Year 10 Mid-Year Knowledge Organiser

HENLEY BANK
HIGH SCHOOL

A Christmas Carol – Knowledge Organiser

Plot

Stave One - Marley's Ghost:
1. Scrooge turns down his nephew, Fred's, invitation to his Christmas party and the request of two men who want money for charity.
2. Scrooge is visited by the ghost of his dead partner, Jacob Marley, who tells Scrooge that, due to his greedy life, he has to wander the Earth wearing heavy chains.
3. Marley tries to stop Scrooge from doing the same.
4. He tells Scrooge that three spirits will visit him.

Stave Two - The First of the Three Spirits:
1. He wakes and the Ghost of Christmas Past takes Scrooge into the past.
2. Invisible to those he watches, Scrooge revisits his childhood school days, his work with a jolly man named Fezziwig, and his engagement to Belle.
3. She leaves Scrooge as he loves money too much to love another human being.

Stave Three - The Second of the Three Spirits:
1. Scrooge watches the Cratchit family eat a tiny meal in their home.
2. He sees Bob Cratchit's disabled son, Tiny Tim, whose kindness and thankfulness warm Scrooge's heart.
3. The ghost shows Scrooge his nephew's Christmas party.
4. The ghost shows Scrooge two starved children, Ignorance and Want – deformed children as a result of his greed and selfishness.

Stave Four -The Last of the Spirits:
1. The Ghost of Christmas Yet to Come takes Scrooge through a sequence of scenes linked to an unnamed man's death.
2. Scrooge, is keen to learn the lesson. He begs to know the name of the dead man.
3. Scrooge looks at the headstone and is shocked to read his own name.
4. He is desperate to change his fate and promises to change his ways.

Stave 5- The End of It:
1. Scrooge rushes out onto the street hoping to share his Christmas spirit.
2. He sends a turkey to the Cratchit house and goes to Fred's party. 3. Scrooge transforms his ways and becomes charitable and loving. He develops a social conscience.

Key Themes

Christmas Spirit	**Redemption**	**Supernatural**	**Greed**
Family	**Social Responsibility**	**Time**	**Poverty**

Key Characters

Scrooge	Selfish businessman/miser who transforms in the end of the novella
Marley	Scrooge's dead business partner who comes to warn him to change his ways.
Bob Cratchit	Scrooge's clerk. Humble, works hard but is living in poverty.
Fred	Scrooge's nephew who forgives him despite his mean behaviours.
Christmas Spirits	Spirit of Christmas Past, Present and Yet to Come are sent to teach Scrooge the importance of Christmas Spirit
Fezziwig	Scrooge's kind, old, jolly employer who trained him.
Belle	Breaks up with Scrooge because he 'worships' money

Context

Religion & Christmas Spirit	1. Dickens believed that being a good Christian simply meant being charitable. 2. Christmas became a time to reconsider giving to charity and helping the poor.
Poverty & The Poor Laws	1. Many of the poor needed the generosity of charity and the wealthy. 2. In 1834, a Poor Law was introduced which ruled that the unemployed would have to work in a workhouse in order to receive food and shelter.
Thomas Malthus	The theory that food production will not be able to keep up with growth in the human population.

Key Terms

Allegory	a story which can be interpreted to reveal a hidden meaning, typically a moral or political one.
Foil	something or someone that makes another's good or bad qualities more noticeable.
Sins and Virtues	Sin – the offence or breaking, or the breaking of, a religious or moral law. Virtue – a good moral quality in a person, or the general quality of being morally good
Pathetic Fallacy	When writers use the environment (e.g. weather) to create a particular tone/mood

Key Quotations

"Tight-fisted hand at the grindstone" (1)

"As solitary as an oyster" (1)

External heat and cold had little influence" (1)

" A bright clear jet of light, by which all this was visible" (2)

"A solitary child, neglected by friends" (2)

"Another idol has displaced me" (2)

"its genial face, its sparkling eye, its open hand, its cheery voice" (3)

"brave in ribbons" (3)

"if the shadows remain unaltered by the Future, the child will die" (3)

"This boy is Ignorance. This girl is Want" (3)

"the Phantom slowly, gravely, silently approached" (4)

"Oh tell me I may sponge away the writing on this stone!" (4)

"The time before him was his own to make amends in" (5)

"as light as a feather" (5)

"God bless us, everyone" (5)

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3. Marley tries to stop Scrooge from doing the same.
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1. Scrooge watches the Cratchit family eat a tiny meal in their home.
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3. The ghost shows Scrooge his nephew's Christmas party.
4.

Stave Four -The Last of the Spirits:
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2. Scrooge, is keen to learn the lesson. He begs to know the name of the dead man.
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Stave 5- The End of It:
1. Scrooge rushes out onto the street hoping to share his Christmas spirit.
2.

Key Themes

	Redemption	**Supernatural**	
Family			**Poverty**

Key Characters

Scrooge	
Marley	
Bob Cratchit	
Fred	
Christmas Spirits	
Fezziwig	
Belle	

Context

	1. Dickens believed that being a good Christian simply meant being charitable. 2. Christmas became a time to reconsider giving to charity and helping the poor.
	1. Many of the poor needed the generosity of charity and the wealthy. 2. In 1834, a Poor Law was introduced which ruled that the unemployed would have to work in a workhouse in order to receive food and shelter.
	The theory that food production will not be able to keep up with growth in the human population.

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	a story which can be interpreted to reveal a hidden meaning, typically a moral or political one.
	something or someone that makes another's good or bad qualities more noticeable.
	Sin – the offence or breaking, or the breaking of, a religious or moral law. Virtue – a good moral quality in a person, or the general quality of being morally good
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Key Quotations

"Tight-fisted hand at the _____" (1)

"As _____ as an _____" (1)

" A bright clear jet _____, by which all this was visible" (2)

"A _____ child, _____ by friends" (2)

"Another ___ has displaced me" (2)

"its genial face, its sparkling eye, _____" (3)

"_____in ribbons" (3)

"the Phantom slowly, gravely, _____

"Oh tell me I may _____ the writing on this stone!" (4)

"as_____as a _____" (5)

Year 10F – Sparx Codes SET 2&3

Paper 1 – Non Calculator	
Topic	**Sparx Code**
Order of operations	M521
Estimating	M878
Equation of a line	U848
FDP	M958, M264 & M553
Percentage of amounts	M437
Calculating with Fractions	M835, M601, M931, M157, M197, M110 & M265
Ratio	M801, M267 & M525
Translations	M139
Linear Sequences	M991
Venn Diagrams	U476 & U748
Bar Charts	M738
Index Laws	M120, M608 & M150
Solving equations	M634, M647, M401 & M554
Expanding single brackets	M237 & M792
Forming expressions	M957
Best Buy	M681
Angles rules	M818, M163, M351 & M319
Reverse percentages	M528
Types of angles	M502
Money	M901

Paper 2 - Calculator	
Topic	**Sparx Code**
Simplify expressions	M795 &531
Prime Factor Decomposition	M108
HCF/LCM	M365
Unit conversions	M772
Direct Proportion	M478
Coordinates and midpoints	M311
Reflections	M290
Compound interest	U332
Speed, distance and time	U151
Quadratic graphs	U989
Area of a circle	M231
Pythagoras	U385
Trigonometry	U283 & U545
Similar Shapes	M324
Density, mass and volume	U910
Percentage Change	M533
Unit conversions	M892, M963 & M627
Inverse Proportion	U537 & U138
Ratio	M801, M267 & M525
Median from frequency table	U373
Properties of quadrilaterals	M393

Year 10H – Sparx Codes SET 1

Paper 1 – Non Calculator	
Topic	**Sparx Code**
Arithmetic Sequences	U498
Mixed Number Fractions	U793, U224
Compound Area	U970
Estimation	U225
Reverse Percentages	U286
Equation of Straight Lines	U315
Parallel Lines	U377
Fraction of Amounts	U881
Combining Ratios	U921
Sharing Ratios	U595
Combined Mean	U291
Percentage Multipliers	U888
Simultaneous Equations	U760
Non-Linear Graphs	U310, U980, U593
Histograms	U814, U983, U267
Expanding Triple Brackets	U606
Rationalising Surds	U707
Simplifying Surds	U338
Recurring Decimals to Fractions	U689
Volume and Surface Area of Cuboids	U786, U929

Paper 2 - Calculator	
Topic	**Sparx Code**
Substitution	U201
Speed, Distance and Time	U151
Simple Interest	U533
Pythagoras	U385
Prime Factorisation	U739
LCM	U250
Proportion	U721, U357
Probability	U510
Sharing Ratios	U595
Quadratic Graphs	U989
Percentage of Amounts	U349
Similar Triangles	U578
Scale Drawings	U257
Error Intervals	U657
Cumulative Frequency Graphs	U182, U642
Algebraic Proportion	U138
Rationalising Surds	U281
Similar Lengths, Area & Volumes	U110
Completing the Square to find Turning Points	U769

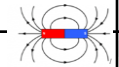
KS4 ENERGY

What is an energy system?

An object or group of objects that have the ability to do work (transfer energy).

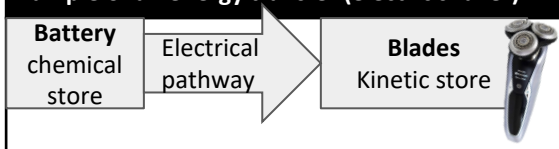
Law of conservation of energy:

Energy cannot be created or destroyed - only transferred via a force pathway

What are the 8 energy stores?	Examples
Chemical 	In food, fuel, muscles and electric batteries.
Kinetic 	In moving objects
Gravitational potential 	In objects raised above a planet's surface.
Elastic potential 	In a stretched, compressed or twisted object.
Internal (thermal) 	In any heated object.
Magnetic 	In any object with a magnetic field.
Nuclear 	The forces acting between atomic nuclei.
Electrostatic 	In electrostatic forces

s?	
Mechanical work done	When a force acts and an object moves.
Electrical work done	When an electric current flows.
Heating	A temperature difference between objects
Radiation	Electromagnetic waves or sound.

Example of an energy transfer (electric shaver)



Energy is transferred from the chemical store of the battery to the kinetic store of the blades along an electrical pathway.

What is the unit of energy?

The unit of energy is the joule (J).

Since work done = energy transferred, therefore the unit of work done is also the joule (J).

1kJ = 1000 J 1MJ = 1 000 000 J

How to calculate work done?

Mechanical work is the amount of energy transferred by a force.

work (J) = force (N) x distance (along the line of the force) (m)

$$W = F\,s$$

How to calculate work done in an electrical circuit?

Electrical work is the amount of energy transferred by current.

energy transferred (J) = charge flow (Q) x potential difference (V)

How to calculate amount of energy in a kinetic energy store?

kinetic energy (J) = 0.5 x mass (kg) x speed^2

$$E_k = \tfrac{1}{2}\,m\,v^2$$

How to calculate amount of energy in a elastic potential energy store?

EPE (J) = 0.5 x spring constant (N/m) x extension^2 (m)

$$E_e = \tfrac{1}{2}\,k\,e^2$$

Specific Heat Capacity

The energy required to raise the temperature of 1kg of a substance by 1°C

Change in energy = mass x specific heat capacity x temp.change
(J) = (kg) (J/kg°C) (°C)

$$\Delta E = mc\Delta\Theta$$

Dissipation

When energy is transferred to the surroundings to a store that is **not useful or difficult to get back** it is described as 'wasted'.

Dissipation can be reduced by:

- **Insulating -** to prevent transfer to the thermal store of the surroundings
- **Lubricating** to prevent friction and transfer to the thermal store of the surroundings.

How to calculate power?

Power is the **rate at which energy is transferred** or the rate at which work is done.

$$\text{power (W)} = \frac{\text{energy transferred (J)}}{\text{time (s)}}$$

$$P = \frac{E}{t}$$

How to calculate power?

