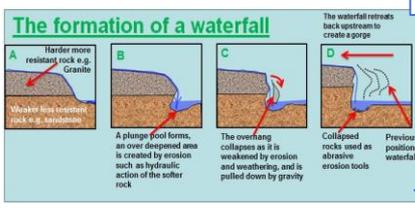
Middle/lower course:

A meander is _____. Erosion happens on _____ as the velocity _____. _____ happens on the inside of the bend as velocity _____. This meander may over time become _____ as erosion on the _____ of the bend exaggerates the bend, and when the river floods, water might take the quickest route – _____!

Upper course:



The image above tracks the journey of a river from source to mouth. Note that the river starts on high land, and meets the sea on flat land. The features of a river will change from source to mouth. This is due to erosion and transportation of material. Typically larger material is found in the upper course of a river, and the material reduces in size as it makes its way to the mouth. Erosion will change from vertical (downwards) to horizontal erosion.



A waterfall will form when bands of hard and soft rock lie on top of each other. Over time the hard (more resistant) rock will be eroded, and therefore the soft rock will be eroded vertically. This creates a plunge pool – and overtime the waterfall will retreat backwards creating a gorge.

The river has been straightened and widened over time to allow navigation for industry and trade.

River flooding might bring a lot of effects to an area. They are worse in LICs as the countries are unable to prepare, or protect. These impacts can be social, economic or environmental.

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Impacts of flooding:

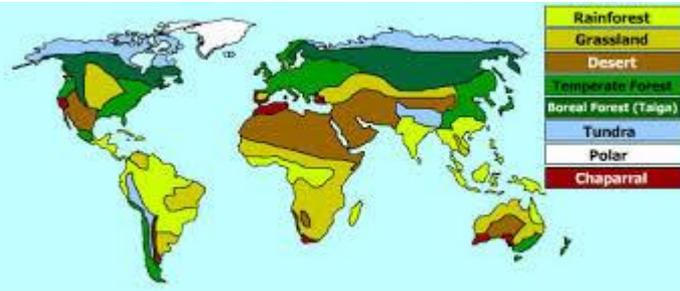
Banbury Floods: What has been done to reduce flooding?

What were the costs/benefits?

The Living World:

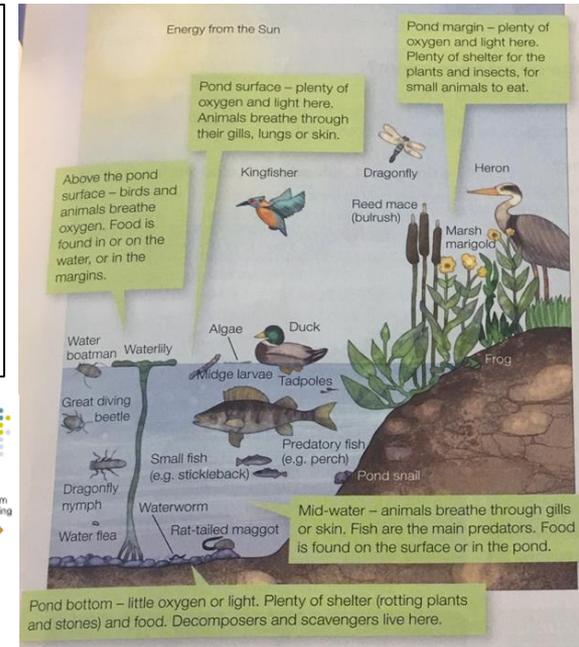
Useful links:

- http://www.worldbiomes.com/biomes_map.htm http://www.ducksters.com/science/ecosystems/world_biomes.php
- <https://www.bbc.co.uk/education/topics/z2tqwx5>
- http://www.softschools.com/facts/biomes/desert_biome_facts/167/
- http://www.softschools.com/facts/biomes/tropical_rainforest_biome_facts/160/



Ecosystems can also be small scale. By definition an ecosystem is an environment where there is an interaction/relationship between the **abiotic** (non living, e.g. soils/rain/rocks), and the **biotic** (living, e.g. plants/animals) components.

- A freshwater pond is a good example of a small scale ecosystem. Check out the interactions....



A **biome** is a large scale ecosystem. They are closely linked to climate belts globally. E.g. **Deserts** are found at 22.5°N/S where pressure is high so air sinks leading to a lack of precipitation. **Rainforests** are found along the equator, in areas of low pressure where the air rises, leading to condensation and precipitation.

In an ecosystem there are three elements to its existence.

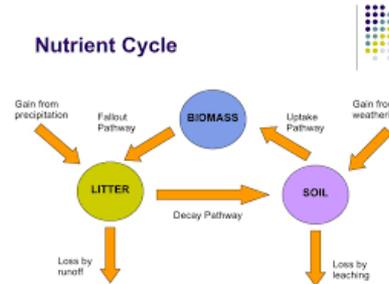
- **A decomposer** (breaks down the waste e.g. Fungi)
- **A producer** (produces their own food e.g. grass)
- **A consumer** (eats the producer. Primary consumers may include snails/grasshoppers. Secondary consumers then refer to an animal that eats the primary consumer).

These three elements interact to recycle nutrients. Each one depends on one another.

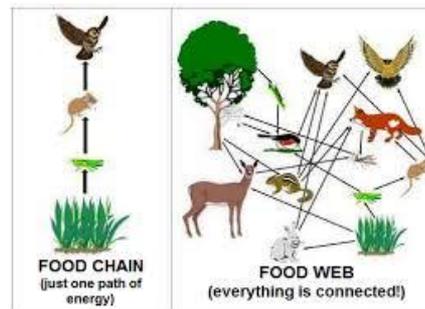
Humans can upset the balance of ecosystems by introducing new consumers/producers; or removing consumers/producers. E.g. the introduction of the Grey Wolf in Yellowstone National Park meant that there was more competition for consumers, leading to an imbalance further down the food chain.

See an example of a food chain & food web opposite.

Nutrient Cycle



The nutrient cycle in an ecosystem is also incredibly important, and emphasises the links between the **abiotic** and **biotic** elements of the ecosystem.



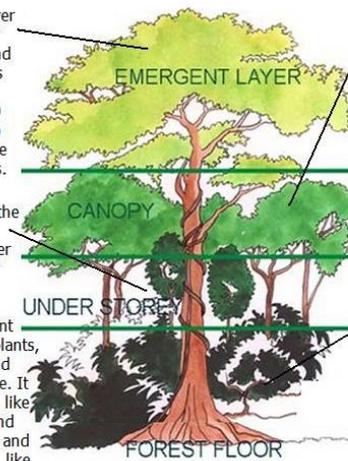
Carnivores (meat eaters), **herbivores** (plant eaters) and **omnivores** (meat & plant eaters) are all important too.

Biome case study 1: The Tropical Rainforest: The Amazon Rainforest:

Emergent trees have buttress roots to anchor them to the ground. Trees in the canopy/emergent layer will have drip tips to direct water to the floor.

The emergent layer is the highest layer of the rainforest and consists of the tops of the tallest trees (ranging up to 270 ft). It is a home to many birds, like the Macaw, and insects.

The understory is the second layer of the rainforest. It is under the leaves, but over the ground. It has very little sunlight, so it has limited plant growth, but some plants, like small shrubs and small trees, live here. It also houses insects, like bees and beetles, and reptiles, like snakes and lizards. Some birds, like antbirds, nest here while some large animals, like jaguars, prey for food here.



The canopy is the third layer of the rainforest and consists of the upper parts of the tree (65-130ft high!). It is a home to many insects and many birds, like the toucan, macaw, & cuckoo. It is also home to many mammals, like the howler monkey and the orangutan. This layer also houses many reptiles, like snakes and lizards, and plants, like vines, mosses, and orchids.

The forest floor is the bottom layer of the rainforest. It is a home to MANY different types of animals. Many insects and spiders, like tarantulas, live here. In general, the largest animals of the rainforest live here, like gorillas, anteaters, tapirs, and people.

Rainforests hold over 1/2 of the world's species of animals and plants. They are complex ecosystems with high levels of interdependence. The climate of the rainforest (humid, wet, high temperatures) means that there is huge competition between species, and therefore there is a high level of adaptation from plants and animals.



Causes of deforestation:

Logging – this accounts for 3%. Timber companies are interested in trees such as mahogany and teak and sell them to other countries to make furniture (selective logging). Smaller trees are often used as wood for fuel or made into charcoal.

Mineral extraction – Some of the minerals that richer countries need are found beneath rainforest. In the Amazon, mining is mainly about gold. In 1999, there were 10, 0000 hectares of land being used for gold mining. Today, the area is over 50,000 hectares.

Energy development – The vast Amazon River has encouraged dams to be built to generate hydroelectric power. This involves flooding large areas of rainforest.

Commercial Farming: Cattle. This accounts for 80% of tropical rainforest destruction in Brazil. Crops. The forest is being cleared to make way for vast plantations, where crops such as bananas, palm oil, pineapple, sugar cane, tea and coffee are grown. The cultivation of soy bean has also caused a lot of clearance in the Amazon. The amount of rainforest cleared for this crop doubled between 1990 and 2010.

Road building: Roads are needed to bring in equipment and transport products to markets, but road building means cutting great swathes of rainforest. The Trans-Amazonian highway began construction in 1972 and is 4000km long.

Impacts of deforestation:

Environmental:

- The Amazon stores around 100 billion tonnes of carbon, releasing this will contribute to global warming.
- Soil erosion is caused by deforestation which means that the soil loses its fertility and it takes a long time for things to grow.
- Loss of biodiversity – estimations that the Amazon could lose between 30-40% by 2030.

Economic:

- Wealth brought to countries that were very poor.
- Farming makes a lot of money for countries in the rainforest (E.g. Brazil made \$6.9b in 2008).
- Mining creates jobs for people; and logging contributes to Brazil's economy.
- Decline of native (indigenous) tribes.

Sustainable management of deforestation:

Selective logging: Only some trees are cut down, reducing the pressure.

Replanting (afforestation) – replanting trees that are cut down.

Conservation: National parks/nature reserves set up to restrict activity.

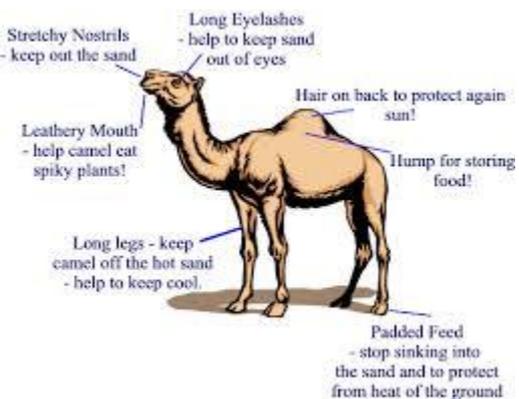
International policies: Putting laws into place internationally to encourage conservation. This could relate to countries only using sustainably sourced materials.

Education: Educating locally and globally to encourage sustainable use of the rainforest.

Biome case study 2: The Desert: The Thar Desert.



The desert is an ecosystem of harsh and extreme climatic conditions. During the day temperatures can hover near to 40°C, and during the night in some areas they can drop below freezing (due to lack of cloud cover because of the area being in high pressure zone). Deserts make living conditions difficult for both animals and plants, and adaptations are essential for these to survive.

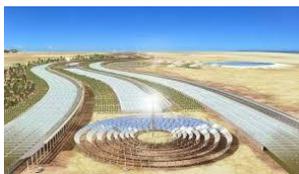


Very low biodiversity in the desert, as seen by the image above.



1. Spikes instead of leaves - reduces moisture loss (and helps protect from predators!)
2. Cactus have fleshy stems to soak up lots of water (pleats in stem help to increase storage space!)
3. Thick, waxy skin - helps to reduce transpiration and loss of moisture
4. Long roots to search for underground water and a large number of long but shallow roots to collect water when it does rain
5. Some plants have a rapid life cycle - grow very quickly when rain does come
6. Some plants have bulbs on their roots in which they store water!

Grand plans by the EU to use land in the Sahara Desert for a vast solar farm.



Development opportunities:

1. **Mineral resources** – Gypsum, Kaolin, Limestone
2. **Solar energy** – 12 or more hours of bright sunshine and cloudless skies everyday are perfect conditions. Badla Solar Farm produces enough energy to power factories and develop the Thar desert are
3. **Wind energy**- Jaisalmer Wind Farm
4. **Coal**- large coal mine owned by the Chinese however enough coal to provide energy to India for 200 years and allow development of factories
5. **Tourism** – camel trekking in the desert, Jaisalmer Fort to visit as a cultural experience
6. **Commercial Farming** – water is essential so farming only happens where there is enough water. Indira Gandhi Canal allows water to be used for commercial farming. Crops include, sesame, mustard and cotton.

Challenges to development:

- Extreme temperatures – daily temperatures can be as high as 40°C due to lack of cloud cover, and freezing at night.
- Inaccessibility – due to the sheer size of the desert it is often expensive and long distances for people to access the whole desert. Use of transport is limited due to poor quality roads and traditional use of camels
- Water supply – low annual rainfall (less than 70mm in some places) – unpredictable rainfall, and huge demand on rainfall/water means it is difficult to provide enough water for all.

Desertification is a huge threat to the desert ecosystem. As pressure is placed on land by human and physical factors such as:

- Removal of vegetation cover.
- Overgrazing.
- Uncontrolled fuel wood collection.
- Unsustainable farming practice and loss in fertility of soil.
- Excessive tree felling.