Power is the rate at which energy is transferred or the **rate at which work is done.**

$$\text{power (W)} = \frac{\text{work done (J)}}{\text{time (s)}}$$

$$P = \frac{W}{t}$$

What is the unit of power?

The watt is the unit for power.

One watt is one joule transferred in one second - or 1 J/s (1 joule per second).

How to calculate amount of energy in a gravitational potential energy store?

GPE (J) = mass (kg) x gravitational field strength (N/kg) x height (m)

$$E_p = m\,g\,h$$

How to calculate the efficiency of an energy transfer ?

$$\text{efficiency} = \frac{\text{useful output energy transfer}}{\text{total input energy transfer}}$$

$$\text{efficiency} = \frac{\text{useful power output}}{\text{total power input}}$$

Since there is always some wasted energy, efficiency must always be less than 1 or less than 100% if you convert the efficiency to a percentage.

Efficiency does not have a unit.

KS4 ENERGY

What is an energy system?

An object or group of objects that have the ability to do work (transfer energy).

Law of conservation of energy:

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What are the 8 energy stores?

	Examples
Chemical	
Kinetic	
Gravitational potential	
Elastic potential	
Internal (thermal)	
Magnetic	
Nuclear	
Electrostatic	

What are the 4 pathways?

	When a force acts and an object moves.
	When an electric current flows.
	A temperature difference between objects
	Electromagnetic waves or sound.

Example of an energy transfer (electric shaver)

Battery _____ store → Electrical pathway → **Blades** _____ store

Energy is transferred from the chemical store of the battery to the kinetic store of the blades along an electrical pathway.

What is the unit of energy?

The unit of energy is the _____(J).

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1kJ = _____J 1MJ = _____ J

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work (J) = x

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How to calculate work done in an electrical circuit?

Electrical work is the amount of energy transferred by current.

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kinetic energy (J) =

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How to calculate amount of energy in a elastic potential energy store?

EPE (J) =

$$E_e = \tfrac{1}{2} k e^2$$

Specific Heat Capacity

The energy required to raise the _____ of __kg of a substance by _____

Change in energy = mass x specific heat capacity x temp.change
(J) = (kg) (J/kg°C) (°C)

$$\Delta E = mc\Delta\Theta$$

Dissipation

When energy is transferred to the surroundings to a store that is **not useful or difficult to get back** it is described as '_____'.

Dissipation can be reduced by:

- _____ - to prevent transfer to the thermal store of the surroundings
- _____ - to prevent friction and transfer to the thermal store of the surroundings.

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Power is the **rate at which energy is transferred** or the rate at which work is done.

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KS4 Energy

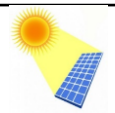
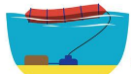
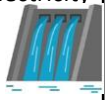
What are the two types of energy resources?

Non-renewable	These will eventually run out. There is a finite (limited) supply.
Renewable	Energy resources that can be easily replenished.

What are energy resources used for?	Examples
Transport	cars, trains, buses, planes etc.
Electricity generation	Industry, homes, business, lighting etc.
Heating	Homes, industrial processes, schools and hospitals etc.

What are the 4 non-renewable energy resources?	Examples
Coal	Fossil fuels - these are becoming more difficult to find and extract.
Oil	
Gas	
Nuclear	Plentiful but difficult to extract/purify.

What are the 7 renewable energy resources?	Examples
Biofuel	Plant matter usually used as a fuel.
Wind	Turbines spin a generator to produce electricity.
Hydroelectric	Falling water spins a turbine to produce electricity.
Geothermal	Hot rocks underground produce steam.
Tides	Rise and fall of the tide can be used to turn a turbine.
Solar	To directly heat things or to produce electricity.
Waves	Up and down movement can turn turbines.

Energy resource	Advantages	Disadvantages
Fossil fuel 	• there are a lot of fossil fuel power stations already built • reliable	• fossil fuels are non-renewable and are running out • produce carbon dioxide, which causes global warming • coal produces polluting gases that cause acid rain
Nuclear 	• no polluting gases released as fuel is not 'burned' • reliable	• nuclear fuels are non-renewable • expensive to decommission • produce nuclear waste • accidents can have extremely bad consequences for the environment and for human life
Solar 	• renewable • can be used in remote locations • no pollution • no fuel costs	• unreliable – not always sunny
Tida' 	• renewable • reliable • no pollution • no fuel costs	• only works in areas where there is a coastline and tides • flooding areas damages habitats
Wind 	• renewable • no pollution • no fuel costs	• unreliable – it's not always windy • not all locations are suitable for wind turbines • noisy
Wave 	• renewable • no pollution • no fuel costs	• unreliable (wave strength varies) • expensive to install • difficult to maintain • not much electricity generated
Biofuel 	• renewable • very reliable - can be stored and used when needed	• releases carbon dioxide when burnt • takes up land that could be used for growing food
Geothermal 	• renewable • very reliable • no pollution • no fuel costs	• expensive to build • most parts of the world don't have areas suitable to build these power stations
Hydroelectricity 	• renewable • reliable • no pollution • no fuel costs	• expensive to build • flooding areas damages habitats

Security and Reliability of Energy Resources

In the UK, a mix of energy supplies are used so should one supply become unavailable, others can be used without disruption .

Coal, oil, gas and nuclear are more reliable than others as they can supply a continuous flow of electricity.

Trends in Use of Energy Resources

The total amount of energy used in the world is increasing as the population increases and each person is using more energy.

As fossil fuel reserves dwindle, an increase in the use of renewable energies is likely.

KS4 Energy

What are the two types of energy resources?

Non-renewable	
Renewable	

What are energy resources used for?	Examples
	cars, trains, buses, planes etc.
	Industry, homes, business, lighting etc.
	Homes, industrial processes, schools and hospitals etc.

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Hydroelectric	
Geothermal	
Tides	
Solar	
Waves	

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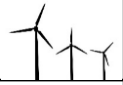
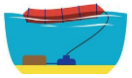
Wind 	• renewable • no pollution • no fuel costs	• • •
_____ 	• renewable • no pollution • no fuel costs	• unreliable (wave strength varies) • expensive to install • difficult to maintain • not much electricity generated
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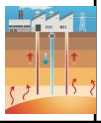
_____ 	• renewable • very reliable • no pollution • no fuel costs	• expensive to build • most parts of the world don't have areas suitable to build these power stations
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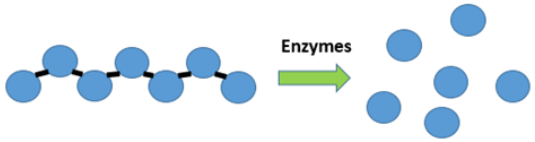
Security and Reliability of Energy Resources	Trends in Use of Energy Resources
In the UK, a mix of energy supplies are used so should one supply become unavailable, others can be used without disruption.. Coal, oil, gas and nuclear are more reliable than others as they can supply a continuous flow of electricity.	The total amount of energy used in the world is increasing as the population increases and each person is using more energy. As fossil fuel reserves dwindle, an increase in the use of renewable energies is likely.

KS4 Organisation

Levels of Organisation	Example	Definition
Cells	**muscle cells**	The basic building blocks of all living organisms.
Tissues	**muscle tissue**	A group of cells with a similar structure and function.
Organs	**the heart**	Tissues working together to perform a specific function.
Organ systems	**the circulatory system**	Organs working together to form organ systems, which work together to m an organism.

Enzymes



Enzymes are biological catalysts , they speed up chemical reactions without being used up.

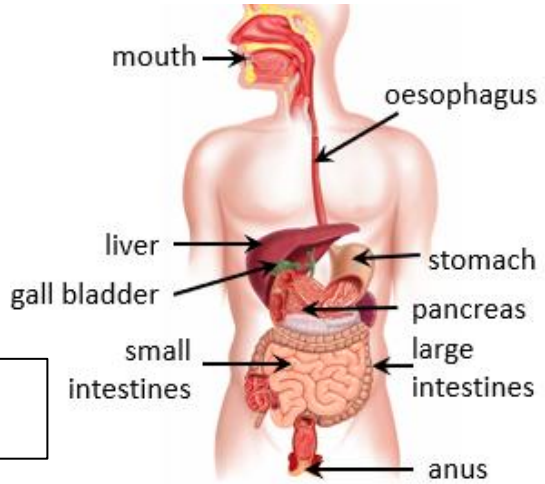
Digestive enzymes turn **large insoluble molecules** into **smaller soluble molecules** that can be absorbed into the bloodstream

Lock and Key hypothesis

Enzyme + reactant → enzyme reactant complex → enzyme + products

The activity of enzymes is affected by changes in temperature and pH

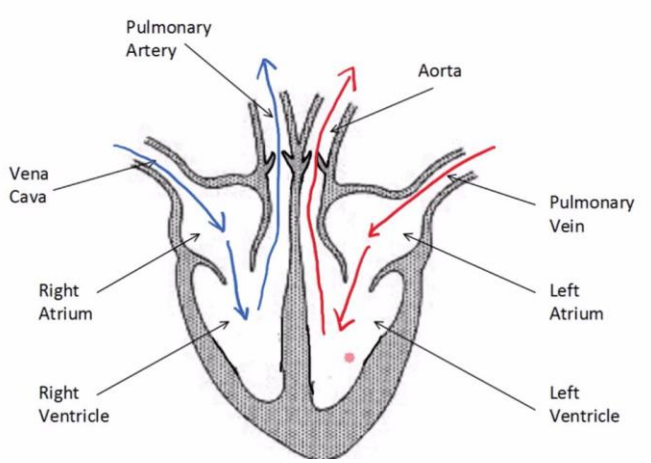
Enzymes have an optimum temperature and pH, If the temperature or pH goes too far above the optimum the enzyme changes shape (denatures) and the substrate will no longer fit the active site



Digestive Enzymes		
Carbohydrase (e.g. amylase)	Found in the salivary glands , pancreas , small intestine	
Protease	Found in stomach, pancreas and small intestine	
Lipase	Found in pancreas and small intestine	
Bile (not enzyme)	Made in the Liver , stored in the gallbladder	Emulsifies lipids Neutralises stomach acid

Food Tests		Positive result
Sugars	Benedict's test	Orange to brick red
Starch	Iodine test	Brown to blue/black
Protein	Biuret reagent	Blue to purple
lipids	Ethanol	cloudy

Blood Components		
Plasma (55%)	**Pale yellow fluid**	Transports CO_2, hormones and waste.
Red blood cells (45%)	**Carries oxygen**	Large surface area, no nucleus, full of haemoglobin.
White blood cells (<1%)	**Part of the immune system**	Some produce antibodies, others surround and engulf pathogens.
Platelets (<1%)	**Fragments of cells**	form blood clots.



The Cardiovascular System	
Right ventricle	Pumps blood to the lungs where gas exchange takes place.
Left ventricle	Pumps blood around the rest of the body.
Pacemaker (in the right atrium)	Controls the natural resting heart rate. Artificial electrical pacemakers can be fitted to correct irregularities.
Coronary arteries	Carry oxygenated blood to the cardiac muscle.
Heart valves	Prevent blood in the heart from flowing in the wrong direction.

Types of Blood Vessel		
Artery	Carry blood **away** from the heart	Thick muscular walls, small lumen, carry blood under high pressure
Vein	Carry blood **into** the heart	Thin walls, large lumen, carry blood, have valves, under low pressure
Capillary	Connects arteries and veins	One cell thick to allow diffusion

KS4 Organisation

Levels of Organisation	Example	Definition
Cells		
Tissues	**Muscle tissue**	A group of cells with a similar structure and function.
Organs		Tissues working together to perform a specific function.
Organ systems	**The circulatory system**	

Enzymes

Enzymes are biological c_____ , they speed up chemical reactions without being used up.

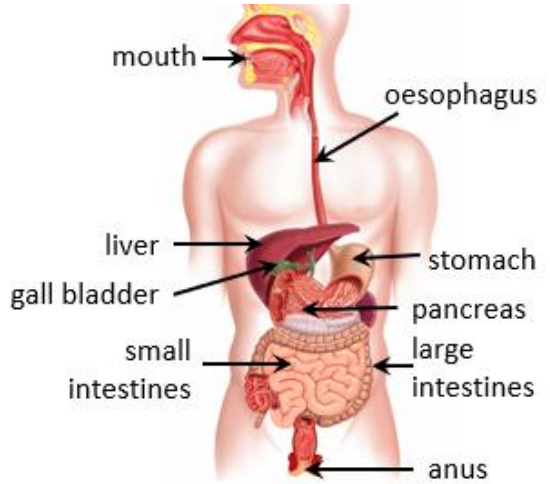
Digestive enzymes turn **large i_____ molecules** into **smaller s_____ molecules** that can be absorbed into the bloodstream

Lock and Key hypothesis

Label the diagram : enzyme, reactant, enzyme reactant complex, product active site

The activity of enzymes is affected by changes in temperature and pH

Enzymes have an optimum _____and ___, If the temperature or pH goes too far above the optimum the enzyme changes shape (d_____) and the substrate will no longer fit the _____ _____



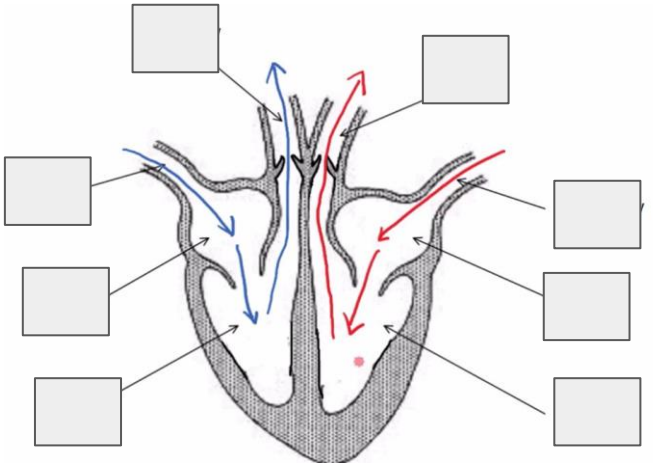
Digestive Enzymes

	Found in the salivary glands , pancreas , small intestine	
	Found in stomach, pancreas and small intestine	
	Found in pancreas and small intestine	
(not enzyme)	Made in the Liver , stored in the gallbladder	Emulsifies lipids Neutralises stomach acid

Food Tests		Positive result
Sugars	Benedict's test	
Starch		Brown to blue/black
Protein		Blue to purple
lipids	Ethanol	

Blood Components

(55%)	**Pale yellow fluid**	Transports CO_2, hormones and waste.
(45%)	**Carries oxygen**	Large surface area, no nucleus, full of haemoglobin.
(<1%)	**Part of the immune system**	Some produce antibodies, others surround and engulf pathogens.
(<1%)	**Fragments of cells**	form blood clots.



The Cardiovascular System

	Pumps blood to the lungs where gas exchange takes place.
Left ventricle	Pumps blood around the rest of the body.
	Controls the natural resting heart rate. Artificial electrical pacemakers can be fitted to correct irregularities.
Coronary arteries	
Heart valves	

Types of Blood Vessel

	Carry blood **away from** the heart	Thick muscular walls, small lumen, carry blood under high pressure
	Carry blood **into** the heart	Thin walls, large lumen, carry blood, have valves, under low pressure
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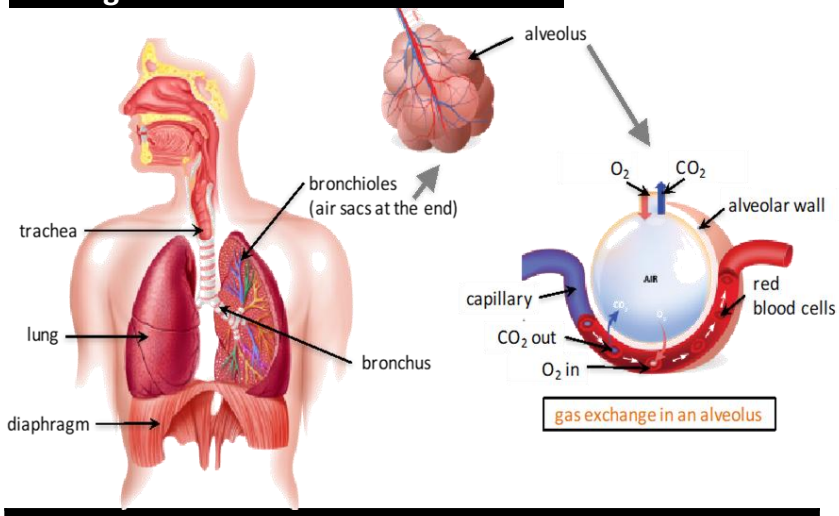
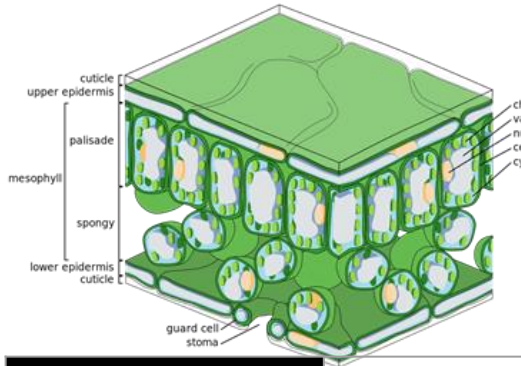
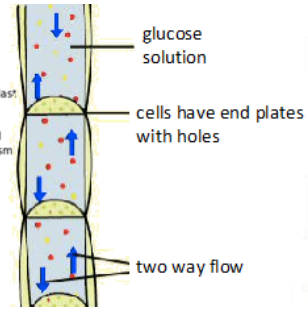
KS4 Organisation

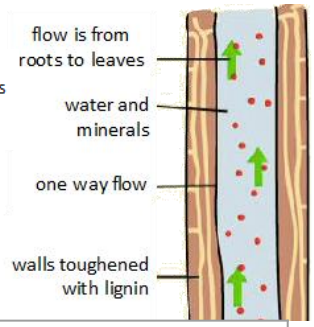


The Respiratory system		
Trachea	***Carries air to/from the lungs***	Rings of cartilage protect the airway.
Bronchioles	***Carries air to/from the air sacs (alveoli)***	Splits into multiple pathways to reach all the air sacs.
Alveoli	***Site of gas exchange in the lungs***	High surface area for efficient gas exchange.
Capillaries	***Allows gas exchange between into/out of blood***	Oxygen diffuses into the blood and carbon dioxide diffuses out.

Plant Organisation	
Waxy Cuticle (top)	Reduces water loss from the leaf
Guard cells and stomata (in lower epidermis)	Guard cells open and close the stomata to control water loss and allow for gas exchange
Palisade mesophyll	Contains palisade Cells near the top of the leaf that are packed with chloroplasts to maximise photosynthesis.
Spongy mesophyll	Contains air spaces between cells that Increase surface area for gas exchange so that carbon dioxide can diffuse into cells.



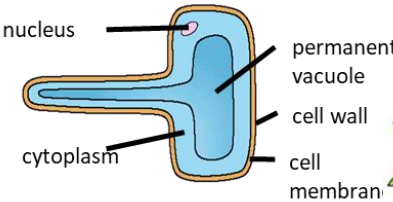


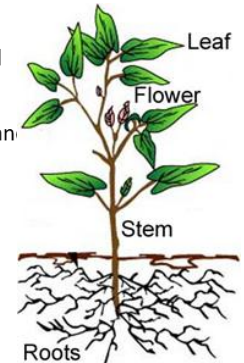


xylem	Allows transport of water and mineral ions from the roots to the stem and the leaves.
phloem	Transports dissolved sugars from the leaves to the rest of the plant for use or storage (translocation).
Transpiration	The loss of water through the leaf by evaporation
Translocation	The movement of dissolved sugars

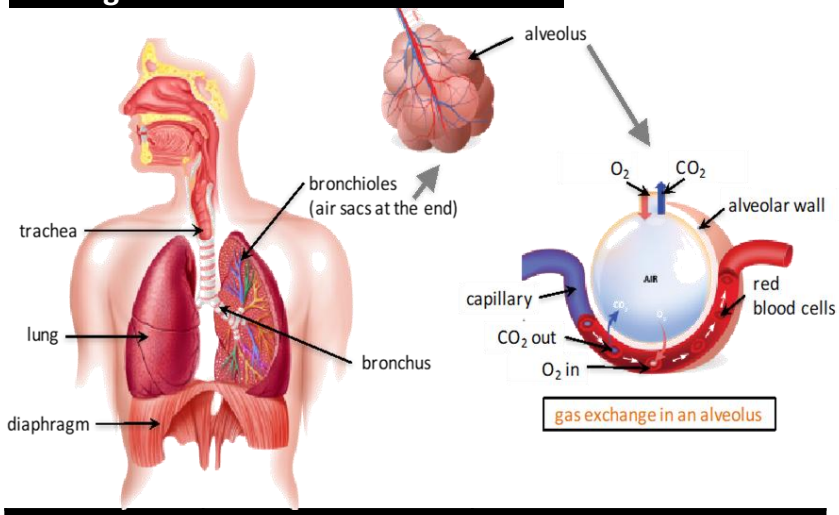
Non-communicable Diseases		Description	Treatment		Risk Factors
Cardiovascular Conditions	Coronary Heart Disease	Fatty deposits in the coronary artery causing a lack of blood flow to the cardiac muscle	Stents , statins	Heart Disease	drinking alcohol, diet, obesity
	Faulty Heart Valves	Valves failing to open or close properly causing blood to leak or flow in wrong direction	Biological Valve transplant , mechanical valve transplant	Cancer	Carcinogens and ionising radiation increase the risk of cancer by changing/ damaging DNA
Cancer	Benign Tumour (not cancer)	Contained in one area of the body within a membrane			Some cancers have genetic risk factors
	Malignant Tumour	Spreads to different parts of the body and forms more tumours	chemotherapy , radiotherapy		smoking

Temperature, humidity, air movement and light intensity affect the rate of transpiration.





KS4 Organisation



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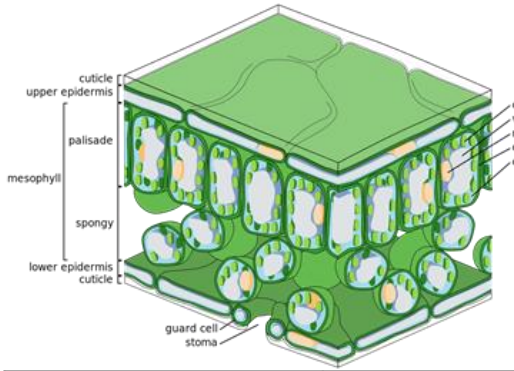
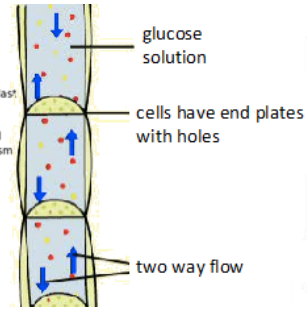
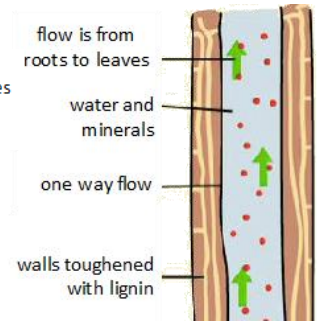
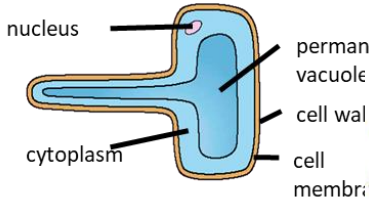


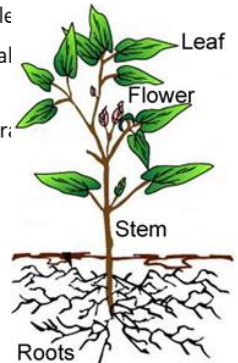




	Allows transport of water and mineral ions from the roots to the stem and the leaves.
	Transports dissolved sugars from the leaves to the rest of the plant for use or storage (translocation).
	The loss of water through the leaf by evaporation
	The movement of dissolved sugars

Temperature, humidity, air movement and light intensity affect the rate of transpiration.