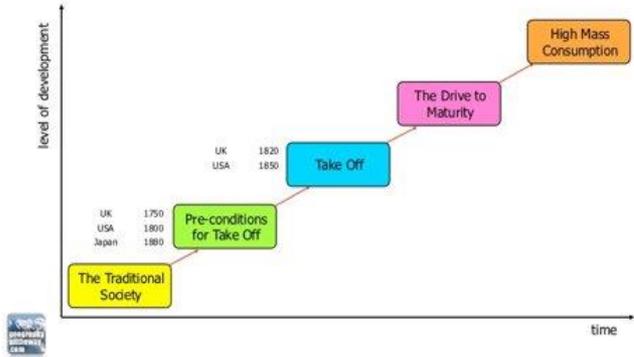
It can be reduced by:

- Appropriate technology (e.g. Stone Lines used to reduce soil erosion) & planting pits
- Tree planting (to hold soil in place)
- Water & soil management (E.g. restricting overuse of water for irrigating crops) Great Green Wall

Where is Rio?

Rio de Janeiro is located in South America. It is located in south Brazil. It borders the Atlantic Ocean.

- G. Why is Rio de Janeiro a global city?**
- Until 1960 Rio was the capital of Brazil however this has not changed to Brasilia. Rio is still very important.
 - Brazil is in an Emerging Developing Country. This means that it is experiencing rapid economic growth
 - Rio is a mega-city. This means it has a population of over 10 million people.
 - The exact population of Rio is unknown however it is over 18 million.
 - Rio is the cultural capital of Brazil with an annual carnival and over 50 museums. It is also a UNESCO World Heritage Site.
 - In 2014 the world cup took place in Rio
 - In 2016 Rio hosted the Olympics.



- F. What is Rostow's model?**
- Human Influence**
- Currently Nigeria is in stage 3. This is where secondary industries dominate.
 - In the future Nigeria may develop to stage 4
 - They will do this by becoming more self-reliant by improving education.
 - This will lead to increase in tertiary employment such as nursing and IT support.

Positive impacts of urbanisation

- Employment opportunities in banking, finance and insurance.
- Good infrastructure (roads) which link different areas together.
- Better quality of life
- More jobs in secondary and tertiary sectors

Year 11 OCR A Term 1 – People of the world

- H. Where do people in Rio come from?**
- Migration accounts for 65% of urban growth in Rio de Janeiro. Largely people come from Europe, in particular Portugal because they speak Portuguese in Rio.
 - However, large numbers of people come from other parts of Brazil including the Amazon Basin because there are better jobs, higher income, improved medical care and education.
 - People also travel from other countries in South America- Argentina/ Bolivia due to the cultural opportunities in Rio.
 - Many people come from the USA and UK. These are largely people who are highly skilled and are attracted due to the growing secondary and tertiary industry (specifically in oil exploration).
 - Many people come from China and Japan, this is because Rio de Janeiro has a growing finance and banking industry which is well paid.

I. How has migration influenced the character and way of life within Brazil?

Copacabana Beach: The beaches in Brazil are stunning and so are the natural surroundings. Rio is one of the most visited cities in the southern hemisphere. It is a UNESCO world Heritage Site which means that it should be protected from environmental harm.

Crime and government: Due to over population, there are not many jobs which means that many people must resort to crime. As a result, gangs often rule over the favelas. Police have been sent in to pacify these slum areas (make peaceful) with the aim to improve quality of life for people living there.

Negative impacts of urbanisation

- 40% of people living in favelas do not have a job.
- Due to unemployment there's not much tax being paid by a large proportion of the population.
- Not enough houses – 40% of population live in favelas (illegal squatter settlements).
- Only 50% of people have access to healthcare.
- Air pollution – 5,000 deaths/year

K.	
Sustainable Management in Rio- Transport	Due population growth, means that the use of cars has grown by 40% in the last 10 years. They have expanded the public transport system which is a metro that runs under the bay and connects various parts of Rio. More and more people are using the metro system and buses; however, they are no extremely busy as there aren't enough services to go around. They have also put tolls into the city centre, this means that traffic is reduced because people don't want to pay. Lastly, they have made busy roads one way in rush hour. Car use has reduced slightly, however many still use cars for their own safety.
Sustainable Management in Rio- Housing	Hillside were secured and new health and education facilities were built in these areas, however the budget of US\$1Billion is probably not going to be enough to do this in every Favela. It has also led to rent rising and many people can't afford to live in their old homes.

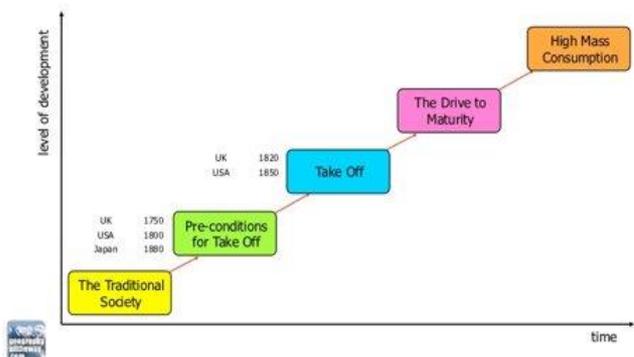
Sustainable Management in Rio- Waste

As we saw before, the largest problems concerning waste disposal are in the Favelas. Many are built on steep slopes and have few proper roads meaning that it is difficult for waste collection lorries to get through. Imagine if rubbish in Swindon wasn't collected every week – it would pile up outside our houses, attracting rats and foxes. It would also really smell. The waste in Rio does the same, it builds up and pollutes the water system spreading diseases like Cholera. To reduce this, a power plant has been set up near the University or Rio which uses methane gas from rotting rubbish to produce energy. This is more environmentally friendly than a lot of electricity production, however it does release some methane which is a greenhouse gas. It consumes 30 tonnes of rubbish a day (that's 2 busses) and produces electricity for 1000 homes. However, because of the methane gas it can be a stinky business.

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3. The Spanish Empire 1528-1555

Pizarro – First Expedition

Pizarro was with Balboa when they reached the Pacific. Pizarro was impressed by Cortes and his success in Mexico.

Tales of vast wealth in Peru encouraged Pizarro to find his own success.

November 1524 – First expedition

Not a success. Only reached Columbia before bad weather, lack of food and attacks by hostile natives forced Pizarro to turn back. The mangrove swamps put off any idea of establishing a settlement too.

Impact of Gold and Silver on Spain

Used to make 8 sided coins – ‘pieces of eight’. Widely accepted in Europe due to high silver content.

The Crown took 25% of bullion coming into Spain .

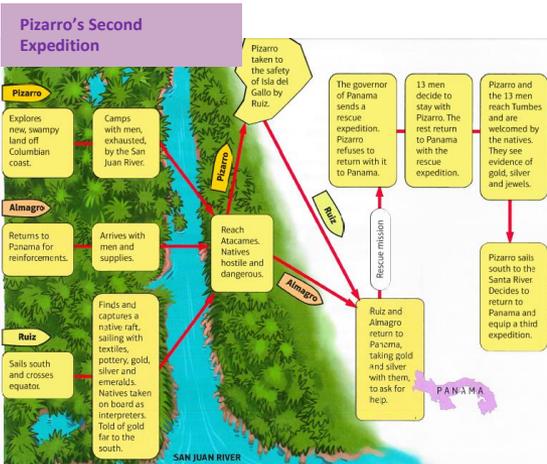
75% of wealth went to Spanish merchants and conquistadors.

European traders put up prices for the wealthy Spanish merchants.

High prices led to inflation – workers demanded higher wages in Spain.

Charles I invested money in the military – not industry and business.

Spanish were getting wealthy by finding bullion instead of making products and selling.



Pizarro's appeal to the Spanish King Charles I

In 1528 Pizarro returned to Spain with evidence of Inca wealth, including Llamas, silver and gold. Having been refused permission to launch a third expedition by the governor of Panama, he appealed to Charles I. Pizarro received a licence, the *Capitulacion de Toledo*, in July 1529, authorising him to conquer Peru.

Governing the Empire

The Spanish needed to find a way to govern the discovered territories to restore peace and stability. They needed to make sure basic essentials were available, laws were in place, conquistadors didn't fight among themselves and ensure daily life was managed effectively.

Bartolome de las Casas – was a priest that tried to encourage the fair treatment of natives in the New World. 1527 he wrote a book 'A Short Account of the Destruction of the Indies'.

The New Laws:

- It was made illegal to enslave natives.
- The amount of tribute that could be collected was limited.
- Encomiendas had to be passed back to the Spanish government on the death of the encomendero.

The role of the Viceroy:

The Council of the Indies appointed two viceroys to govern Spanish territories: one in Mexico city and one in Lima (Peru). They acted on behalf of the government. Justice was managed through the audiencias (courts), with judges who were independent of the viceroys.

The role of the **encomienda system**:

This was imposed officially across the Spanish Empire. An encomienda was land granted to a Spaniard, who was then called an encomendero. He could demand tribute from natives. In return he was responsible for their protection and their conversion to Christianity.

Significance of the New Laws 1542:

Laws introduced to improve the rights of native people, but encomenderos opposed them and the viceroy of Peru refused to implement them. Revolts in Peru: the most serious in 1544 had to be put down by the Spanish government and led to a temporary halt in the Spanish conquest of the New World in 1550.

Although forced to suspend the laws, Charles I insisted encomiendas be passed back to the crown on the death of an encomendero. Natives continued to be exploited in the New World.

Date	Event
Dec 1518	Smallpox epidemic in Haiti.
Sept 1520	First cases of smallpox in Mexico
1525-1527	Smallpox spreads along the Caribbean coast.
1527	Smallpox reaches Peru. Huayna Capac dies from smallpox after returning to help his people.
1529	Civil War breaks out between Huascar and Atahualpa (Huayna Capac's son).
April 1532	Huascar is captured and killed. Atahualpa takes over Cuzco.
Nov 1532	The Battle of Cajamarca – Pizarro's men hid in the town square of Cajamarca. When Atahualpa's men entered the town they met with a priest who showed them a bible. Atahualpa threw the bible on the floor which was the signal needed for Pizarro's men to attack and they took Atahualpa prisoner.
July 1533	Atahualpa promised to fill his prison with treasure in order to secure his release. Although he did this, the Spanish still sentenced him to death. On 26 th July he was garrotted.
1533	Manco made puppet ruler of the Inca Empire.

Revolt of the Incas 1536
The Spanish saw Manco as a puppet king who would rule on their behalf. When Manco escaped from the Spanish he assembled an army and attacked the base at Cuzco.
The Siege of Cuzco 1536-1537 -10,000 Inca warriors faced 150 Spanish and 1000 native allies. -The Inca warriors broke into town, burning buildings to try to drive out the Spanish, but the Spanish were able to put the fires out. -The Spanish used their cavalry to attack the Inca warriors. -The Spanish captured the fortress of Sacsahuaman from the Incas, which the Inca army then besieged. -The siege ended when Spanish forces exploring Chile returned. -Manco withdrew and established a separate kingdom which lasted until 1572.

Founding of La Paz, 1548

La Paz was founded to symbolise the end of the revolt and to demonstrate that Spain had the overall authority in the New World, not the conquistadors. It became the administrative centre of the Spanish Empire. The Viceroy and the audiencias (courts) were based here. It was founded close to trade routes to ensure it maintained control over the silver mines based in Potosi and Oruro.

Discovery of silver in Bolivia and Mexico

By 1550 silver had been discovered in Potosi (Bolivia) and in Guanajuato and Zacatecas (Mexico). Some was sent back to Spain but most was kept by the conquistadors. Large mining towns developed to house workers for the mines. Colonisation of the New World increased as adventurers, merchants, speculators and their employees came in search of wealth. 25% of silver shipped to Spain went straight into the treasury.

Conquistador Revolt in Peru 1544

A serious revolt took place as the encomenderos were unhappy with the New Laws. This revolt was led by Gonzalo Pizarro, brother of Francisco Pizarro. It was a success and Almagro ruled over the Inca territory for 2 years. The arrival of a Spanish army resulted in his execution and the restoration of Spanish authority. The revolt raised the issue of control. Spain needed to govern its territories and control the rebellious conquistadors and encomenderos. This led to the founding of La Paz in 1548.

Pirates and Privateers

Spanish treasure was a target for Pirates and Privateers (funded by government/monarchy).

The ships were easy to find as they took well-defined and predictable routes across the Atlantic.

War with France (1542-46) meant Spain had to adapt ships and develop systems to deal with French privateers.

Galleons patrolled the sea routes and started carrying treasure as they were well armed.

Treasure fleet system developed: the **Tierra Firme** (went to S. America) and the **New Spain** (went to Mexico).



Growth of Seville

All goods imported to Europe had to go through Seville. Merchants travelled from all over Europe to buy and sell goods. This gave Spain a monopoly over trade with the New World.

The Slave Trade

Due to the number of deaths of natives in the New World, there was a labour shortage. Under the Treaty of Tordesillas, Spain could not directly get slaves from W. Africa. Spanish merchants could get licences (asientos) to supply slaves to the New World. Licences sold to the highest bidder who could then buy from Portuguese merchants and sell to merchants in the New World.

Casa de Contratacion (House of Trade)

Established in 1503 by Isabella. Collected colonial taxes. Approved voyages of exploration and trade and kept secret information on new lands and trade routes. Licenced captains of ships. In theory, no Spaniard could sail anywhere without the approval of the Casa.

Council of the Indies

Formed in 1524 and based in Spain. Controlled all matters concerning the New World. Messages received from Viceroys would be discussed and advice given to the King. Decisions made were sent from the Council to the Viceroys. This was Spain's way of trying to maintain control over its empire in the New World.

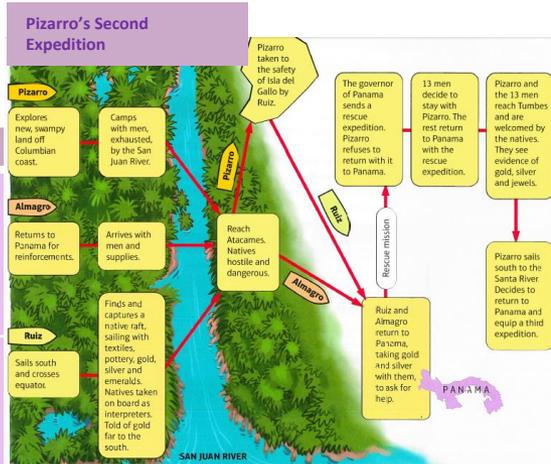


3. The Spanish Empire 1528-1555

Pizarro – First Expedition

Pizarro

November 1524 – First expedition



Governing the Empire

The Spanish needed to

Bartolome de las Casas –

The New Laws:

The role of the Viceroy:

(courts), with judges who were independent of the viceroys.

The role of the **encomienda system**:

Significance of the New Laws 1542:

Pizarro's appeal to the Spanish King Charles I

Pizarro and the Conquest of the Inca Empire

Date	Event
Dec 1518	
Sept 1520	
1525-1527	
1527	
1529	
April 1532	
Nov 1532	
July 1533	
1533	

Revolt of the Incas 1536

The Siege of Cuzco 1536-1537



Impact of Gold and Silver on Spain

Used to make 8 sided coins – ‘pieces of eight’. Widely accepted in Europe due to high silver content.

The Crown took 25% of bullion coming into Spain .

75% of wealth went to Spanish merchants and conquistadors.

European traders put up prices for the wealthy Spanish merchants.

High prices led to inflation – workers demanded higher wages in Spain.

Charles I invested money in the military – not industry and business.

Spanish were getting wealthy by finding bullion instead of making products and selling.

Founding of La Paz, 1548

Growth of Seville

The Slave Trade

Casa de Contratacion (House of Trade)

Discovery of silver in Bolivia and Mexico

Conquistador Revolt in Peru 1544

Pirates and Privateers

Spanish treasure was a target for



The ships were easy to find as they took well-defined and predictable routes across the Atlantic.

War with France (1542-46) meant Spain had to adapt ships and develop systems to deal with French privateers.

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Council of the Indies

Balboa the Conquistador

1509
Balboa rescues Spanish expedition in trouble on mainland America.

1510
Founds first permanent settlement on mainland America, Santa Maria de la Antigua del Darien.

1511
Confirmed, by King Ferdinand, as captain general and governor of Darien.

1513
Expedition across Isthmus of Panama – finds the Pacific and claims it and surrounding lands for Spain.

1514
Plans an expedition to sail south on the Pacific. Replaced as governor by Pedrarias.
Arrested for treason, tried and beheaded.

Pedrarias and Espinosa: the significance of Panama

Pedrarias and Espinosa explored the south coast separately, but both ended up on the same point on the Pacific coast – this became Panama.
Panama significant because:
-Situating on Pacific coast – closest in distance to Nombre de Dios on the Caribbean Sea.
-a route between Panama and Nombre de Dios was the quickest way of moving goods, people and messages between the Pacific and the Caribbean sea.
-land surrounding Panama was fertile and had sea rich in fish.
-Panama was a port, well situated for Spanish treasure ships to off-load.

Velázquez conquers Cuba

1511 – Hatuey a native chief living in Haiti, flees to Cuba with 400 natives to escape Spanish cruelty. Velázquez and 300 conquistadors pursue them.

1512 – After strong native resistance, Hatuey is captured and burned alive.

1513 – Massacre at Canao – thousands of natives killed.

1514 – Conquest of Cuba complete. City of Santiago de Cuba founded and becomes capital of Cuba.

1515 – City of Havana founded.

2. The Conquistadors 1513-1528



Cortes' expedition to Mexico 1519

1519 February – Cortes sails from Cuba, despite Velázquez attempts to stop him.

March – Lands on Yucatan Peninsula and claims land for Spain.

April – Fights Tabascan natives and takes control of the city of Pontonchon. Makes peace with Tabascans. Given Malinche.

July – Re-establishes a Spanish settlement at Vera Cruz. Cortes also sinks his ships.

August – Cortes is met by cheering natives at Cempoala and allies with them.

September – Fights Tlaxcalans – enemies of the Aztecs – makes peace and allies with them.

Aztec religion



Quetzalcoatl

What beliefs did the Aztecs have towards the Spanish?

Some Aztecs wanted to treat Cortes and the Conquistadors as returning gods; others as dangerous invaders. Aztecs worshipped many gods. They were usually connected to nature. Human sacrifices were common among the Aztecs. The god Quetzalcoatl was the god of life. Aztecs believed he had vanished into the sea and would one day return. Many Aztecs believed that Cortes and the conquistadors were returning gods. Cortes and the conquistadors appeared from the same sea, and in the same spot, from which Aztecs believed Quetzalcoatl disappeared.

Magellan

Magellan and his ships managed to circumnavigate the world between 1519 and 1522 and claim the Phillipines for Spain.

This was important because:

- It meant that Spain could claim the Spice Islands – as they had found a western route to it.
- It brought prestige to Spain – Magellan and his ships were the first to complete a voyage of global circumnavigation.

Cortes removed as governor

Cortes had many enemies which were causing him problems back in Spain. In 1528 he was removed as governor because:

- Velázquez became a determined enemy.
- Rumours of greed reached the Spanish court.
- The king wanted to control Cortes.

In 1528 Cortes returns to Spain. Charles I was impressed with what Cortes had found but did not trust him. Cortes was no longer governor but he kept his land. An enemy of Cortes was installed so they could keep an eye on both, and to prevent one gaining too much power.

Date Event

1519

Feb Cortes sails from Cuba

March Lands on Yucatan peninsula and claims land for Spain

April Fights Tabascan natives and takes control of Pontonchon. Makes peace with Tabascans. Given Mayan woman, Malinche.

July Re-establishes Spanish settlement at Vera Cruz. Sinks his ships.

August Met by cheering natives at Cempoala and allies with them.

Sept Fights Tlaxcalans – enemies of the Aztecs – makes peace and allies with them.

October Cortes and his forces massacre 3000 natives in the town of Cholula.

8th Nov Cortes and his forces enter Tenochtitlan – welcomed by Montezuma.

14th Nov Montezuma taken prisoner by Cortes – becomes a puppet emperor.

1520

April Spanish troops arrive at Vera Cruz under instructions from Velázquez, intending to arrest Cortes.

May Cortes leaves Tenochtitlan to oppose Velázquez's troops. Cortes deputy, Alvarado, massacres thousands of Aztec nobles.

24-29 June Spaniards trapped in Tenochtitlan as Aztecs rise against them.

29th June Montezuma killed.

30th June The Night of Tears: Spaniards are massacred as they flee from Tenochtitlan and spend nearly a year re-grouping and planning.

1521

22nd May Battle for Tenochtitlan begins.

1st Aug Spaniards fight their way into the centre of Tenochtitlan.

13th Aug Tenochtitlan falls to the Spaniards and the Aztecs surrender.

Cortes strengthens Spanish control

In the years to 1528, Cortes strengthened control in many ways:

- He continued killing Aztecs and natives that supported them.
- He took tribute from remaining Aztec chiefs.
- Tenochtitlan was rebuilt on the ruins of the Aztec city.
- He encourages exploration and establishment of new communities.
- Agriculture was developed.
- Industry was developed.
- He helped with the spread of Christianity.

Aztec priests killed

Temples pulled down

The Spanish impose the encomienda system of landholding

The fall of the Aztec Empire

Aztec leaders killed and Aztecs ruled by Spaniards

Millions of Aztecs die from smallpox

Christian priests and friars convert Aztecs to Christianity

Forced labour kills millions of Aztecs

Balboa the Conquistador

2. The Conquistadors 1513-1528



Date | Event

1519

Feb

March

April

July

August

Sept

October

8th Nov

14th Nov

1520

April

May

24-29 June

29th June

30th June

22nd May

1st Aug

13th Aug

Cortes' expedition to Mexico 1519

1519 February –

March –

April –

July –

August –

September –

Aztec religion

What beliefs did the Aztecs have towards the Spanish?



Quetzalcoatl

Cortes strengthens Spanish control

Velázquez conquers Cuba

1511 –

1512 –

1513 –

1514 –

1515 –

Magellan

Cortes removed as governor

Aztec priests killed

Temples pulled down

The Spanish impose the encomienda system of landholding

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Keywords		What we are learning in this unit		B.	The 5 Pillars - Salah		
Tawalla	Showing love for God and for those who follow Him	A. The 5 Pillars and 10 Obligatory Acts B. Salah C. Sawm D. Zakah E. Hajj F. Jihad G. Id-ul-Adha H. Id-ul-Fitr		What is it?	<ul style="list-style-type: none"> “Salah is a prescribed duty that has to be performed at the given time by the Qur’an” Muslims pray 5 times per day and this allows them to communicate with Allah. The prayers are done at dawn (fajr), afternoon (zuhr), late afternoon (asr), dusk (maghrib) and night (isha) Muslims face the holy city of Makkah when paying. 		
Tabarra	Disassociation with God’s enemies			A.	5 Pillars of Islam and 10 obligatory acts	Wuzu	<ul style="list-style-type: none"> The washing process to purify the mind and body for prayer Muhammad said the key to Salah is cleanliness Hands, arms, nose, mouth, head, neck and ears are cleaned as well as both feet up to the ankle.
Khums	The obligation to pay one-fifth of acquired wealth			What are the 5 pillars	<ul style="list-style-type: none"> 5 key practices or duties for Muslims Both Sunni and Shi’a keep these (Shi’a have them as part of the 10 obligations) They are seen as pillars “holding up the religion” and are all of equal importance 	Rak’ahs and recitations	<ul style="list-style-type: none"> These are the movements that Muslims make during prayer Takbir – raise hands to ears and say ‘Allahu Akbar’ Qiyam – Standing, Muslims recite Surah Then bow to the waist saying “Glory be to my Great Lord and praise be to Him” Then sink to their knees saying “Glory be to my Lord, The Most Supreme...”
Lesser jihad	The physical struggle or holy war in defence of Islam			What are the 10 obligatory acts	<ul style="list-style-type: none"> There are 10 obligations for a Muslim according to the Shi’a branch of Islam. These include prayer, fasting, almsgiving, pilgrimage, jihad, khums, directing others towards good, forbidding evil, tawalla and tabarra 	Salah at home	<ul style="list-style-type: none"> Salah is a big part of family life Meals and other activities are usually scheduled to fit around prayer times Families pray all together and might have a room set aside for prayer
Greater jihad	The daily struggle and inner spiritual striving to live as a Muslim			Shahadah	<ul style="list-style-type: none"> Shahadah is the first of the 5 pillars It is the Muslim declaration of faith “there is no God but Allah, and Muhammad is His messenger” This is a statement that Muslims reject anything but Allah as their focus of belief It also recognises that Muhammad has an important role and his life is an example to follow 	Salah in the mosque	<ul style="list-style-type: none"> All mosques have a qiblah wall which is to show where to face Makkah Men and women pray in separate rooms at the Mosque
Sunni	Muslims who believe in the successorship of Abu Bakr, Umar, Uthman and Ali as leaders after the Prophet Muhammad			Jumma	<ul style="list-style-type: none"> Jumma is congregational prayer held on a Friday at the mosque where the imam leads the prayer Praying together as a community develops the feeling of unity amongst Muslims Men are obliged to attend unless they are sick or too old Women do not have to go – they may pray at home instead 		
Shi’a	Muslims who believe in the Imamah, leadership of Ali and his descendants			Differences between Sunni and Shi’a	<ul style="list-style-type: none"> Shi’a Muslims combine some prayers so they may only pray 3x a day Shi’a use natural elements e.g. clay where their head rests 		
Niyah	Intention during prayer - having the right intention to worship God						
Du’a	A personal prayer that is done in addition to Salah e.g. asking Allah for help						
		<i>Jihad</i>					
Lesser Jihad		<ul style="list-style-type: none"> Originated when Prophet Muhammad and early Muslims were being attacked and oppressed by the Meccans and had no choice but to engage “Fight in the way of God those who fight against you but do not transgress” Conditions for declaration <ul style="list-style-type: none"> self-defense proportionate legitimate authority no harm to civilians 					
Greater Jihad		<ul style="list-style-type: none"> A struggle within oneself to follow the teachings of Islam and be a better person e.g. perform the Five Pillars, follow Sunnah and avoid temptation “encourage what is right and forbid what is wrong” 					



Keywords		What we are learning in this unit		B.	The 5 Pillars - Salah		
Tawalla		A. The 5 Pillars and 10 Obligatory Acts B. Salah C. Sawm D. Zakah E. Hajj F. Jihad G. Id-ul-Adha H. Id-ul-Fitr		What is it?			
Tabarra				A.	5 Pillars of Islam and 10 obligatory acts	Wuzu	
Khums				What are the 5 pillars		Rak'ahs and recitations	
Lesser jihad				What are the 10 obligatory acts		Salah at home	
Greater jihad				Shahadah		Salah in the mosque	
Sunni				<i>Jihad</i>		Jummah	
Shi'a						Lesser Jihad	
Niyah						Greater Jihad	
Du'a			Differences between Sunni and Shi'a				



The 5 Pillars - Zakah	
The role of giving alms	<ul style="list-style-type: none"> • Muslims believe it is their duty to ensure Allah's wealth has been distributed equally as everyone is the same • The Qur'an commands to give to those in need
The significance of giving alms	<ul style="list-style-type: none"> • Giving 2.5% of savings/wealth to charity • Wealth can cause greed which is evil, so Zakah purifies wealth – wealth is given by God and must be shared • The Prophet Muhammad practiced Zakah as a practice in Medina • Given to the poor, needy and travellers • Sadaqah is giving from the heart out of generosity and compassion
Khums	<ul style="list-style-type: none"> • Shi'a Islam – one of the 10 obligatory acts • 20% of any profit earned by Shi'a Muslims paid as a tax • Split between charities that support Islamic education and anyone who is in need • "know that whatever of a thing you acquire, a fifth of it is for Allah, for the Messenger, for the near relative, and the orphans, the needy, and the wayfarer"