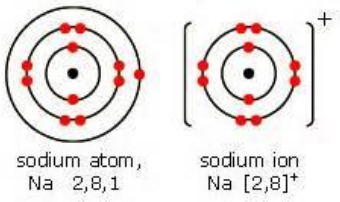




Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

Ions

All atoms of all elements react to get a full outer shell of electrons. **Metals** will lose electrons to get a full outer shell. **Non-metals** will gain electrons to get a full outer shell: An ion is an atom with a positive or negative charge, these are formed by an atom gaining or losing electrons. We represent ions with square brackets around the ion and the charge in the top right corner.

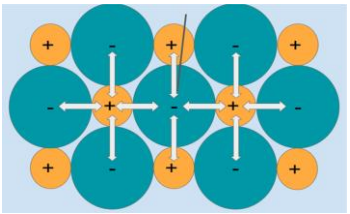


The **group number** indicates how many electrons an atom would have to lose or gain to get a full outer shell of electrons.

Group	What happens to the electrons?	Charge on ions
1	Lose 1	+1
2	Lose 2	+2
3	Lose 3	+3
5	Gain 3	-3
6	Gain 2	-2
7	Gain 1	-1

Giant Ionic Compounds

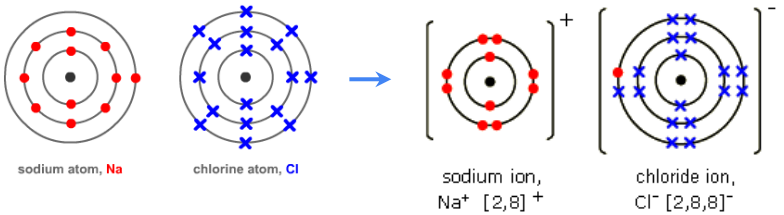
Opposite charged ions attract. Similarly charged ions repel. Ionic compounds form **giant ionic compounds due to the electrostatic forces** of attraction in all directions between oppositely charged ions.



Key Terms	Definitions
metal	An element which loses electrons to form positive ions
non metal	An element which gains electrons to form negative ions
ion	An atom (or particle) with a positive or negative charge, due to loss or gain of electrons
ionic bond	A bond formed by the electrostatic attraction of oppositely charged ion
electrostatic	The force between a positive and negative charge.

Ionic Bonding

When a metal atom reacts with a non-metal atom, electrons in the outer shell of the **metal atom are transferred to the non metal atom**. The metal now has a positive charge and the non metal has a negative charge. This means there is an **electrostatic attraction** between the two ions - this is what forms an ionic bond. Both atoms will have **a full outer shell.**



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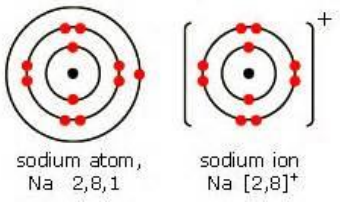


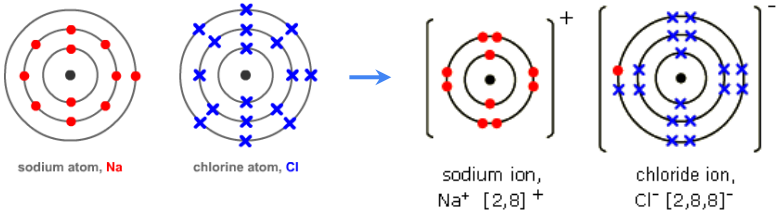
The **group number** indicates how many electrons an atom would have to lose or gain to get a full outer shell of electrons.

Group	What happens to the electrons?	Charge on ions
1		+1
2		+2
3		+3
5	Gain 3	
6	Gain 2	
7	Gain 1	

Key Terms	Definitions
metal	
	An element which gains electrons to form negative ions
ion	
	A bond formed by the electrostatic attraction of oppositely charged ion
	The force between a positive and negative charge.

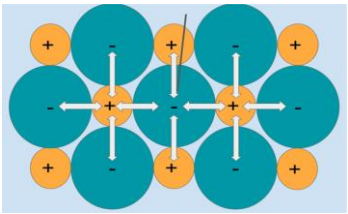
Ionic Bonding

When a metal atom reacts with a …… atom, electrons in the outer shell of the **metal atom are** …… **to the non metal atom**. The metal now has a positive charge and the non metal has a negative charge. This means there is an **electrostatic** …… between the two ions - this is what forms an ionic bond. Both atoms will have **a full** …… …… .



Giant Ionic Compounds

Opposite charged ions …… . Similarly charged ions repel. Ionic compounds form…… **ionic compounds due to the electrostatic forces** of attraction in all directions between oppositely charged …… .

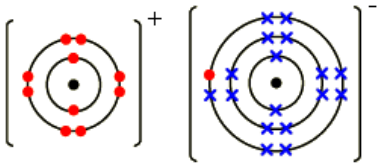


Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

Ionic Bonding- Models

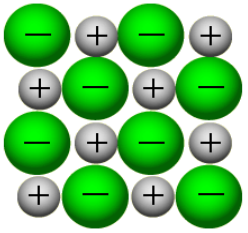
There are a number of ways we can represent ionic bonding all; of these have **advantages and limitations.**

Dot and cross diagrams- These show clearly how the electrons are transferred. It does not, however, show the 3D lattice structure of an ionic compound or that this is a giant compound.

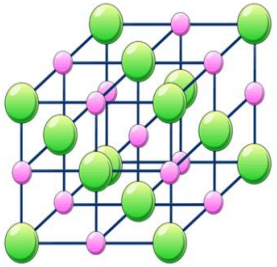


sodium ion, Na^+ [2,8] $^+$ chloride ion, Cl^- [2,8,8]$^-$

2D ball and stick model of ionic bonding
This has the advantage of showing that electrostatic forces exist between oppositely charged ions in an ionic compound. However, does not show the 3D structure of an ionic compound.



3D Ball and Stick model of ionic bonding
This clearly shows the 3D structure of the **ionic lattice** and how different ions interact with other ions **in all directions** to create an ionic lattice.



Key Terms	Definitions
ionic lattice	The regular 3D arrangement of ions in an ionic compound
giant	When the arrangement of atoms is repeated may times, with large numbers of atoms or ions
aqueous	When a substance is dissolved in water
empirical formula	The simplest ratio of atoms in a compound

Properties of Ionic compounds

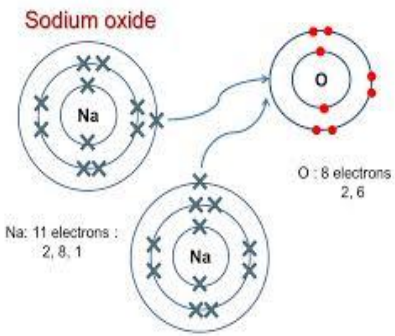
Ionic compounds have **high melting points, due to strong electrostatic forces between the oppositely charged ions.** This means a lot of energy is required to break these bonds.

Ionic compounds **do not conduct electricity** as a solid. They **do conduct electricity** if they are dissolved in water (aqueous) or in the liquid state.

This is because the ions are free to move, carrying the electric charge.

Empirical Formula of Ionic Compounds

In sodium chloride, 1 sodium atom transfers one electron to a chlorine atom, therefore the empirical formula is NaCl. However, there are some examples where the ratio of atoms is not 1:1. For example when sodium bonds with oxygen, sodium only loses one electron but oxygen gains two. So there are two sodium atoms for every oxygen, so the **empirical formula is Na_2O.**



Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

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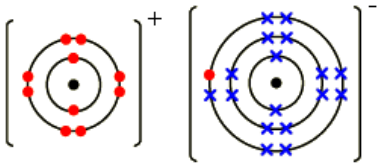

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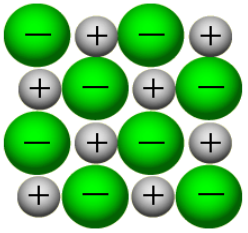

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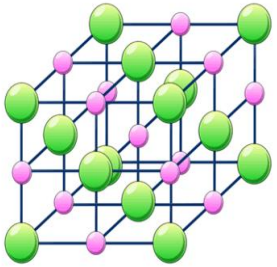

Key Terms	Definitions
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	When a substance is dissolved in water
	The simplest ratio of atoms in a compound

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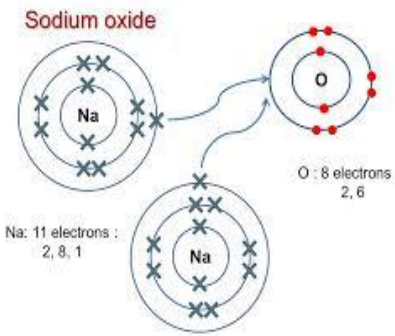
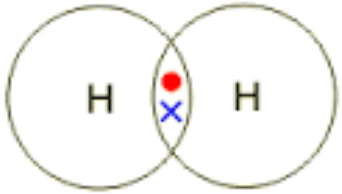


Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

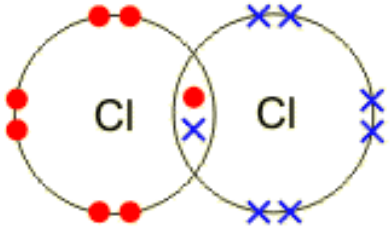
Covalent Bonding

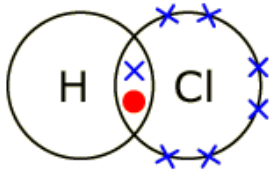
Covalent bonding occurs between atoms of non metal elements. E**lectrons are shared between the atoms**, so that they have a full outer shell. Covalent bonds are strong and require a lot of energy to break. Both hydrogen atoms have **one electron in their outer shell. Therefore both hydrogen atoms share one electron each,** to give them both a full outer shell.

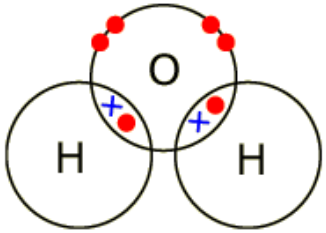


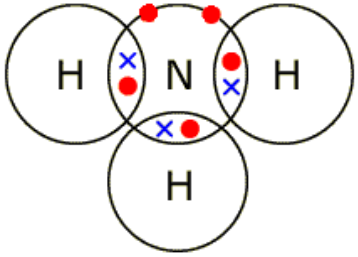
When drawing covalent molecules we use "dot cross diagrams" as we do with ionic compounds. It is important to represent the electrons on one atom with a dot and on the other atom with an X.

These examples of **chlorine, water, hydrogen chloride and ammonia (NH_3)** all share one electron per atom in a molecule to make a full outer shell of electrons on each atom.





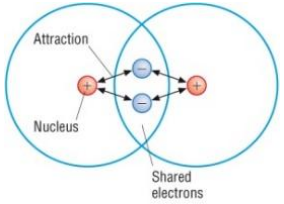




Key Terms	Definitions
covalent bonding	Bonding between 2 (or more) atoms where electrons are shared.
molecule	A substance which contains two or more covalently bonded atoms
lone pair	A pair of outer electrons that are not part of the covalent bond.

The Nature of a Covalent Bond

Covalent bonds are **strong** because there is electrostatic attraction between the electrons in the covalent bond and the positively charged nucleus. This means a lot of energy is required to break a covalent bond.