The 5 Pillars - Sawm	
The role of fasting	<ul style="list-style-type: none"> • Fasting during Ramadan (9th month in Muslim calendar) • Muslims give up food, drink, smoking and sexual activity in daylight hours • Pregnant people, children under 12, travellers and elderly people are exempt from fasting.
The significance of fasting	<ul style="list-style-type: none"> • Ramadan is believed to be the month that Prophet Muhammad began to receive revelations of the Qur'an • Helps Muslims to become spiritually stronger
Reasons for fasting	<ul style="list-style-type: none"> • Obeying God and exercising self-discipline • Develops empathy for the poor • Appreciation of God's gifts • Giving thanks for the Qur'an • Sharing fellowship and community with other Muslims
Night of power	<ul style="list-style-type: none"> • The night when the Angel Jibril first appeared to Muhammad and began revealing the Qur'an. • The most important event in history – "better than a thousand months" [Surah 97:3] • Laylat Al-Qadr is the holiest night of the year. Muslims try to stay awake for the whole night to pray and study for the Qur'an

The 5 Pillars - Hajj	
The role of pilgrimage	<ul style="list-style-type: none"> • A pilgrimage to Makkah which is compulsory for Muslims to take at least once as long as they can afford it and are healthy
The significance of pilgrimage	<ul style="list-style-type: none"> • God told Ibrahim to take his wife and son on a journey and leave them without food or water • Hajira ran up and down two hills in search of water, could not find any and prayed to God. Then water sprung from the ground. This is the Zamzam well • When Ibrahim returned he was commanded to build the Ka'ba as a shrine dedicated to Allah • Hajj is performed in the month of Dhu'l-Hijja
Actions	<ul style="list-style-type: none"> • Ihram – dressing in two pieces of white cloth • Circling the Ka'aba 7 times (tawaf) • Drinking water from the Zamzam well like Hajar • walking between Al-Safa and Al-Marwa hills seven times • Throwing stones at 3 pillars (jamarat) to represent casting out the devil and remembering Ibrahim throwing stones at the devil to drive him away • Asking Allah for forgiveness at Mt Arafat • Collecting pebbles at Muzdalifah

Id-ul-Adha, Id-ul-Fitr, Ashura	
Id-ul-Adha Not an official holiday in UK	<ul style="list-style-type: none"> • Festival of sacrifice • Marks the end of Hajj and is a chance for whole Ummah to celebrate • Origins – Ibrahim's commitment to God in being willing to sacrifice his son, Ishmael. God was testing Ibrahim • Key events – new clothes, sacrificing an animal, visiting the Mosque. • People ask a butcher to slaughter a sheep for them and share the meat with the community
Id-ul-Fitr Public holiday in Muslim majority countries, not UK	<ul style="list-style-type: none"> • Festival of fast-breaking • Marks the end of Ramadan • Key events – Decorate homes with colourful light and banners, dress in new clothes, gather in Mosques, give gifts and money, give to the poor • Zakah ul-Fitr – donation to the poor so that everyone can eat a generous meal at the end of Ramadan.
Ashura	<ul style="list-style-type: none"> • Sunni celebration – many fast on this day which was established by Prophet Muhammad • Shi'a mourning – Husayn was murdered and beheaded. Muslims remember his death and betrayal • Key events – public displays of grief, day of sorrow, wear black, re-enactments of martyrdom, not a public holiday in Britain but Muslims may have day off school



	<i>The 5 Pillars - Zakah</i>
The role of giving alms	
The significance of giving alms	
Khums	

	<i>The 5 Pillars - Sawm</i>
The role of fasting	
The significance of fasting	
Reasons for fasting	
Night of power	

	<i>The 5 Pillars - Hajj</i>
The role of pilgrimage	
The significance of pilgrimage	
Actions	

	<i>Id-ul-Adha, Id-ul-Fitr, Ashura</i>
Id-ul-Adha Not an official holiday in UK	
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Ashura	

GCSE Unit 10 SPANISH Knowledge organiser.
Topic Life at School and College

What we are learning this term:

- A. Talking about your school and daily routine
- B. Talking about school rules and uniform
- C. Translating into English
- D. Revising 'se debe', 'hay que', 'tener que'
- E. Using questions to help your answer
- F. Using quantifiers and intensifiers

6 Key Words for this term

- | | |
|----------------|----------------------|
| 1. acabar de | 4. demostrar |
| 2. actuar | 5. las instalaciones |
| 3. la ausencia | 6. el maquillaje |

10.1F Las reglas y el uniforme

la agenda	diary, planner
el apellido	surname
el artículo	article
la ausencia	absence
buscar	to look for
el chicle	chewing gum
el daño	harm
dejar	to let, allow
demostrar	to show, demonstrate
el edificio	building
escolar	school (adj.)
firmar	to sign
el individuo	individual
las instalaciones	facilities
el intercambio	exchange
llevar	to take, carry, wear
el maquillaje	make up
los materiales	materials
mientras	while
el nombre	name
la palabra	word
el pasillo	corridor
el pendiente	earring
ponerse en contacto	to get in touch
prohibido	prohibited, banned
la puntualidad	punctuality
la regla	rule
el respeto	respect
sufrir	to suffer
traer	to bring
el trayecto	journey
el uniforme	uniform

10.1G El día en el instituto

acabar de	to have just done something
actuar	to perform
el aire libre	the open air
aislado/a	isolated
el/la alumno/a	pupil
aprender	to learn
la asignatura	subject
el bachillerato	A-level equivalent
el bocadillo	sandwich
bonito	lovely
campo de deportes	sports field
la clase	class
el/la compañero/a	classmate
corto/a	short
durar	to last
empezar	to start, to begin
el equipo	team, equipment
el estante	shelf
la evaluación	assessment
funcionar	to work, to function
ganar	to win
ir al baño	to go to the bathroom
el juego de mesa	board game
la hora de comer	lunch hour
el laboratorio	laboratory
la obra de teatro	play
la opción	option
la oportunidad	opportunity
pasar la lista	to take the register
el producto químico	chemical

Key Verbs

Acabar de To have just finished	Mejorar To improve	Maquillarse To put makeup on oneself	Hacer – to do/make	Ofrecer To offer
Acabo de I have just finished	Mejoro I improve	Me maquillo I put make up on	Hago I do	Ofrezco I offer
Acabas de You have just finished	Mejoras You improve	Te maquillas You put make up on	Haces You do	Ofreces You offer
Acaba de He/she it has just finished	Mejora He/she/ it improves	Se maquila He/she/it puts make up on	Hace s/he does	Ofrece He/she/it offers
Acabamos de We have just finished	Mejoramos We improve	Nos maquillamos We put make up on	Hacemos We do	Ofrecemos We offer
Acaban de They have just finished	Mejoran They improve	Se maquilan They put make up on	Hacen They do	Ofrecen They offer

10.1H Lo bueno y lo malo del instituto

el acoso	bullying
aguantar	to put up with
aislado/a	isolated
alegrar	to brighten up, to cheer up
aprobar	to pass an exam
el aspecto	appearance
la calefacción	heating
el castigo	punishment
el comportamiento	behaviour
la conducta	behaviour
corregir	to mark, to correct
cumplir con	to fulfil
en cuanto a	as regards
encenderse	to be turned on
enfadado/a	angry
enseñar	to teach, show
el equipo	equipment
la espalda	back
el estante	shelf
la explicación	explanation

10.1H Lo Bueno y lo malo del instituto

travieso/a	naughty, badly behaved
el trimestre	term
ya que	since, as
el fracaso	failure
golpear	to hit
hace falta	it is necessary
incómodo/a	uncomfortable
la intimidación	bullying
la pizarra	digital smartboard
mejorar	to improve
molestar	to disturb, to annoy
el ocio	leisure
la pared	wall
recordar	to remember
el repaso	revision
sucio/a	dirty
tardar	to take time, to delay

GCSE Unit 10 SPANISH Knowledge organiser.
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6 Key Words for this term

1. acabar de	4. demostrar
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10.1G El día en el instituto

_____	to have just done something
_____	to perform
el _____	the open air
aislado/a	_____
el/la alumno/a	_____
aprender	to _____
la _____	subject
el _____	A-level equivalent
el bocadillo	_____
bonito	_____
campo de deportes	_____
la _____	class
el/la compañero/a	_____
corto/a	_____
_____	to last
_____	to start, to begin
el equipo	_____
el _____	shelf
la evaluación	_____
_____	to work, to function
ganar	_____
_____	to go to the bathroom
el juego de mesa	_____
la hora de comer	_____
_____	laboratory
la obra de teatro	_____
la _____	option
la oportunidad	_____
_____	to take the register
el producto químico	_____

10.1F Las reglas y el uniforme

_____	diary, planner
el apellido	_____
el artículo	_____
la _____	absence
buscar	_____
el _____	chewing gum
El _____	harm
dejar	_____
_____	to show, demonstrate
el _____	building
_____	school (adj.)
firmar	to _____
el _____	individual
las instalaciones	_____
el intercambio	_____
_____	to take, carry, wear
el maquillaje	_____
los materiales	_____
_____	while
el nombre	_____
la _____	word
el pasillo	_____
el pendiente	_____
ponerse en contacto to _____	_____
_____	prohibited, banned
la puntualidad	_____
la _____	rule
el _____	respect
sufrir	to _____
_____	to bring
el trayecto	_____
el uniforme	_____

Key Verbs

To have just finished	Mejorar To improve	Maquillarse To put makeup on oneself	to do/make	Ofrecer To offer
I have just finished	I improve	Me maquillo I put make up on	I do	Ofrezco _____
Acabas de You have just finished	You improve	Te maquillas _____	Haces _____	_____ You offer
Acaba de He/she it has just finished	Mejora He/she/ it improves	Se maquila He/she/it puts make up on	Hace s/he does	_____ He/she/it offers
Acabamos de _____	We improve	Nos maquillamos _____	Hacemos We do	_____ We offer
Acaban de They have just finished	Mejoran They improve	Se maquilan They put make up on	Hacen They do	Ofrecen They offer

10.1H Lo bueno y lo malo del instituto

el _____	bullying
_____	to put up with
aislado/a	_____
_____	to brighten up, to cheer
up	_____
_____	to pass an exam
el aspecto	_____
la _____	heating
el castigo	_____
el comportamiento	_____
la _____	behaviour
_____	to mark, to correct
cumplir con	to _____
en cuanto a	_____
_____	to be turned on
enfadado/a	_____
_____	to teach, show
el equipo	_____
la _____	back
el estante	_____
la _____	explanation

10.1H Lo Bueno y lo malo del instituto

_____	naughty, badly
behaved	_____
el trimestre	_____
_____	since, as
el fracaso	_____
_____	to hit
hace falta	_____
_____	uncomfortable
la intimidación	_____
la _____	digital smartboard
_____	to improve
_____	to disturb, to annoy
el ocio	_____
la _____	wall
_____	to remember
el repaso	_____
_____	dirty
_____	to take time, to delay

Translation Practice. G – blue F – orange H - Green	
Irene _____ porque estudió muy poco	Irene failed because she studied very little
No practicamos _____ atletismo.	We don't practise much athletics.
Cuando _____ de clase hay mucha gente	When we change class there are too many people
No _____ bastantes ordenadores	We don't have enough computers
El instituto está _____ lejos	The school is too far away
Hay _____ posibilidades de estudiarlo	There are few possibilities to study it
Hay _____ llevar uniform	You have to wear a uniform
No _____ usar el móvil	We cannot use mobile phones
No _____ fumar	You must not smoke
Me gustaría _____ para ir al colegio	I would like to put makeup on to go to school
Soy educado y _____	I am polite and considerate
Odio _____ los deberes en casa	I hate doing homework at home
Hay muchas _____ entre los dos	There are many differences between the two
Las aulas _____ ser más grandes	The classrooms ought to be bigger
Debería _____ más ordenadores	There ought to be more computers
Deberían _____ una piscina	They ought to build a swimming pool
He _____ mis estudios	I have finished my studies
Han _____ a casa	They have returned home

Key Questions: Answer the following in your own words. Use these model answers	
¿Qué crees que es lo peor / lo mejor aspecto del instituto?	El mejor aspecto del colegio es ... porque ... El peor aspecto del colegio es ... porque ...
¿Qué cambiarías de tu colegio si tuvieras la oportunidad?	Si tuviera la oportunidad, cambiaría/me gustaría cambiar las reglas. Me gustaría cambiar el uniforme porque me parece que es tan feo, me gustaría cambiar las reglas porque son demasiadas estrictas, me gustaría cambiar unos profesores porque son tan antipáticos
En tu opinión, ¿cuáles son las características más importantes de un buen profesor?	En mi opinión, un buen profesor es siempre simpático, nunca malhumorado, es de vez en cuando gracioso, es comprensivo y cariñoso, es siempre alegre y no es nunca antipático
¿Cómo es tu colegio, las reglas, los edificios, las instalaciones?	Mi colegio es un colegio grande que tiene circa ochocientos alumnos. Está en las afueras de Swindon en los barrios de Pinehurst y Penhill. Tenemos una biblioteca nueva, una cantina acogedora, un patio grande ... En el colegio no debes comer chicle, no debes acosar, no tienes que gritar, no deberías comportarse mal... En el colegio tienes que comportarse bien, llevar el uniforme, ir al baño solo durante el recreo, llegar al colegio a hora

Key Grammar	
Forming the preterite (past tense). Always remove the –AR, -ER, -IR endings first	Remember the preterite (past) tense endings for –AR, -ER, -IR verbs. They are: -AR: -é, -aste, -ó, -amos, -astéis, -aron -ER: -í, -íste, -ió, -imos, -istéis, -ieron -IR : -í, -íste, -ió, -imos, -istéis, -ieron
Forming the conditional ('would like to' tense). Always remove the –AR, -ER, -IR endings first	Remember the conditional ('would') tense endings for –AR, -ER, -IR verbs. They are: -AR, -ER, -IR: -ía, -ías, -ía, -íamos, -íais, -ían
Using the immediate future tense IR + A + INFINITIVE	Voy a casarme = I'm going to get married Va a discutir con su padre = He / She is going to argue with his/her father
Perfect Tense ('have done...') Formed with the verb 'haber':	Formed with the verb 'haber': he, has, ha, hemos, habéis, han + past participle: -ar: -ado -er/ir: -ido e.g. <i>He estudiado = I have studied</i>

1. Gross Profit Margin	
	Explanation
Gross profit	Gross profit is the difference between a product's selling price and what it costs the business to manufacture/purchase.
Gross profit margin	The percentage of gross profit made from the sales revenue for a product.
Gross profit margin calculation.	Gross profit margin = $\frac{\text{Gross Profit}}{\text{Sales revenue}} \times 100$

2. Net Profit Margin	
There are three main types of production:	
Type of Production	Advantages and Disadvantages
Job Production	Advantages: Highly flexible; gives the customer exactly what they want. Disadvantages: High production costs. Skills may be in short supply, making it hard for the business to grow
Batch Production	Advantages: Gain some cost advantages from producing several items at once...yet still able to offer customers the colour/size they want Disadvantages: May be limited scope for automation, making production costs far higher than with flow production. Not as flexible as job production.
Flow Production	Advantages: Can automate production fully, making it highly cost effective (which should be good for customers as well as suppliers). Many customers value consistency, and flow will provide an identical product each time. Disadvantages: Likely to be expensive to set up and inflexible to use; could be a disaster if a product life cycle proves much shorter than expected. Lacks flexibility in terms of meeting individual customer needs.