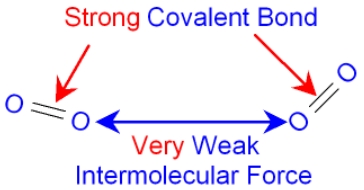


Properties of Simple Covalent Compounds

Simple covalent compounds have low melting and boiling points. They are often gases at room temperature: for example, **oxygen** and **carbon dioxide.**

Although the covalent bonds between the atoms are strong, the **intermolecular forces between the molecules are weak.**

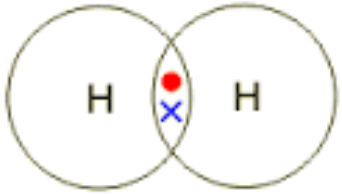
This means that only a small amount of energy is required to overcome these weak forces.



Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

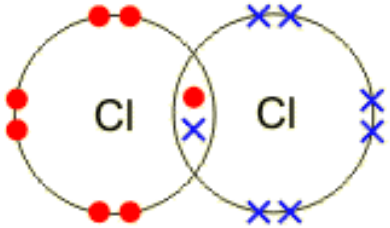
Covalent Bonding

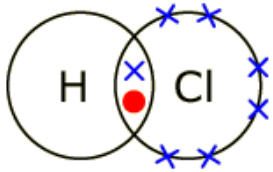
Covalent bonding occurs between atoms of non metal elements. …… **are shared between the atoms**, so that they have a full outer shell. Covalent bonds are …… and require a lot of energy to break. Both hydrogen atoms have **one electron in their outer shell. Therefore both hydrogen atoms share one electron each,** to give them both a …… outer shell.

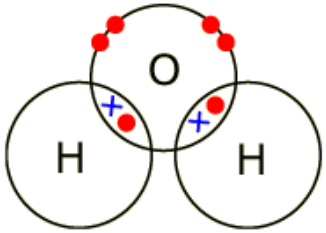


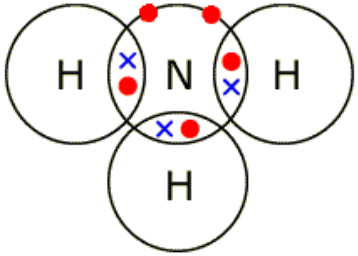
When drawing covalent …… we use "dot cross diagrams" as we do with ionic compounds. It is important to represent the electrons on one atom with a dot and on the other atom with an X.

These examples of **chlorine, water, hydrogen chloride and ammonia (NH_3)** all share one electron per atom in a molecule to make a full outer shell of electrons on each atom.





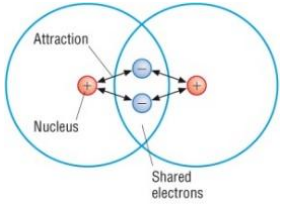




Key Terms	Definitions
covalent bonding	
molecule	
lone pair	

The Nature of a Covalent Bond

Covalent bonds are …… because there is <u>electrostatic attraction</u> between the electrons in the covalent bond and the positively charged nucleus. This means a lot of …… is required to break a covalent bond.

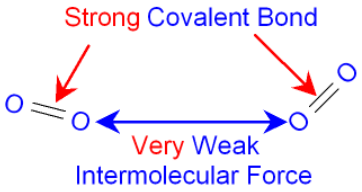


Properties of Simple Covalent Compounds

Simple covalent compounds have …… melting and boiling points. They are often gases at room temperature: for example, **oxygen** and **carbon dioxide.**

Although the covalent bonds between the atoms are strong, the **…… forces between the molecules are weak.**

This means that only a small amount of energy is required to overcome these …… forces.

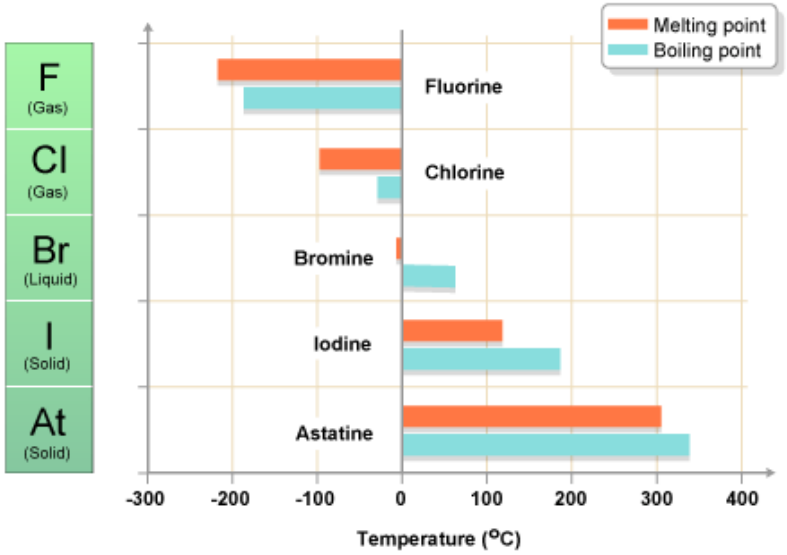


Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

Properties of Covalent Compounds-Continued

The size of the intermolecular force between molecules increases as the molecules get larger. For example, as you go down group 7, the boiling points increase because **the molecules get larger**.

On the graph below - the boiling point of fluorine is -188°C → a gas at room temperature, whereas the melting point of astatine is 302°C → a solid at room temperature. This is because the intermolecular forces between the larger astatine molecules are larger than between the **smaller fluorine molecules.**



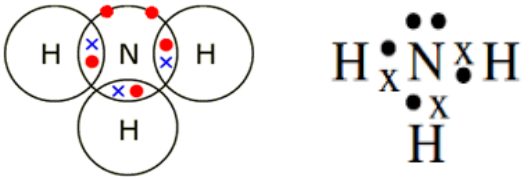
As well as having low melting points, covalent compounds **do not conduct electricity. T**his is because they have no free electrons or ions and therefore there is nothing to carry the electric charge**.** Pure water does not conduct electricity; only when it has ions dissolved in it will it conduct.

Key Terms	Definitions
polymer	A very large molecule, made from monomers
repeating unit	The shortest repeating section of a polymer
intermolecular forces	The force of attraction between two molecules

Representing Covalent Compounds

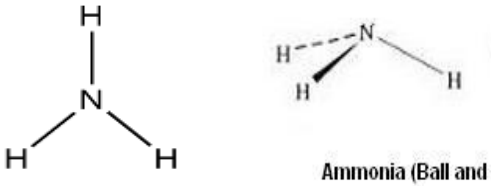
Like ionic compounds, there are variety of ways that scientists use to represent covalent compounds**.**

Dot cross diagram



There are two dot cross representations of ammonia shown above. The advantages of these diagrams are that it is very clear, which electrons are used in bonding and which are lone pairs. However it does not show the 3D structure of the molecule.

Ball and stick model



Ammonia (Ball and stick model)

A ball and stick diagram can either be 2D or 3D. While the 2D version clearly shows which atoms are bonded together, the 3D version gives the scientist more information about the 3D shape and the angles between the bonds in the molecule.

Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

Properties of Covalent Compounds-Continued

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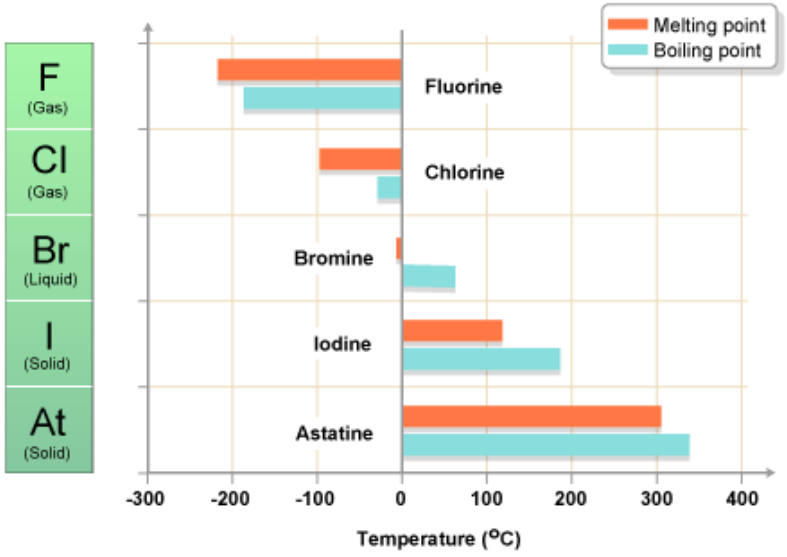

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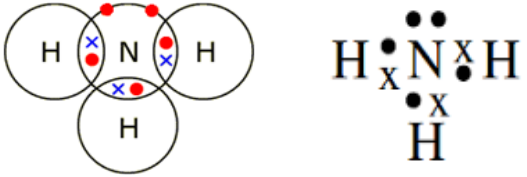

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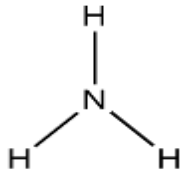

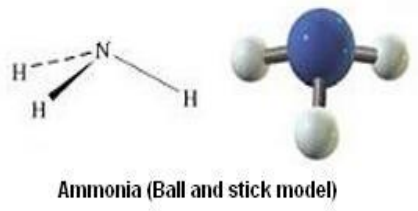

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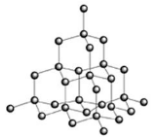
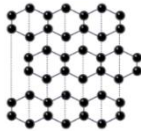
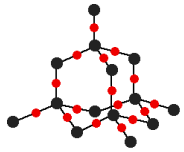
Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

Key Terms	Definitions
giant covalent	Giant covalent structures contain a lot of non-metal atoms, each joined to adjacent atoms by covalent bonds
delocalised electron	An electron that is free, not part of an atom
allotrope	Different forms of the same element for example diamond and graphite are allotropes of carbon

Giant/Macro Covalent Compounds

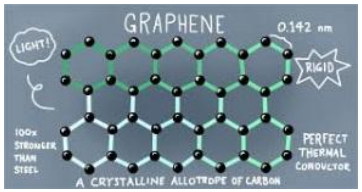
In a giant covalent structure all atoms are bonded to each other by strong covalent bonds. Giant covalent compounds have a **high melting point** because many strong covalent bonds need to be broken and this requires a lot of energy.

There are three examples you need to know, diamond, graphite and silica (see table below).