2. Procurement – Working with Suppliers	
There are five main factors at the heart of a relationship between a company and its suppliers:	
Quality	Suppliers must supply high quality products to businesses, suppliers will struggle to maintain a good relationship with a company if they are not supplying good durable products. First and fore most suppliers must supply high quality materials to businesses.
Delivery	Suppliers must deliver on time to clients, there is little point supplying at the right price and with the right product, if the product doesn't arrive on time. Failing to deliver supplies on time can bring manufacturing to a halt or leave shops with empty shelves.
Availability	Suppliers must be available and able to cope with varying orders in a timely fashion and sometimes within a short timeframe. Suppliers must be flexible and aware of the needs of their customers.
Cost	Cheaper supplies mean lower variable costs and higher profit margins. Therefore, the price charged by a supplier will be a key factor in the relationship between a firm and its suppliers. Price to highly and firms may look to alternative suppliers, price to low and firms may question the quality of merchandise. Pricing is key to the relationship between supplier and firm.
Trust	Trust is key for the relationship between firm and supplier. Most business transactions are on credit and not cash – therefore suppliers have to be able to trust that a firm will make a profit and be able to pay them back in cash.
8. Placing Strategy – Managing Quality within a Business	
Type of Quality Control	Explanation:
Quality Control	Quality control is a system of inspection to try to make sure that customers don't experience a poor-quality product or service. Such controls may include Factory Inspectors at the end of a production line checking the quality of a product
Quality Assurance	Quality Assurance describes the system put into place by a company to assure quality within the production system. Every member of staff will have responsibilities to quality assure products. Over time this should lead to quality products as people become better at their roles.
Quality Culture	Quality culture means the general attitudes and behaviours among staff within a workplace is focussed on high quality production. Quality culture describes motivated, punctual, diligent and invested employees who care about the business and strive to improve it.

9. The Sales Process

Term	Definition
Customer Engagement	The attempt to make a customer feel part of something rather than an outsider.
Customer Feedback	Comments, praise or criticisms given to the company by its customers
Post-Sales Service	Service received after the purchase is completed because something has gone wrong or as a way of promoting customer engagement
Product Knowledge	How well staff know all the features of the products and service issues surrounding the products.

9. Customer Service

Great Customer Service is pivotal to any successful business, but there is far more than that to the sales process. To succeed in sales, a business must make sure it provides:

Component of Customer Service	Term
Product Knowledge	<p>Customers expect that staff will be sufficiently well trained and well-motivated to have good knowledge of the products and services being offered. In order to ensure staff, have good product knowledge, certain things are essential:</p> <p>Good Training – if businesses provide good training to staff, then staff will be knowledgeable about products and therefore will be able to improve the customer experience</p> <p>Loyal Staff – The longer staff stay working in a job the better they become. If staff only stay three to six months, they will never develop a rich understanding of the products and services that the business provides. Well managed businesses pay fairly and treat staff with respect.</p> <p>Committed Staff – Committed and enthusiastic staff are crucial to the smooth running of any business. This is affected by the quality of recruitment, the standard of training and the overall culture that exists within the company’s workforce.</p>
Speedy and Efficient Service	<p>Good customer service is designed for the customer not the company.</p> <p>Efficient service:</p> <p>Gets products to customers exactly when you want them</p> <p>Gets products to customers in good condition</p> <p>If there is anything wrong - it will be sorted out as soon as possible and considerately</p>
Customer Engagement	<p>In the world of social media, it becomes possible to try to keep customers engaged with the business on a regular basis.</p> <p>Companies engage customers in a variety of ways:</p> <p>E-Mail</p> <p>Social Media (Facebook and Instagram)</p> <p>Post</p> <p>Text</p> <p>Television/Web advertisements.</p> <p>It is vital that customers feel up to date and informed about any product innovations</p>
Responses to Customer Feedback	<p>How companies respond to customer feedback is vital, providing great customers service where people feel listened too ensures customers continue to come back and buy products from the business.</p> <p>It can cost a lot of money to persuade new customers to come advertising is expensive and it’s affects are hard to judge. Building up a reputation for responding to customer feedback can travel by word of mouth and this is much cheaper.</p>



What we are learning this term:

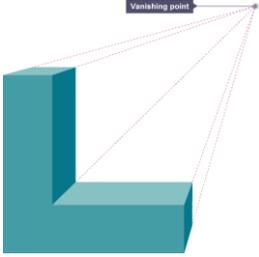
- A. One-Point Perspective B. Two-point Perspective C. Isometric Drawing
 D. Exploded Drawing E. Oblique Drawing F. CAD G. Orthographic Drawing

Design Strategies Introduction.

Design strategies are used to create technical drawings, to show an object in 3D on a 2D page. Perspective drawings show an object getting smaller in the distance. The rest are done to scale.

A. One-point Perspective Drawing

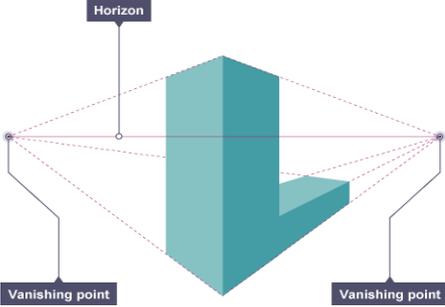
Single-point perspective shows an object from the front in a realistic way. The front view goes back towards a vanishing point on the horizon.



Commonly used by interior designers to show a view into a room.

B. Two-point Perspective Drawing

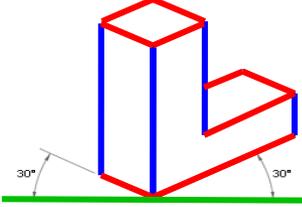
Two-point perspective shows an object from the side with two vanishing points. It gives the most realistic view of a product as it shows the item edge on, as we would see it. It is often used to produce realistic drawings of an object.



Commonly used by architects to show realistic building ideas.

C. Isometric Technical Drawing

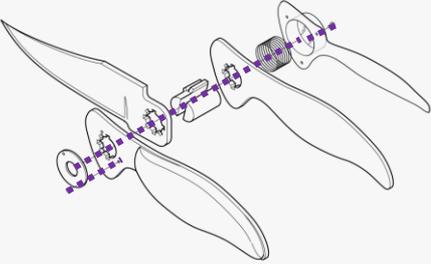
Made up of a series of parallel **vertical lines** and parallel **30-degree lines**. But no **horizontal lines**.



Used by architects and engineers to communicate their ideas to the client and manufacturer.

D. Exploded Technical Drawing

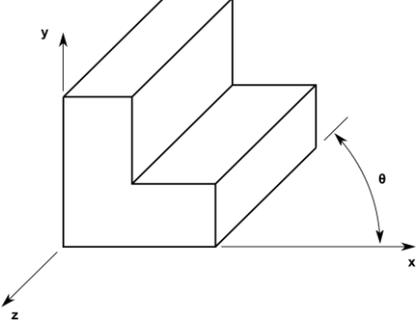
Exploded technical drawing is an Isometric drawing of all the parts and components of an object.



All parts are shown separately so you can see all aspects. **Dashed lines** indicate where everything goes and in what order.

E. Oblique Technical Drawing

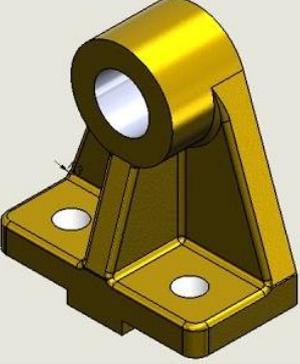
Consists of an object where the front view is drawn flat with height and width of the object drawn to the correct lengths. Diagonal lines are drawn at 45-degrees.



Commonly used by engineers for drafting ideas.

F. CAD (Computer Aided Design)

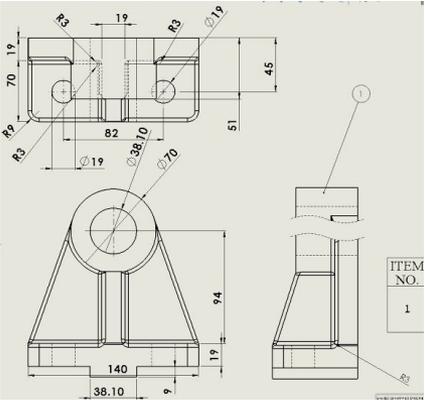
This is designing using a computer using a software such as 2D Design or Solidworks.



Commonly used to model, test and develop an idea before manufacture.

G. Orthographic Projection – 2D NOT 3D Drawing Strategy!

This shows 2D views of a 3D object from different angles – front, plan and end. Lines are dimensions have specific meaning to avoid confusion.



Commonly used in industry to help the manufacturer understand the design.



What we are learning this term:

- A. One-Point Perspective
- B. Two-point Perspective
- C. Isometric Drawing
- D. Exploded Drawing
- E. Oblique Drawing
- F. CAD
- G. Orthographic Drawing

Design Strategies Introduction.

Design strategies are used to create technical drawings, to show an object in 3D on a 2D page. Perspective drawings show an object getting smaller in the distance. The rest are done to scale.

A. One-point Perspective Drawing

C. Isometric Technical Drawing

E. Oblique Technical Drawing

F. CAD (Computer Aided Design)

B. Two-point Perspective Drawing

D. Exploded Technical Drawing

G. Orthographic Projection – 2D NOT 3D Drawing Strategy!

- Object Line
- - - Hidden Line
- · - · - Center Line
- Dimension Line
- Construction Line

Food spoilage, contamination and food poisoning

Food spoilage

As soon as food is harvested, slaughtered or processed it starts to change. This happens for two main reasons:

- autolysis – self destruction, caused by enzymes present in the food;
- microbial spoilage – caused by the growth of micro-organisms, i.e. bacteria, yeasts and moulds.

Food spoilage: Autolysis – enzymes

Enzymes are chemicals which can cause food to deteriorate in three main ways:

- ripening – this will continue until the food becomes inedible, e.g. banana ripening;
- browning – enzymes can react with air causing certain foods, e.g. apples, to discolour;
- oxidation – loss of nutrients, such as vitamin C from food, e.g. over boiling of green vegetables.

Food spoilage: Microbial spoilage

Spoilage can be caused by the growth of:

- bacteria – single celled micro-organisms which are present naturally in the environment;
- yeasts – single celled fungi;
- moulds – fungi which grow as filaments in food.

Food contamination

Food contamination can lead to food poisoning. There are three ways which food can be contaminated: **bacterial**, **chemical** and **physical**.

Chemical contamination

Chemical contamination can occur in a variety of ways at different stages of food processing and production. For example, chemicals from the farm; cleaning products used in the processing plant and fly spray used in the kitchen.

Physical contamination

This can occur in a variety of ways at different stages of food processing and production. Some examples are:

- soil from the ground when harvesting;
- a loose bolt from a processing plant when packaging;
- a hair from a chef in the kitchen.**

Bacterial contamination

Most bacteria are harmless but a small number can cause illness. These are known as pathogenic bacteria. Food which is contaminated with pathogenic bacteria can look, taste and smell normal.

Bacteria can be transferred onto food through cross-contamination, via equipment, people or pests, or can be naturally present in the food. Some bacteria can produce toxins which can cause food poisoning.

Micro-organisms

Micro-organisms need conditions to survive and reproduce these can include:

- temperature;
- moisture;
- food;
- time;
- oxygen and pH level.

Temperature

Bacteria need warm conditions to grow and multiply.

- The ideal temperature for bacterial growth is 30°C – 37°C.
 - Some bacteria can still grow at 10°C and 60°C.
 - Most bacteria are destroyed at temperatures above 63 °C.
 - Bacterial growth danger zone is 5°C - 63°C.
- At very cold temperatures, bacteria become dormant – they do not die, but they cannot grow or multiply.

Moisture

Where there is no moisture bacteria cannot grow. However, bacteria and moulds can both produce spores which can survive until water is added to the food.

Food

Bacteria need a source of food to grow and multiply, these food are usually high in moisture, fat and protein, and may be ready to eat. Food where bacteria rapidly multiply in is called a **high risk food**. For example:

- meat, meat products and poultry;
- milk and dairy products;
- eggs – uncooked and lightly cooked;
- shellfish and seafood;
- prepared salads and vegetables;
- cooked rice and pasta.