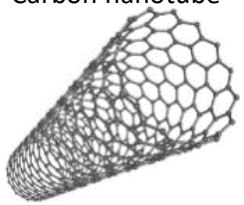
Substance	Diagram	Description	Properties
Diamond		Each carbon is covalently bonded to four other carbons	• Very hard • Very high melting point, due to strong covalent bonds between all the atoms • Does not conduct electricity.
Graphite		Each carbon is covalently bonded to 3 other carbons, there are weak (non covalent) bonds between the layers.	• High melting point • Conductor of electricity due to **delocalised electrons** between the layers • Slippery as layers can slide over each other
Silica (silicon dioxide)		Every silicon atom is bonded to 2 oxygen atoms and vice versa	• Strong • High melting point

Graphene and Fullerenes

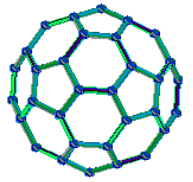
There are other forms of carbon which have been discovered recently: **graphene is a single layer of graphite** so it is 1 atom thick. Fullerenes are molecules of carbon with hollow shapes. The most famous example is Buckminsterfullerene (C_{60}). Fullerenes have use in drug delivery and as catalysts. Carbon nanotubes are cylinder shaped fullerenes, these are strong and are excellent conductors of both **heat and electricity.**



Carbon nanotube



Buckminsterfullerene



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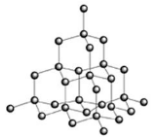
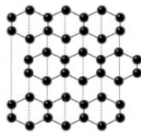
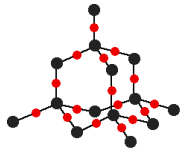
		Each carbon is covalently bonded to ……. other carbons	• • Very high melting point, due to strong covalent bonds between all the atoms •
		Each carbon is covalently bonded to ……. other carbons, there are weak (non covalent) bonds between the layers.	• • Conductor of electricity due to **delocalised electrons** between the layers •
		Every silicon atom is bonded to 2 oxygen atoms and vice versa	• Strong •

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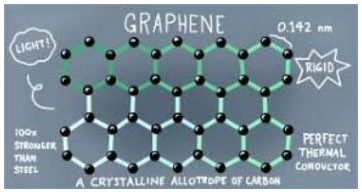

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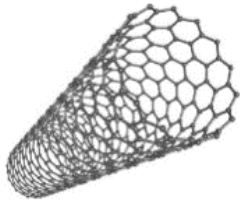

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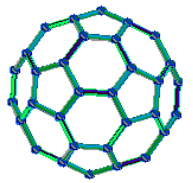
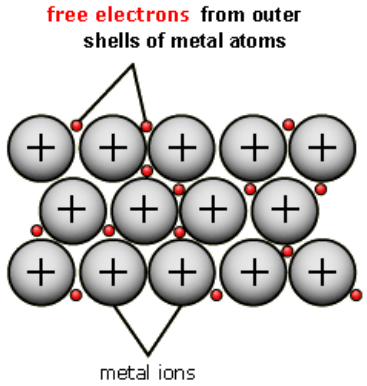


Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

Metallic Bonding

Metals form giant structures. The metal atoms form a regular pattern and the donate their outer electron to the **"sea of delocalised electrons".** These electrons are free to move. The 2D structure of metallic bonding looks like this:



This would be the structure of a group 1 metal like sodium, if it were a group 2 metal (e.g. magnesium) then the charge on the ions would be 2+.

Metals have high melting points because there are strong forces between the atoms. There is strong **electrostatic** attraction between the positive metal ions and the delocalised electrons.

The strength of this attraction means that more energy is required to overcome these forces.

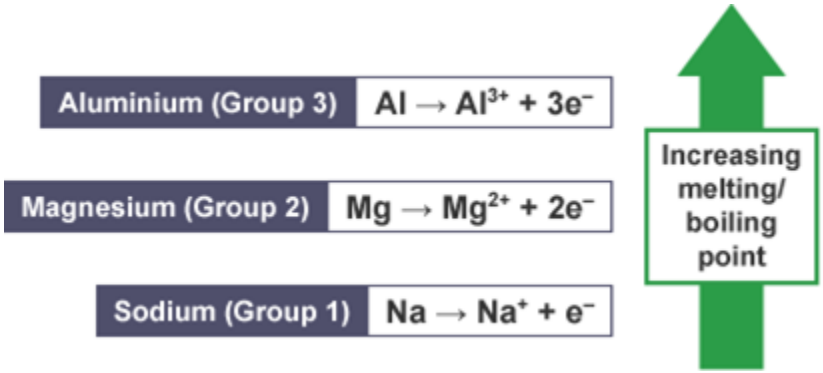
The greater the number of outer electrons, the higher the melting point. This is due to the increased positive charge of the metal ion.

Key Terms	Definitions
metallic bonding	A type of bonding which occurs only in metals
alloy	A mixture of 2 or elements, one of which is a metal (the other element may be metal or non metal)
delocalised electron	An electron that is free, not part of an atom
malleable	The ability of a material to be bent into shape.

Properties of Metals

Metals are **good conductors of electricity**, due to the delocalised electrons, which can carry the electric charge. Metals are also **good conductors of heat** as the free electrons can transfer the heat energy through the metal.

Metals are also **malleable** (bendy) as the layers of ions can easily slide over one another. This means that many pure metals are too soft for uses such as building.



Chemistry Knowledge Organiser
Topic: Bonding structure and properties of matter

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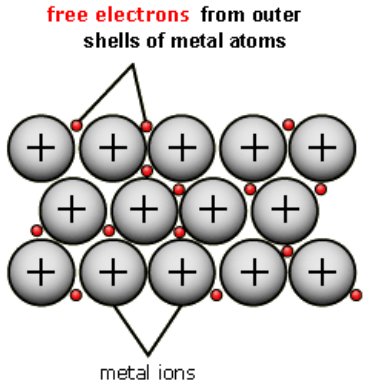

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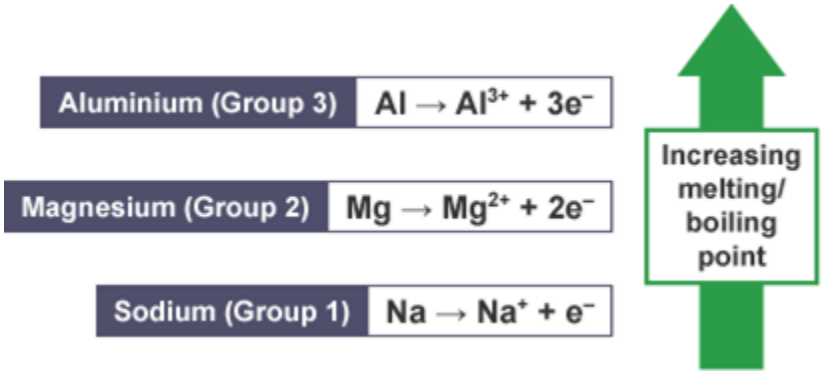
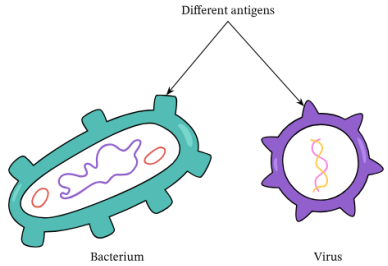


KS4 INFECTION AND RESPONSE

Non-Specific Defence Systems	
Nose	Nasal hairs, sticky mucus and cilia prevent pathogens entering through the nostrils.
Trachea and bronchus	Lined with mucus to trap dust and pathogens. Cilia move the mucus up and into the digestive system.
Stomach acid	Stomach acid (pH1) kills most ingested pathogens.
skin	Waterproof barrier. Glands secrete oils that kill microbes.

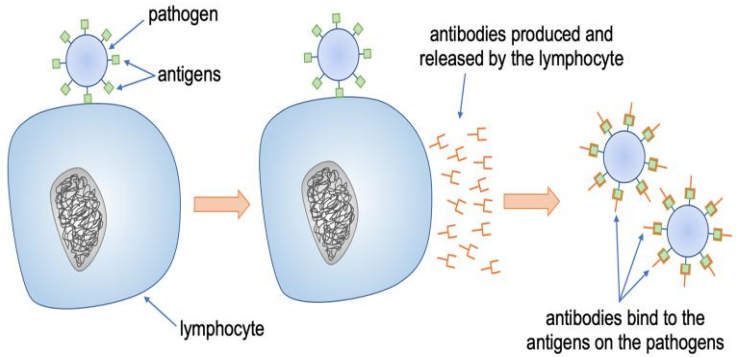


Pathogens are identified by white blood cells by the different proteins on their surfaces **ANTIGENS.**

Traditionally drugs were extracted from plants and microorganisms		
Digitalis	**Aspirin**	**Penicillin**
Extracted from foxglove plants and used as a heart drug	A painkiller and anti-inflammatory that was first found in willow bark	Discovered by Alexander Fleming from the Penicillium mould and used as an antibiotic

Antibiotics	Kill infective bacteria inside the body. Specific bacterial infections require specific antibiotics.
vaccines	Weakened or dead form of pathogen. White blood cells respond to pathogen, releasing antibodies. White blood cells are much faster at producing antibodies during a future exposure

White Blood Cells		
Phagocytes	**Phagocytosis**	Phagocytes engulf the pathogens and digest them.
Lymphocytes	**Antibodies**	Specific antibodies destroy the pathogen. If a person is infected again by the same pathogen, the lymphocytes make antibodies much faster.
	Antitoxins	Antitoxin is a chemical produced to counteract the toxins produced by bacteria.



Disease	Pathogen	Symptoms	Method of transmission	Control of spread
Measles	Virus	Fever, red skin rash.	Droplet infection from sneezes and coughs.	Vaccination as a child.
HIV	Virus	Initially flu like systems, serious damage to immune system.	Sexual contact and exchange of body fluids.	Anti-retroviral drugs and use of condoms.
Tobacco mosaic virus	Virus	Mosaic pattern on leaves.	Enters via wounds in epidermis caused by pests.	Remove infected leaves and control pests that damage the leaves.
Salmonella	Bacteria	Fever, cramp, vomiting, diarrhoea.	Food prepared in unhygienic conditions or not cooked properly.	Improve food hygiene, wash hands, vaccinate poultry, cook food thoroughly.
Gonorrhoea	Bacteria	Green discharge from penis or vagina.	Direct sexual contact or exchange of body fluids.	Use condoms. Treatment using antibiotics.
Malaria	Protists	Recurrent fever.	By an animal vector (mosquitoes).	Prevent breeding of mosquitoes. Use of nets to prevent bites.
Rose black spot	Fungus	Purple black spots on leaves.	Spores carried by wind or water.	Remove infected leaves. Spray with fungicide.

Clinical Testing			
Stage		**Tested on…**	**tested for…**
Pre-clinical		**Not** humans Animals Cells/tissues in lab	Toxicity Efficacy
Clinical	Phase (I)	Small group **healthy volunteers**	Toxicity Side-effects
	Phase (II)	Medium group patients	Efficacy Dosage
	Phase (III)	Large group patients	Efficacy Dosage Long-term side-effects

KS4 INFECTION AND RESPONSE

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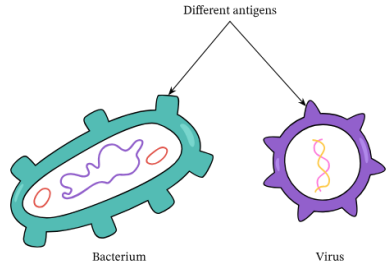

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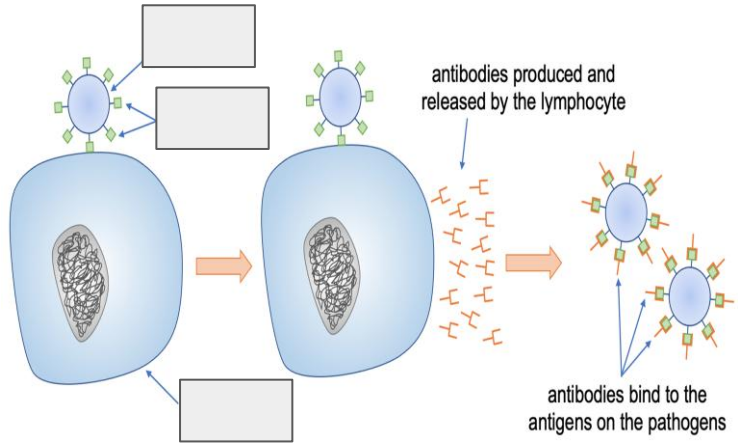
Measles		Fever, red skin rash.		Vaccination as a child.
HIV		Initially flu like systems, serious damage to immune system.		Anti-retroviral drugs and use of condoms.
Tobacco mosaic virus		Mosaic pattern on leaves.		Remove infected leaves and control pests that damage the leaves.
Salmonella		Fever, cramp, vomiting, diarrhoea.		Improve food hygiene, wash hands, vaccinate poultry, cook food thoroughly.
Gonorrhoea		Green discharge from penis or vagina.		Use condoms. Treatment using antibiotics.
Malaria		Recurrent fever.		Prevent breeding of mosquitoes. Use of nets to prevent bites.
Rose black spot		Purple black spots on leaves.		Remove infected leaves. Spray with fungicide.