Time

Given the right conditions, one bacterium can divide into two every 10-20 minutes through a process called binary fission.

People at high risk of food poisoning

Elderly people, babies and anyone who is ill or pregnant needs to be extra careful about the food they eat.

Symptoms of food poisoning

Food poisoning can be mild or severe. The most common symptoms are:

- feeling sick;
- being sick;
- diarrhoea;
- abdominal pain.

Campylobacter

Sources

Raw and undercooked poultry, unpasteurized milk, contaminated water.

Signs and symptoms

Onset 2 – 5 days (can be longer). Fever, headache and dizziness for a few hours, followed by abdominal pain.

E Coli 0157

Sources

Raw and undercooked meat and poultry. Unwashed vegetables. Contaminated water.

Signs and symptoms

Onset usually 3-4 days. Diarrhoea, which may contain blood, can lead to kidney failure or death.

Listeria

Sources

Unpasteurised milk and dairy products, cook-chill foods, pate, meat, poultry and salad vegetables.

Signs and symptoms

Onset 1-70 days. Ranges from mild, flu-like illness to meningitis, septicaemia, pneumonia. During pregnancy may lead to miscarriage or birth of an infected baby.

Salmonella

Sources

Raw meat, poultry and eggs. Flies, people, sewage and contaminated water.

Signs and symptoms

Onset 6-48 hours. Headache, general aching of limbs, abdominal pain and diarrhoea, vomiting and fever. This usually lasts 1 – 7 days, and rarely is fatal.

Staphylococcus aureus

Sources

Humans: nose, mouth and skin. Untreated milk.

Signs and symptoms

Onset 1 – 6 hours. Severe vomiting, abdominal pain, weakness and lower than normal temperature. This usually lasts 6 – 24 hours.

Key terms

Bacteria: Small living organisms that can reproduce to form colonies. Some bacteria can be harmful (pathogenic) and others are necessary for food production, e.g. to make cheese and yogurt.

Binary fission: The process that bacteria uses to divide and multiply.

Cross-contamination: The transfer of bacteria from one source to another. Usually raw food to ready to eat food but can also be the transfer of bacteria from unclean hands, equipment, cloths or pests. Can also relate to allergens.

Food spoilage: The action of enzymes or microorganisms which make the food unacceptable to consume.

Food poisoning: Illness resulting from eating food which contains food poisoning micro-organisms or toxins produced by micro-organisms.

Toxin: A poison produced by some bacteria which can cause food poisoning.

Allergens

Allergenic ingredients can cause adverse reactions in some people. Care must be taken at each stage of food processing to prevent contamination.

Desirable food changes

Desirable changes that can be caused by micro-organisms include:

- bacteria in yogurt and cheese production;
- mould in some cheeses, e.g. Stilton;
- yeast in bread production.

Food spoilage, contamination and food poisoning

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- autolysis –
- microbial spoilage –

Food spoilage: Autolysis – enzymes

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- ripening
- browning
- oxidation

Food spoilage: Microbial spoilage

Spoilage can be caused by the growth of:

- bacteria
- yeasts
- moulds

Food contamination

Food contamination can lead to _____. There are three ways which food can be contaminated:

Chemical contamination

Chemical contamination can occur in a variety of ways at different stages of food processing and production. For example:

Physical contamination

This can occur in a variety of ways at different stages of food processing and production. Some examples are:

-
-

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Some bacteria can produce toxins which can cause food poisoning.

Micro-organisms

Micro-organisms need conditions to survive and reproduce these can include:

-
-
-
-

Temperature

Bacteria need warm conditions to grow and multiply.

•The ideal temperature for bacterial growth is _____. Some bacteria can still grow at 10°C and 60°C.

•Most bacteria are destroyed at temperatures above _____

•Bacterial growth danger zone is _____

•At very cold temperatures, bacteria become _____ – they do not die, but they cannot grow or multiply.

Moisture

Where there is no moisture bacteria cannot grow. However, bacteria and moulds can both produce spores which can survive until water is added to the food.

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-
-
-
-
-

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Food poisoning can be mild or severe. The most common symptoms are:

-
-
-
-

Campylobacter Sources

Signs and symptoms

E Coli 0157

Sources

Signs and symptoms

Listeria

Sources

Signs and symptoms

Salmonella

Sources

Signs and symptoms

Staphylococcus aureus

Sources

Signs and symptoms

Key terms

Bacteria:

Binary fission:

Cross-contamination:

Food spoilage:

Food poisoning:

Toxin:

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-
-
-



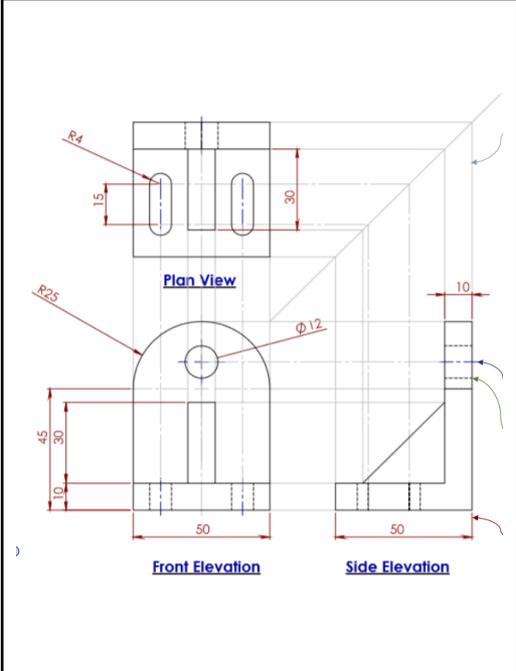
What we are learning this term:		
A. Health & Safety	C. Orthographic	E. Materials and properties
B. Manufacturing processes	D. Tools & Equipment	

A. Health & Safety
Risk Assessment A risk assessment is the analysis of the risks involved when using equipment or performing a process.
Signage Signage is the word used for all the signs that you may see in a workshop environment. Showing how to translate and understand the signs in a workshop is vital when dealing with potentially dangerous equipment and processes.

	Mandatory sign- Specific instruction on behaviour		Prohibition sign- Prohibiting or actions
	Warning sign- Giving warning of hazard or danger		No danger sign- Information on exits, first aid etc

B. Manufacturing processes
Pillar drill
Pillar drills are free standing machine tools that use high powered motors to rotate drill bits at varying speed
Milling machine
A milling machine is a device that rotates a circular cutting tool that has a number of cutting edges. The workpiece is held in a vice or similar device clamped to a table that can move in directions. X, Y & Z axis
Centre lathe
A centre lathe is used to manufacture cylindrical product /objects and is 'turned' to create different shapes. Different cutting tools can be used such as facing, parting and knurling .

C. Orthographic
The study of human measurements to ensure the products and environments are the correct size for the intended user.



	The symbol ϕ on this dimension represents Diameter – so it is telling us how wide the circle is overall.
	The letter R on this dimension tells us the Radius of the curve or circle – the distance from the centre to the outside

D. Tools & Equipment	
	Battery/cordless drill - A drill is a tool used for making round holes or driving fasteners. It is fitted with a bit, either a drill or driver chuck. Battery for ease of use
	Checking for true (i.e. straight and accurate) alignment of edges, planes and angles is by far the most common engineer square use.
	A scribe (scribe) is a hand tool used for marking-out areas ready for machining/cutting/drilling, etc. on workpieces made from metal. The scribe is made from high-carbon steel and is hardened to make sure it can score the surface of the metal.
	The centre punch is made from mild steel, with the point hardened and tempered, so that it withstands impact with the material it is marking. It is normally used to mark the centre of a hole to be drilled
	Divider, instrument for measuring, transferring, or marking off distances, consisting of two straight adjustable legs hinged together and ending in sharp points.

E. Materials and properties	
Strength	Ability of a material to withstand compression, tension and shear
Hardness	Ability to withstand impact without damage
Toughness	Materials that are hard to break or snap are tough & can absorb shock
Malleability	Being able to bend or shape easily would make a material easily malleable
Ductility	Materials that can be stretched are ductile
Elasticity	Ability to be stretched and then return to its original shape



What we are learning this term:

A. Health & Safety C. Orthographic E. Materials and properties
 B. Manufacturing processes D. Tools & Equipment

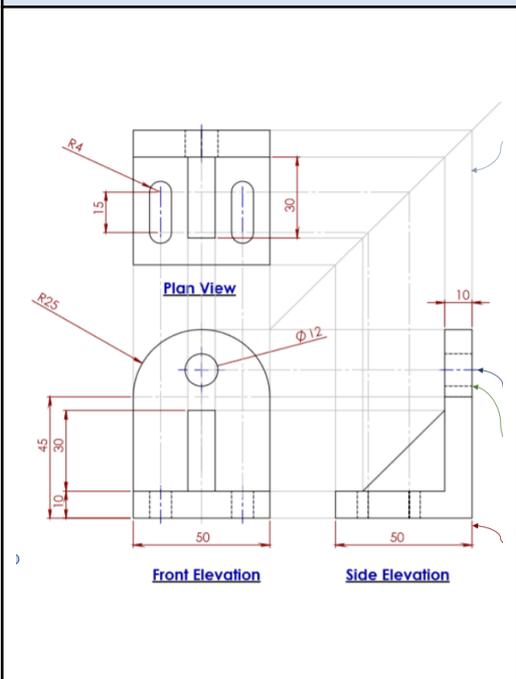
A.	Health & Safety
Risk Assessment	
Signage	

	_____ sign- Specific instruction on behaviour		_____ sign- Prohibiting or actions
	_____ sign- Giving warning of hazard or danger		_____ sign- Information on exits, first aid etc

B.	Manufacturing processes
	Pillar drill
	Milling machine
	Centre lathe

C. Orthographic

The study of human measurements to ensure the products and environments are the correct size for the intended user.



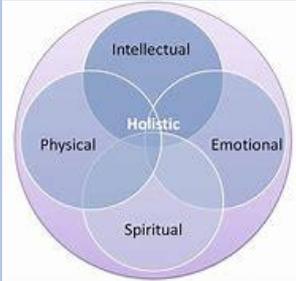
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D.	Tools & Equipment

E.	Materials and properties
Strength	
Hardness	
Toughness	
Malleability	
Ductility	
Elasticity	

What we are learning in LAA:	
A.	Key words
B.	Definitions of health and wellbeing
C.	Genetic inheritance

A.	Key words for this Unit
Genetic inheritance	The genes a person inherits from their parents
Predisposition	Someone is more likely to suffer from a particular condition
Chronic	Gradual illness that is long term (longer than 3 months) and generally can be treated but not cured
Acute	A short-term illness that can be cured
Monitor	To check progress over a period of time.
Person-Centred	Planning care around the wants and needs of a service user
Bereavement	The process of coming to terms with the death of someone close.
Circumstances	Events that change your life, over which you have no control
Physiological	Relates to how a person and their bodily parts function normally.
Interpret	understand an action, mood, or way of behaving as having a particular meaning
Collaboratively	Working well together with other people or services
Obstacles	Difficulties a person might face when they implement a plan.
Goal	What you want to achieve in the long term
Norm	Something that is usual, typical or standard
Targets	Challenges to help you reach your goal

B	Definitions of health and well-being	
Positive Definition		Looks at how physically fit and mentally stable a person is. You have a positive attitude towards health and wellbeing if you realise that there is something you can do to improve your health and wellbeing and do it.
Negative definition		Looks at the absence of physical illness, disease, and mental distress. You have a negative attitude towards your health and wellbeing if you: <ul style="list-style-type: none"> • Base your attitude on not having anything wrong with you. • Continues as you are- Inc. keeping bad habits like smoking. • Assume that because you currently feel fine you will stay healthy in the future.
Holistic definition		It is a combination of physical health and social and emotional wellbeing. It is not just the absence of disease or illness; it looks at all aspects of a person's health and wellbeing. You have a holistic attitude towards health and wellbeing if you look after your: <ul style="list-style-type: none"> • Physical Health: Be meeting the needs we have to keep our bodies working as well as they can, e.g. Food, water, shelter, warmth, clothing, rest, exercise and good personal hygiene. • Intellectual health: By meeting the needs we have to develop and keep our brains working as well as possible; these include mental stimulation to keep us motivated and interested. • Emotional aspects of wellbeing: By meeting the needs we have that make us feel happy and relaxed, e.g. being loved, respected and secure. Knowing how to deal with negative emotions, having positive self-concept and being respected by others. • Social aspects of wellbeing: By meeting the needs we have to help us develop and enjoy good relationships with others, including mixing with others in appropriate environments and having access to leisure facilities/ activities.

C.	Genetic inheritance	
	Inherited physical Characteristics	Genes and environment
	<ul style="list-style-type: none"> • Children inherit their physical; characteristics from their parents e.g. height, skin and eye colour and hair type and colour. • These characteristics can affect social and emotional wellbeing because they influence a person's self-concept (self-image and esteem). 	<ul style="list-style-type: none"> • Chromosomes carry genes that determine aspects of persons physical makeup. • Gene is a section of DNA that carries a code. Different versions of a gene are called alleles (they can be faulty). • Environmental factors such as diet, also influence physical appearance. For example, a person may not grow to their full, genetically determined height if they do not have enough food.
Allele type	<p>Dominant: If a gene is dominant a child inheriting it from only one birth parent will have the condition, e.g Huntington's disease.</p> <p>Recessive: If the gene is recessive a child would only develop the condition if it was inherited from both birth parents, e.g. Cystic fibrosis.</p>	<p>Effects of inherited disorders</p> <ul style="list-style-type: none"> • Physical health: Body systems, growth and mobility • Intellectual wellbeing: learning, thinking, problem solving and decision making. • Emotional wellbeing: how people feel about themselves. • Social wellbeing: the ability to build relationships and maintaining them.



What we are learning in LAA:

- D. Balanced diet
- E. Chronic and acute illness
- F. What are the effect of exercise?
- G. What are the effect of excessive substance use?

D.	Balanced diet
What is a balanced diet?	<ul style="list-style-type: none"> • Diet that contains the correct nutrients in the right proportions to keep out bodies and minds healthy. • It is also a lifestyle choice • Choosing to eat too much or too little might make us less able to take all the opportunities that life offers.
Overweight or underweight may:	<p>A person over weight or under weight may:</p> <ul style="list-style-type: none"> • Be prone to illness and conditions • Have their life expectancy reduced • Be less able to exercise effectively • Miss out on learning experiences • Miss out on some sporting activities • Be less successful in job interviews • Feel embarrassed and self-conscious about their appearance in social situations.
Essential parts of a healthy diet:	<ul style="list-style-type: none"> • Fats (saturated and unsaturated) • Carbohydrates (sugars and starches) • Minerals • Vitamins • Proteins
Est well guide says you should eat:	<ul style="list-style-type: none"> • Eat at least 5 portions of a variety of fruit and vegetables every day. • Base meals on potatoes, bread, rice, pasta or other starchy carbohydrates; choosing wholegrain versions where possible. • Have some dairy or dairy alternatives (such as soya drinks); choosing lower fat and lower sugar options. • Eat some beans, pulses, fish, eggs, meat and other proteins (including 2 portions of fish every week, one of which should be oily). • Choose unsaturated oils and spreads and eat in small amounts. • Drink 6-8 cups/glasses of fluid a day.
If you eat more than you need:	<ul style="list-style-type: none"> • The body will store food as fat and this can lead to: • Obesity, heart disease, high blood pressure, Strokes, Tooth decay or cancer
If you eat less than you need	<ul style="list-style-type: none"> • The body does not get enough nutrients to grow and develop properly and this can lead to: • Eating disorders, stunted growth, anaemia, heart failure, depression, tiredness, cancer or rickets.

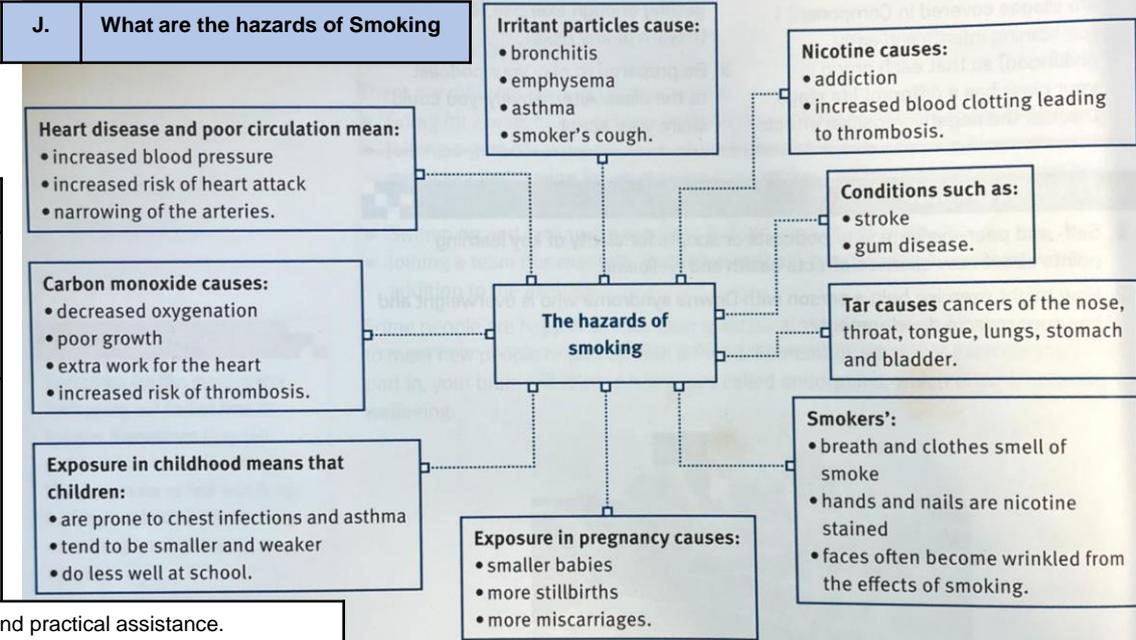
E	Chronic or Acute Illness	
	<p>Chronic illness- Illness comes on gradually, is long term (more than 3 months) and generally can be treated but not cured. E.g Asthma, Diabetes, epilepsy, bipolar disease, Alzheimer’s disease</p>	<p>Acute illness- Illness comes on quickly, is short term and can be cured. E.g. Cold, flue, broken bones, heartburn, appendicitis or Diarrhoea.</p>
<p>Some chronic conditions are acute but may develop because of chronic conditions. For example: osteoporosis (a chronic condition that weakness bones) masking their bones fragile and more likely to break. Broken bones are then an acute condition.</p>		
Possible negative effects of chronic illness		
Physical:	<ul style="list-style-type: none"> • poor rate of growth • Unusual physiological change during puberty • Restricted movement 	Emotional: <ul style="list-style-type: none"> • Negative self-concept • Stress • Decision making
Intellectual:	<ul style="list-style-type: none"> • Disturbed learning because of missing school • Difficulties in thinking and problem solving • Memory problems. 	Social <ul style="list-style-type: none"> • Isolation • Loss of independence • Difficulties developing relationships

F.	What are the effect of exercise?	
Positive effects of exercise		<p>Physical: maintain a healthy weight, reduce BMI, boosting energy levels. Improved flexibility, stamina, endurance and stronger bones and muscles. Reduce risk of heart disease and diabetes.</p> <p>Intellectual: improved brain function like mentor and thinking skills.</p> <p>Emotional: improves confidence and mood and reduces stress. Aid relaxation and sleep and lead to better self concept.</p> <p>Social: encourages social interaction, reducing isolation and improving social skills.</p>
Negative effects of exercise		<p>Physical: Obesity and associated health problems.</p> <p>Intellectual: Reduced pain performance, hard to concentrate and retain information.</p> <p>Emotional: poor self-concept and reduced ability to cope with stress.</p> <p>Social: Fewer opportunities for social interactions.</p>

G.	What are the effect of excessive substance use?	
Negative effects of excessive alcohol consumption		<p>Physical: Alcohol dependence, damage to major organs: liver, heart, kidneys, pancreas. Cancers: mouth, throat, oesophagus, liver, breast. Infertility and impotence, weight gain.</p> <p>Intellectual: difficulty in making decisions, depression and anxiety, chance of stroke and brain damage, impaired brain development of unborn baby.</p> <p>Emotional: poor self-concept, poor judgement leading to a risk of accidents and unsafe sex, can have an impact on relationships, depression.</p> <p>Social: breakdown of relationships, domestic violence, social isolation</p>

What we are learning in LAA:	
H.	The effects of social interactions on wellbeing
I.	What are the effects of stress on health and wellbeing
J.	What are the hazards of smoking
K.	What are the effects of personal hygiene

H. The effects of social interactions on wellbeing	
Social integration	When people feel they belong to a group and can interact with others. Social interactions can happen between family members and friends, work colleagues, school learners, members of a community or interest groups.
Social isolation	Occurs when people do not have regular contact with others. This may be because they don't go out much because of physical illness, reduced mobility or unemployment. They might have a difficulty in communicating if they have a mental illness, depression or learning difficulties. Lastly, a person might be discriminated against because of culture, religion or disability.



	<p>Positive effects of relationships</p> <p>Physical: physical support and day to day care and practical assistance. Intellectual: shared experiences, supported learning and thinking Emotional: unconditional love, security and encouragement, positive self-concept, feeling content, ability to build relationships with people outside the family, independence and confidence. Social: Companionship, social circle increases.</p>
	<p>Negative effects of social isolation</p> <p>Physical: poor lifestyle choices like smoking and drinking, poor diet that can cause eating disorders. Intellectual: reduced ability to use thinking skills, missing school/work Emotional: feelings insecure, depression, anxiety, negative self-concept, feeling of hurt, loneliness and distrust, lack of independence, difficulty in controlling emotions. Social: difficulties in building relationships as lack skills.</p>

I. What are the effects of stress on health and wellbeing			
Physical effects	Intellectual effects	Emotional effects	Social effects
Increased heartbeat Increased breathing rate Tense muscles Sweaty palms Dry mouth High blood pressure Loss of appetite Sleeplessness Digestive problems	Forgetfulness Poor concentration Difficulty in making decisions	Difficulty in controlling emotions Feeling insecure Negative self-concept Feeling anxious and frightened Loss of confidence	Difficulty in making friends and building relationships Breakdown of close relationships Social isolation

K. What are the effects of Personal Hygiene?	
<p>Positive effects of good personal hygiene</p> 	<ul style="list-style-type: none"> Helps prevent the spread of infection Improves self-concept Reduces number of bacteria that lives on us. <p>You must:</p> <ul style="list-style-type: none"> Brush you teeth Shower daily or bath Wash your hair regularly Keep fingernails and toenails clean and trimmed
<p>Negative effects of poor personal hygiene</p>	<p>Physical: catching and spreading disease like food poisoning, sore throat, meningitis and athlete's foot. Bad body odour, bad breath and tooth decay. Emotional: loss of friendships and social isolation. Might be bullied and poor self-concept. Social: low social interactions as people don't want to be friends with someone that neglects their hygiene. Social isolation.</p>
<p>When caring for others:</p>	<ul style="list-style-type: none"> Bad hygiene can stop effective communication. Negative effect on the person being cared for and their health and wellbeing- pass on infection Discomfort for the person being cared for because of the odour or visible dirt under fingernails.

What we are learning in LAA:	
L.	What are the barriers to seeking help.
M.	What are the effects of unexpected life events on health and wellbeing
N.	What are the effects of economic factors (e.g, income) on health and wellbeing
O.	What are the effects of expected life events on health and wellbeing
L.	What are the barriers to seeking help.
Culture	Accessing HSC services can be influenced by values, traditions, way of life and beliefs of the society or group. <ul style="list-style-type: none"> Some may have received discrimination when accessing other services. Some may not speak English well enough. Values and traditions not understood e.g. eye contact means respect in some cultures but not others. Some cultures a woman must be treated only by a female professional. Alternative therapies are used in some cultures
Gender	Research shows that men are less likely to talk about their health and wellbeing than woman. This is because men are: <ul style="list-style-type: none"> Often less open about their feelings Sometimes reluctant to appear vulnerable by asking for help Not aware of poor health signs as health campaigns target women's health more Unhappy to be examined by a female health worker.
Education	Research shows that people who are better educated are more likely to seek help. This is because: <ul style="list-style-type: none"> They like to research symptoms and know when help is needed Understand the importance of early diagnosis and treatment Know how and where to access services.
Stigma	In some cultural groups there is a stigma attached to certain condition like depression. Stigma is a word used to describe something that people feel embarrassed about. Therefore, they wouldn't seek help.

M. What are the effects of unexpected life events on health and wellbeing		
Life event	Positive Effects:	Negative Effects:
Imprisonment	<ul style="list-style-type: none"> Depression Loss of contact with family and friends Social isolation Restrictions on physical activity 	<ul style="list-style-type: none"> Opportunity to study Improvement in health through balanced diet, lack of alcohol, reduced use of nicotine
Redundancy	<ul style="list-style-type: none"> Poor self-concept Anxiety about finances Fewer opportunities 	<ul style="list-style-type: none"> Opportunities to study or train for a new job More time to spend with family and friends
Exclusion or dropping out of education	<ul style="list-style-type: none"> Loss of contact with friends Social isolation Poor self-concept Lack of learning opportunities 	<ul style="list-style-type: none"> Catalyst for change of behaviour Opportunities for more suitable study or work situation

N. What are the effects of economic factors (e.g, income) on health and wellbeing		
	Positive Effects:	Negative Effects:
Physical	<ul style="list-style-type: none"> Better financial resources can result in good housing conditions and healthy diet Manual jobs may improve muscle tone and stamina. 	<ul style="list-style-type: none"> Low wages can affect diet and housing, leading to poor health. Manual jobs can cause muscular and skeletal problems Desk jobs lead to less activity and weight gain.
Intellectual	<ul style="list-style-type: none"> Better financial resources can result in more leisure time for intellectual activities Work, education or training helps to develop problem solving and thinking skills 	<ul style="list-style-type: none"> Some people work very long hours to improve their financial position, leading to less leisure time and reduced learning opportunities. Being unemployed can result in poor mental health.
Emotional	<ul style="list-style-type: none"> A well-paid job gives a feeling of security. Being financially secure promotes positive self-concept 	<ul style="list-style-type: none"> Financial worried can result in stress and breakdown of relationships. Unemployment or low-status work can lead to low self-concept
Social	<ul style="list-style-type: none"> Better financial resources provide opportunities for socialising. Work gives opportunities for socialising with colleagues. 	<ul style="list-style-type: none"> Lack of financial resources reduces opportunities for socialising. Unemployment reduces opportunities for relationships, leading to social isolation.