Traditionally drugs were extracted from plants and microorganisms		
Digitalis	**Aspirin**	**Penicillin**
Extracted from foxglove plants and used as a heart drug	A painkiller and anti-inflammatory that was first found in willow bark	Discovered by Alexander Fleming from the Penicillium mould and used as an antibiotic

Antibiotics	
vaccines	



Clinical Testing			
Stage		**Tested on…**	**tested for…**
Pre-clinical		**Not** humans Animals Cells/tissues in lab	
Clinical	Phase (I)	Small group **healthy volunteers**	
	Phase (II)	Medium group patients	
	Phase (III)	Large group patients	

GCSE Geography Knowledge Organiser - Paper 1 Section B: Living World - Ecosystems

Ecosystems Key Terms

Ecosystem = a community of plants and animals living in one place, which interact with each other and their environment.

Biotic components = living organisms in an ecosystem (e.g. plants, animals, insects, bacteria and fungi.)

Abiotic components = non-living features of an ecosystem (e.g. oxygen, wind, temperature, precipitation and rocks).

Interrelationship = how two or more things link together in an ecosystem, e.g. how biotic organisms needs abiotic features (like water & oxygen) to survive.

Biodiversity = the number of different plant and animal species in an ecosystem.

Producer = plants which make their own food from the sun's energy.

Consumer = anything which gets its energy from eating producers or other consumers (e.g. rabbits and foxes).

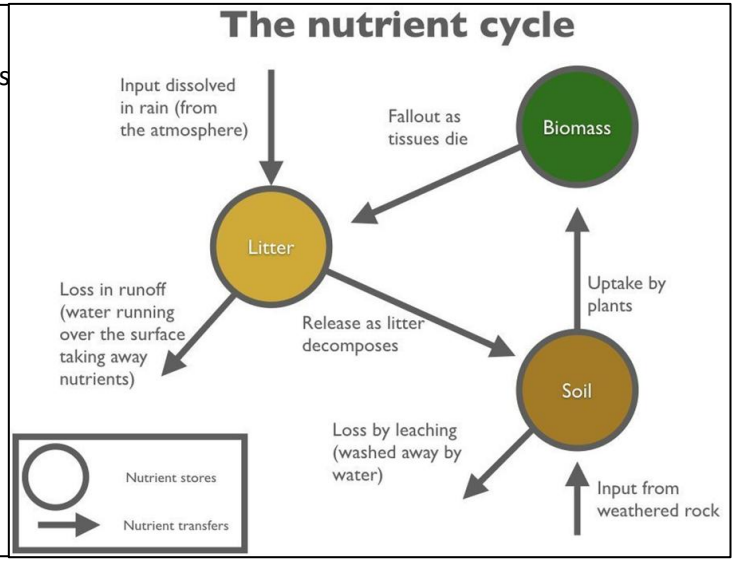
Decomposer = an organism which breaks down dead animals and plants, putting the nutrients back into the soil (e.g. mushrooms, fungi and bacteria).

The nutrient cycle shows how nutrients are constantly recycled around an ecosystem.

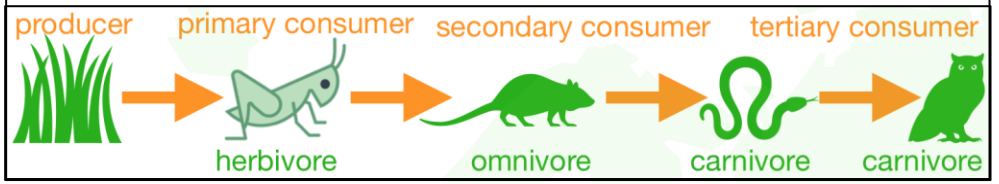
Nutrients = the minerals biotic organisms need to grow.

Biomass = biotic matter (living stuff)

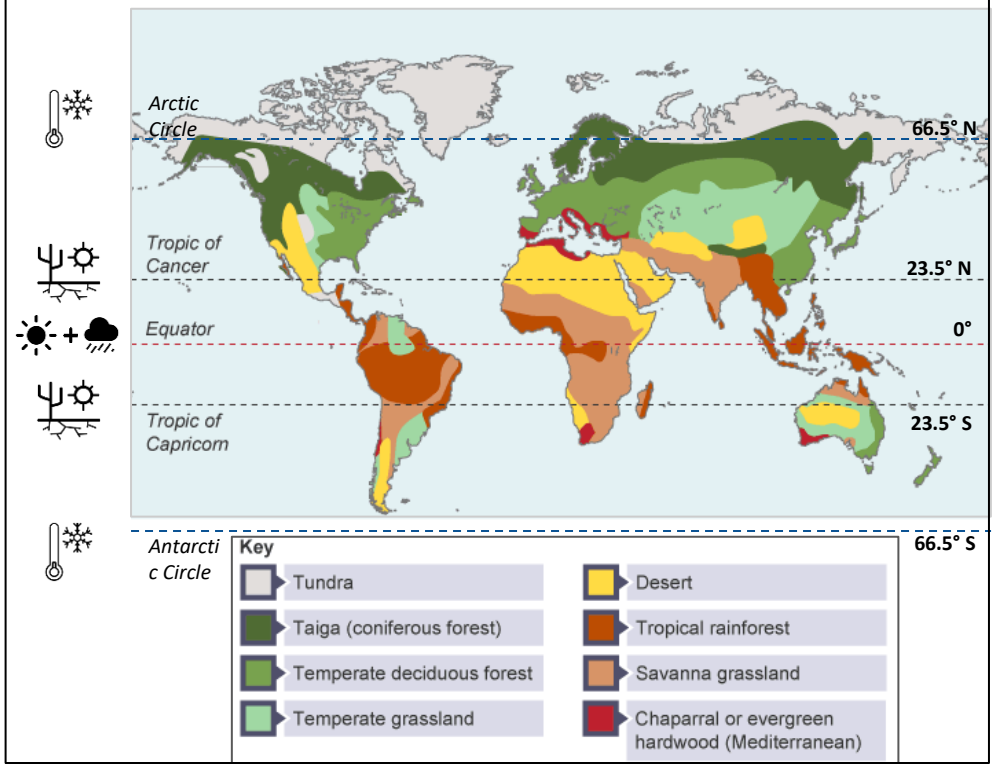
Litter = dead things decomposing



A **food chain** uses arrows to show how energy is transferred in ecosystems.



Map of the World's Large Scale Ecosystems



Epping Forest: Example of small scale UK ecosystem

Located in Northeast London, Epping Forest contains ash trees, which are endangered and getting older. To stop the trees toppling over due to the weight of the large branches, conservationists are **pollarding** the trees (cutting off branches). The old branches are then put onto the forest floor to allow them to decompose and also create habitats for mice and insects in Epping Forest.

GCSE Geography Knowledge Organiser - Paper 1 Section B: Living World - Ecosystems

Ecosystems Key Terms

Ecosystem =

Biotic components =

Abiotic components =

Interrelationship =

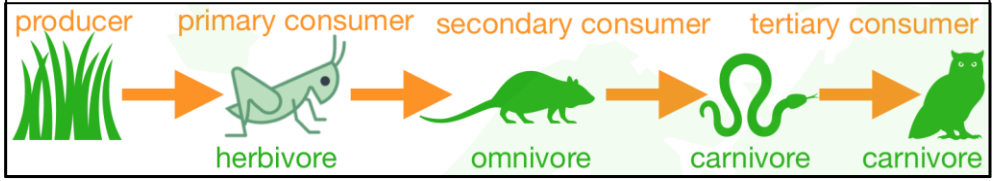
Biodiversity =

Producer =

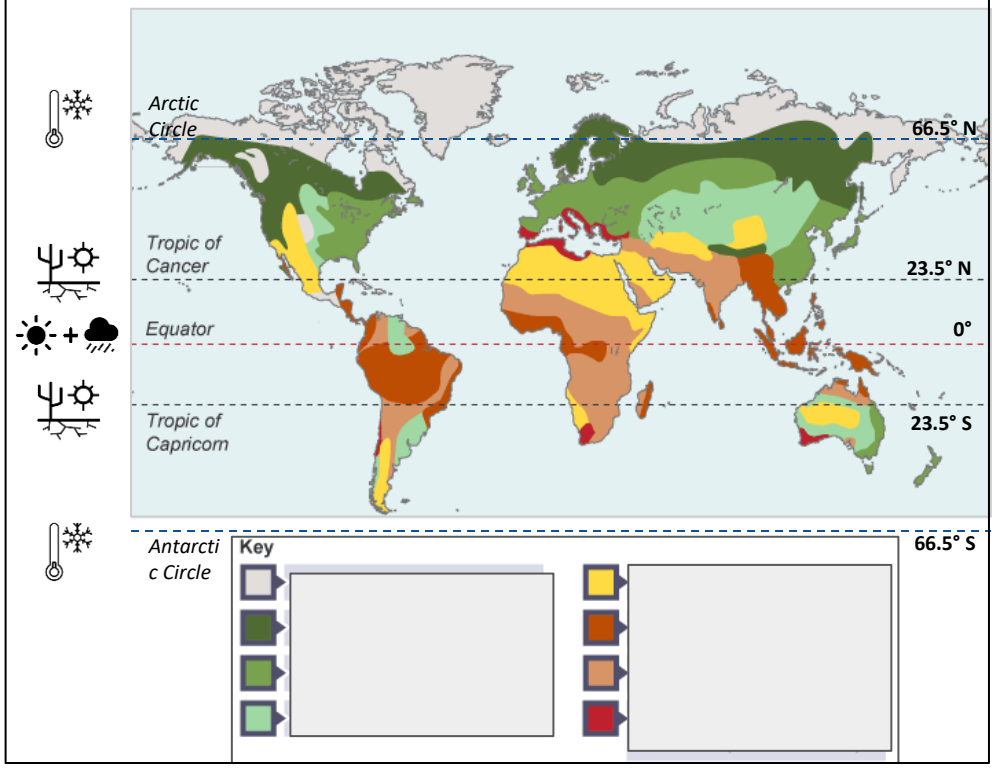
Consumer =

Decomposer =

A **food chain** uses _____ to show how _____ is transferred in _____ .



Map of the World's Large Scale Ecosystems

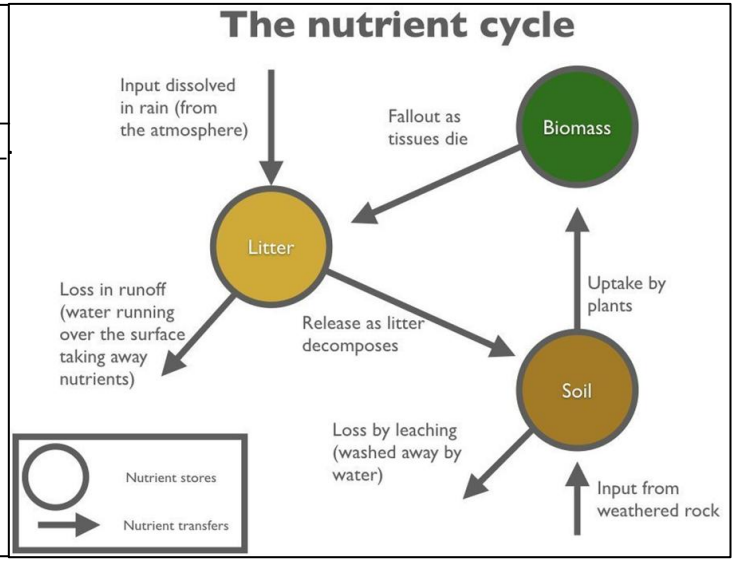


The nutrient _____ shows how _____ are constantly _____ around an _____.

Nutrients =

Biomass =

Litter =



Epping Forest: Example of small scale UK ecosystem

Located in Northeast _____ , Epping Forest contains ash _____ , which are endangered and getting older. To stop the trees toppling ____ due to the weight of the _____ branches, conservationists are _____ the trees (cutting off branches). The old branches are then put onto the forest _____ to allow them to _____ and also create _____ for mice and insects in Epping Forest.