O. What are the effects of expected life events on health and wellbeing		
Life event	Positive Effects:	Negative Effects:
Starting school, college or uni	<ul style="list-style-type: none"> Build new relationships Extend knowledge and learning Develop new skills Improve confidence 	<ul style="list-style-type: none"> Anxiety about new routines and meeting new people Insecurity about leaving parents and other families
Start a new job or career	<ul style="list-style-type: none"> Develop independence Improve thought processes Improve self-concept 	<ul style="list-style-type: none"> Stress about learning new skills and routines Anxiety about meeting new people
Moving to a new house or area	<ul style="list-style-type: none"> Excitement Develop new friendships and relationships 	<ul style="list-style-type: none"> Unhappiness at loss of old life Stress of moving Social isolation
Retirement	<ul style="list-style-type: none"> Reduced stress Time to socialise with family and friends Opportunities for leisure of physical activities 	<ul style="list-style-type: none"> Loss of relationships with colleagues Possible loss of fitness and mobility Loss of intellectual stimulation and status

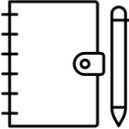
What we are learning in LAB:

- A. Physiological health indicators
- B. What are health indicators?
- C. Interpreting lifestyle data

A. Physiological health indicators	
Pulse	<p>Resting pulse rate is measured when a person has been still for about 5 minutes. Health reading for an adult is 60-100 bpm.</p> <p>Pulse rate during exercise: 220bpm minus the person's age.</p>
Blood pressure	<ul style="list-style-type: none"> • This is the pressure exerted by blood against the artery walls. • It is measured in millimetres of mercury (mm Hg) and is shown in two numbers: <ul style="list-style-type: none"> • Systolic pressure: (the top number) is the maximum pressure in the blood vessels as the heart pushes out blood. • Diastolic pressure: (the bottom number) as the minimum pressure in the vessels when the heart relaxes between the beats.
Peak flow	<ul style="list-style-type: none"> • Measured how quickly you can blow air out of your lungs. • it is measured in liters per min (L/min).
BMI	<ul style="list-style-type: none"> • Measures the amount of fat on your body in relation to your height to tell you if your weight is healthy.

B.	
	<ul style="list-style-type: none"> • What are health indicators?
Importance of understanding indicators	<ul style="list-style-type: none"> • Detect health problems at an early stage • Track improvements or deterioration in health • Make recommendations about health and treatments • Give advice about future health risks • Support individuals to make different lifestyle choices.
What are lifestyle indicators?	<ul style="list-style-type: none"> • These indicators can be used to assess risks to an individual's health and wellbeing now and in the future. • Professionals collect information about lifestyle choices by asking about a person's: <ul style="list-style-type: none"> • Weekly alcohol consumption • Smoking habits • Levels of physical activity and exercise.
What are physiological indicators?	<ul style="list-style-type: none"> • They show how well the body's systems are functioning. • Health professionals check a person's health by taking measurements. • They compare the results with published guidance.

C. Interpreting lifestyle data	
<p>Interpreting data on smoking</p> 	<ul style="list-style-type: none"> • Smoking causes around 96,000 deaths in the UK annually. • Smoker under the age of 40 are 5 times more likely to have a heart attack than non-smoker. • Smoking causes 80% of deaths from lung cancer, 80% of bronchitis and 14% of deaths from heart disease. • More than 25% of all cancer deaths are caused by smoking. • On average a smoker will die 10 years earlier than a non-smoker. • Smokers are more likely to develop facial wrinkles. • Smoking is a cause of impotence and can lead to sperm abnormalities.
<p>Interpreting data on alcohol</p> 	<ul style="list-style-type: none"> • Strongly linked to at least 7 types of cancer • Alcohol-related liver disease accounts for 37% of liver disease and deaths. • 2/3s of cases of chronic pancreatitis are caused by heavy drinking • You are between 2 and 5 times more likely to have an accident or injury • Each drink per day increases the risk of breast cancer in woman between 7-13% • Men and woman should not drink more than 14 units a week and not all in one go.
<p>Interpreting data on inactivity</p> 	<ul style="list-style-type: none"> • Increased risk of breast cancer by 17.8% and colon cancer by 18.7% • Increased risk of type 2 diabetes by 13%. • Increased risk of coronary heart disease by 10.5% • Leads to obesity and joint pain • 16.9% of all premature deaths are caused by inactive lifestyle. • Active people have a lower risk of premature death. • People who are inactive visit their GP more often and they spend 38% more time in hospital.

What we are learning in LAC:		C.	Recommended action to meet health and wellbeing improvement goals	
A. What is a person-centred approach B. Health improvement plan C. Recommended action to meet health and wellbeing improvement goals D. SMART targets for health improvement plan E. Sources of support		To lower blood pressure: <ul style="list-style-type: none"> • Eat five or more portions of fruit and veg a day • Cut out salt • Use relaxation techniques to reduce stress • Join a gym • Drink water alongside alcohol to reduce consumption 	To reduce BMI: <ul style="list-style-type: none"> • Reduce fat and sugar intake • Do not exceed the recommended daily calories intake • Get off the bus a stop early and walk the rest of the way • Drink water instead of sugary drinks. 	
A.	What is a person-centred approach.		To increase peak flow reading: <ul style="list-style-type: none"> • Half the number of cigarettes smoked each day • Use nicotine replacement therapies • Join an exercise or dance class. 	To reduce pulse rate and improve recovery time after exercise: <ul style="list-style-type: none"> • Walk for half an hour at lunchtime • Drink decaffeinated drinks • Take up a physically active hobby • Join a yoga group.
Person-centred approach	A holistic approach that puts the individual at the heart of health care planning, so that the whole range of physical, intellectual, emotional and social health needs are met.			
When planning for health improvements include:	<ul style="list-style-type: none"> • The needs: physical, intellectual, emotional and social. • The wishes: likes, dislikes, choices and desired health goals. • Circumstances: illness or disability, access to facilities, previous experiences, family and relationships, responsibilities. 			
Benefits of person-centred approach:	<ul style="list-style-type: none"> • Will feel involved • Is more likely to trust a health professional who listen to them • Will feel more secure • Is more likely to follow the plan and achieve the targets • Will take responsibility for their own health. 			
B.	Health improvement plan	D. SMART targets for health improvement plan		
What is it?	Health and wellbeing improvement plans are often based on an individual's physiological and lifestyle indicators. Plans should be person-centred and include goals, actions and targets and possible sources of support.	Specific	The target must be clearly stated. It should say exactly what you mean, such as to 'lose 2 kg in weight in a week'. The target should be clear and not open to any misunderstanding.	
The plan will identify:	<ul style="list-style-type: none"> • The health issues and goal • The recommended actions to take • A set of targets for health improvement • The supports that are needed • Possible obstacles to progress and way to overcome them. 	Measurable	A target of to 'lose weight' is too vague. A specific amount must be stated so you can prove you have met your target.	
Positive effects of a health improvement plan	<ul style="list-style-type: none"> • Be fitter • Loose weight • Have improved self-concept • Lower blood pressure, healthier heart • Reduced risk of cancer • Taking control of their health outcomes and reaching health goals 	Achievable/attainable	If you are following a health and wellbeing improvement plan you must feel it is possible to achieve it. If you do not, you will probably give up before you have even started. An achievable target is to 'lose 1kg this week'. An unachievable target would be to 'lose 20kg this week'.	
		Realistic	The target set must be realistic in that you must be able to physically do it. It is not realistic to expect a person who is older and not very fit to run for 30 minutes a day to help weight loss, but it is realistic to ask the same of a fitter, younger person.	
		Time-related	The target must have a deadline, so that you know when you need to achieve the target by, and progress can be assessed.	
		E.	Sources of support	
		Informal support	Informal support is the support an individual receives from partners, family and friends. It is usually the first form of support an individual experiences after and expected or unexpected life event. Informal support can provide reassurance, encouragement, advice, a sense of security, someone to talk through options with and practical help.	
		Professions (formal) support	Formal support may be provided by statutory care services (the state), private care services and charitable organizations. Professional support may include counsellors, teachers, careers advisers, occupational therapists, social workers and health specialists. Professional support may be needed to help people with a health condition, regain mobility, deal with life changes and emotions, get advice and information or change their lifestyle.	
		Voluntary support	Organizations offering voluntary support are charities, community groups and religious groups. At voluntary support services, many staff are volunteers (they work for free), but they also employ qualified people who are paid by donations. Community groups work at a local level to meet the needs of people living in a specific neighbourhood i.e. foodbanks. Religious groups are formed by people who share the same religious or spiritual beliefs but they help all people in need regardless of their beliefs and background i.e. a church run soup kitchen for the homeless.	

F.	What are the potential obstacle to implementing plans?	G.	What are the possible obstacles to accessing services?	
Emotional/psychological- Lack of motivation	<ul style="list-style-type: none"> • A conflict between choices such as worrying that giving up smoking could result in weight gain • Other priorities in a person's life- such as getting married or bereavement. • Having negative attitude- believing change will be too difficult • Lack of progress for example losing eight quickly in the first weeks but then slowing down. • Having a blip- thinking there is no point in continuing the plan after briefly returning to an old lifestyle. 	Type of obstacle	Possible obstacles	Suggestions to overcome obstacles
Emotional/psychological- Low Self-concept	<ul style="list-style-type: none"> • People with low self-concept don't value themselves, • Feel powerless to change their lifestyle or that there's no point in starting because the task seems too big. • Some thin that because they were unsuccessful in other aspects of their life, they won't achieve their health goals. • They may not feel they have support and approval from family and friends even if they really do. 	Geographical	<ul style="list-style-type: none"> • Service is difficult to get to because of poor bus or train services. 	<ul style="list-style-type: none"> • Arrange hospital transport • Suggest telephone helplines or internet support groups.
Emotional/psychological- Acceptance of the current state	<ul style="list-style-type: none"> • People my accept their present health problems or lifestyle choices, as it is easier to stay the same than to make changes. • Have no incentive to make a change because they do not understand the health risks. • Have no desire to change, for example, if they are happy with their weight or don't want to give up smoking. 	Financial	<ul style="list-style-type: none"> • Charges to use the services • Time off from work would mean loss of pay 	<ul style="list-style-type: none"> • Check for entitlements, such as medicines and treatments • Direct the person to advice on benefits and employee rights.
Time constraints	<p>People find that they do not have the time to achieve their health improvements targets because of:</p> <ul style="list-style-type: none"> • Care of young children, family members that are not well. • Regular and additional work and study commitments • Domestic chores • Medical appointments 	Psychological	<ul style="list-style-type: none"> • Fear of being judged because there is stigma around a health problem (mental health, obesity) 	<ul style="list-style-type: none"> • Talk about concerns and reassure • Direct the person to a charity that supports people with a particular health problem.
Availability of resources	<p>Financial obstacles:</p> <ul style="list-style-type: none"> • Gym memberships, entry fee for a swimming pool • Cost of attending exercise classes • Cost of travel to the gym. pool or to attend health appointments • Higher costs of some healthy foods. • Lack of and the cost of exercise equipment 	Physical	<ul style="list-style-type: none"> • Difficulty getting into the buildings where the service is provided (no wheelchair access). • No where to park near the service 	<ul style="list-style-type: none"> • Be aware of services that are adapted for easy access • Ask a friend or family member to drop the person off at the service
Unachievable targets	<ul style="list-style-type: none"> • Expectations too high • Targets are not clear • There are too many targets • Timing is wrong/poor • Targets are not suitable for the individual • Fear of not being able to meet targets • Not being in the right frame of mind to commit to the plan, e.g. due to depression. 	Personal needs	<ul style="list-style-type: none"> • Communication difficulties because of poor language skills, sensory or learning disability . • Concern that cultural needs are not understood 	<ul style="list-style-type: none"> • Provide support services that meet the person's needs, such as a BSL signer, interpreter, advocate • Use anti-discriminatory practice and encourage others to do so
Lack of support	<ul style="list-style-type: none"> • Diet- find it difficult if a person on a healthy eating plan is surrounded by others that eat junk food or tempted by the chocolate and biscuits in the cupboard, Family and friends go out for meals instead of doing other activities. • Smoking- friends and family smoking and offering them cigarettes. Lacking will power to quit. • Alcohol consumption- someone that is used to drinking with family and friends will find it difficult to stop without their support. It would be hard to quit if the family and friends drink wine with their meals, friends centre a night out around heavy drinking at pubs and clubs. 	Resources	<ul style="list-style-type: none"> • Limits on services, such as support aids and equipment • Staff shortages, leading to long waits for appointments and support. 	<ul style="list-style-type: none"> • Suggest sources of second-hand equipment • Look for alternative strategies, for example an exercise DVD if there are no places at an exercise class.
Ability, disability and addiction	<ul style="list-style-type: none"> • Understand what they need to do • Learn how to make the required changes in their lives. • Any places the person uses are wheelchair accessible • Any exercise advised is wheelchair friendly. • If stop smoking, then can put on weight- put people off. • Like the way alcohol makes them feel but cant admit that they have a problem 			

SWINDON ACADEMY READING CANON

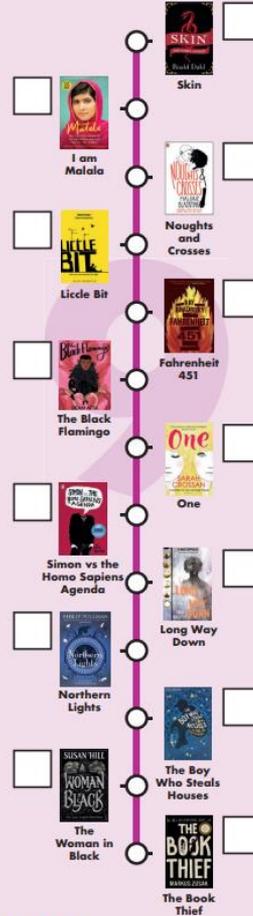
Year 7



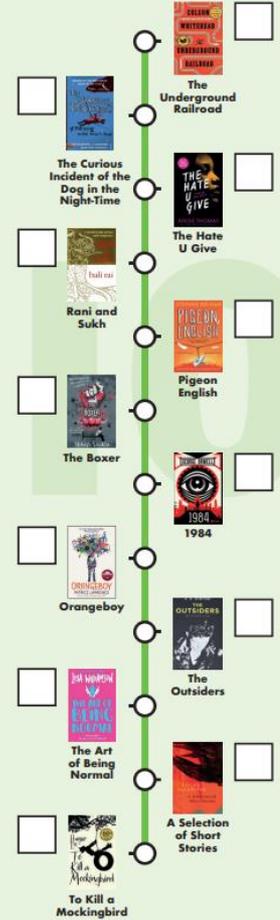
Year 8



Year 9



Year 10



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