GCSE Geography Knowledge Organiser - Paper 1 Section B: Living World - Tropical Rainforests

Characteristics of the Malaysian Rainforest

Location: On the Equator in South America. Mostly located in Brazil.

Climate: Sunny, hot (25-30°C) and rainy (over 2500 mm of rain) all year with no seasons.

Soil: Thin fertile (nutrient rich) topsoil where leaf litter decomposes. However, the soil under this top layer is poor quality, as the heavy rain washes most of the nutrients away.

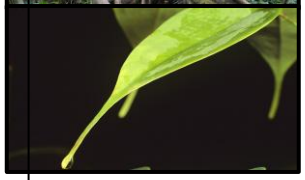
Biodiversity: Very high biodiversity, as the climate is perfect for rapid plant growth. Therefore, there's lots of food for consumers.

Location of the Malaysian Rainforest

Plant and Animal Adaptations in the Malaysian Rainforest

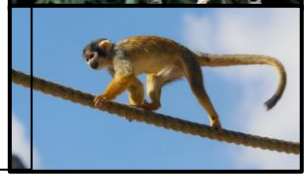
Buttress roots = large roots, which spread out sideways. This means that trees can access all the nutrients in the fertile topsoil and the wide roots also support the trees' weight, so they don't topple over during storms.

Drip tip leaves = pointed leaves, which let water run off quickly. This stops the leaves getting broken or damaged during heavy rainstorms.



Jaguar have spotted fur to help them ambush their prey And so jaguar cubs stay safe when adults are hunting. They are strong swimmers, so they can hunt fish. They are also excellent climbers, so can hunt in the trees.

3 toed sloth have claws to help them climb trees. They can turn their heads 270 degrees to check for predators. They move incredibly slowly, using very little energy, so they live on a diet of readily available leaves.



Deforestation = cutting or burning down all the vegetation (plants) in an area.

Causes of Deforestation in the Malaysian Rainforest

- **Commercial agriculture** = clearing space to grow crops or farm animals for money.
- **Logging** = deforestation that's done on a large scale by companies, so the wood can be sold and used, e.g. for building houses or making furniture.
- **Subsistence farming** = when indigenous people cut down or burn a small area of forest to make space to grow enough food for them and their family.
- **Mining** tin and iron ore.
- **Population growth and building settlements**.
- Flooding for hydroelectric dams

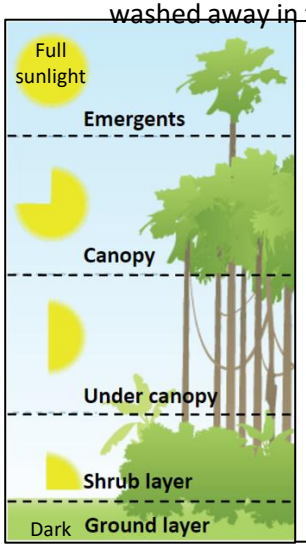
Impacts of Deforestation in the Malaysian Rainforest

\+ **Economic development**, as people reinvest the money they earn into businesses, housing, education, healthcare etc.

– **Soil erosion** as loose soil is washed away in the heavy rain.

– **Biodiversity reduces** as habitats are destroyed.

– Increases the risk of **climate change**, as fewer trees take in CO^2- Carbon sink. Burning also releases CO^2.



Sustainable Management of the Malaysian Rainforest

Sustainable management means using an area in a way that doesn't damage it forever.

Selective logging = cutting down only mature (fully grown) trees in the canopy or emergent layer. Smaller trees are left to grow and get more light.

Ecotourism = tourism that creates jobs but doesn't damage the local environment.

Conservation and education= teaching people about the value of the rainforest (e.g. medicines), so they want to protect it.

International agreements, e.g. restrictions on hardwood logging

GCSE Geography Knowledge Organiser - Paper 1 Section B: Living World - Tropical Rainforests

Characteristics of the Malaysian Rainforest

Location:

Climate:

Soil:

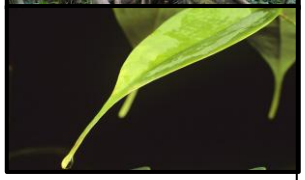
Biodiversity:

Location of the Malaysian Rainforest

Plant and Animal Adaptations in the Malaysian Rainforest

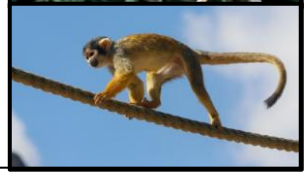
Buttress roots =

Drip tip leaves =



Jaguar =

Squirrel monkeys =



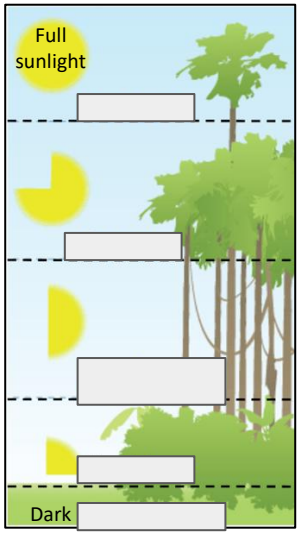
Deforestation = cutting or burning down all the vegetation (plants) in an area.

Causes of Deforestation in the Malaysian Rainforest

- **Commercial agriculture =**
- **Logging =**
- **Subsistence farming =**
- **Mining**
- **Building roads and settlements.**

Impacts of Deforestation in the Malaysian Rainforest

+	**Economic development,**	–	**Biodiversity**
-	**Soil erosion**	–	**Climate change**



Sustainable Management of the Malaysian Rainforest

Sustainable management =

Education =

Ecotourism =

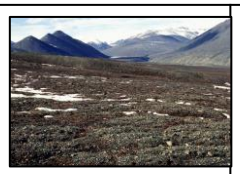
Selective logging =

International agreements =

GCSE Geography Knowledge Organiser - Paper 1 Section B: Living World - Cold Environments

Characteristics of Cold Environments in the Northern Hemisphere

Tundra biome



Location: North of the Arctic Circle.

Climate: Cold, windy and dry (150-250mm of precipitation per year). Average temperature are below freezing for most of the year, but reach a peak of 10°C in the short summer. 50-60 days of permanent daylight during summer.

Soil: The topsoil thaws (melts) in the summer and decomposers break down dead organic matter. The permafrost (frozen soil) underneath never melts.

Biodiversity: Small specially adapted plants grow slowly but survive here, which provides food for more animals.

Polar biome

Location: North of tundra areas.

Climate: Very cold, windy, and very dry (less than 150mm of precipitation per year). Average temperatures never rise above freezing during any month and can drop to -50°C in winter. 3-4 months of permanent daylight during summer.

Soil: Rocky, frozen ground covered in snow and ice, which never melts.

Biodiversity: Very few plants can survive without soil, but lichen grows on rocks. Few animals live here, as food is scarce. Polar animals often hibernate or migrate south during the winter to find food.

Plant and Animal Adaptations in Cold Environments

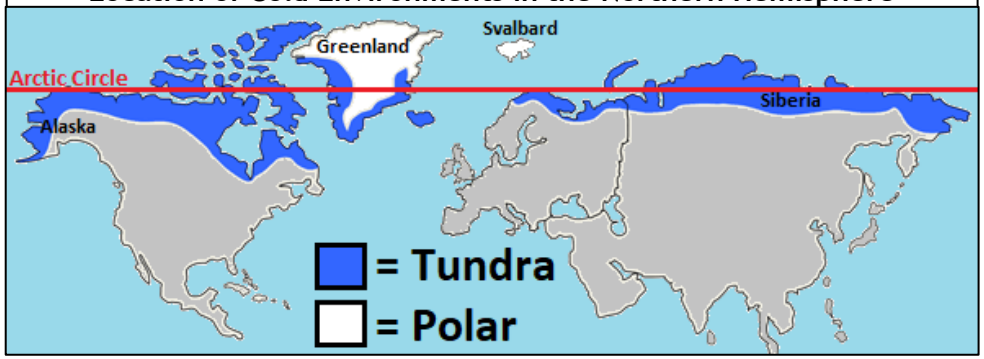
Woolly lousewort have fine hairs along their stems and leaves to reduce wind chill and trap heat from the sun, so they stay up to 20°C warmer than surrounding air.

Arctic Willows are small and grow very close to the ground, where it is warmer because the sun heats it. It has dark blue & purple flowers to absorb even more sunlight to stay warm. Seeds can't form below 0°C.

Musk Oxen have long outer fur to keep out the wind and incredibly fine wool underneath to insulate them from the cold. They have very short legs to retain heat and migrate south during the winter.

Tundra bumblebees have dense hair to stay warm and shiver to heat their flight muscles. Glycerol in their bodies, stops them freezing.

Location of Cold Environments in the Northern Hemisphere



Opportunities and Challenges in Greenland and Svalbard

+	**Hunting** walrus and narwhal.	–	**Extreme cold** down to -30°C in Longyearbyen, Svalbard.
+	**Fishing** for arctic cod.	–	**Infrastructure** problems include pipes freezing and roads ice up.
+	**Mining** for lead and zinc, as the ice melts.	–	**Accessibility** (getting there) is difficult, so fresh food is expensive.
+	**Tourism** as people come to visit these areas.	–	**Construction** (building things) is difficult with freezing temperatures and long months of darkness.
+	**Geothermal energy** (underground heat) can be used to generate electricity.		

Sustainable Management of Cold Environments

Cold environments are **fragile ecosystems** (easily damaged), as plants grow slowly in the cold climate, so it takes a long time to repair any damage.

Technology like the Trans Alaskan Pipeline and **laws** (e.g. hunting quotas (limits) or bans on off-road driving) both reduce environmental damage.

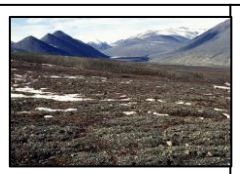
Environmental conservation groups like the WWF (World Wildlife Fund) raise money and educate people, so they want to protect cold environments.

International agreements, e.g. the Antarctic Treaty, allow multiple countries to join together to protect cold environments and have a bigger impact.

GCSE Geography Knowledge Organiser - Paper 1 Section B: Living World - Cold Environments

Characteristics of Cold Environments in the Northern Hemisphere

Tundra biome



Location:

Climate:

Soil:

.

Biodiversity:

Polar biome

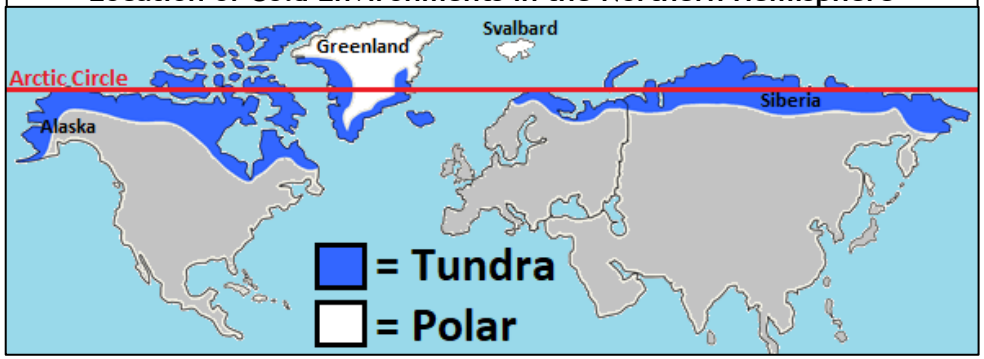
Location:

Climate:

Soil:

Biodiversity:

Location of Cold Environments in the Northern Hemisphere



Opportunities and Challenges in Greenland and Svalbard

Plant and Animal Adaptations in Cold Environments

Woolly lousewort

Arctic Willows

Musk Oxen

Tundra bumblebees

Sustainable Management of Cold Environments

Cold environments are **fragile ecosystems**...

Technology...

Environmental conservation groups...

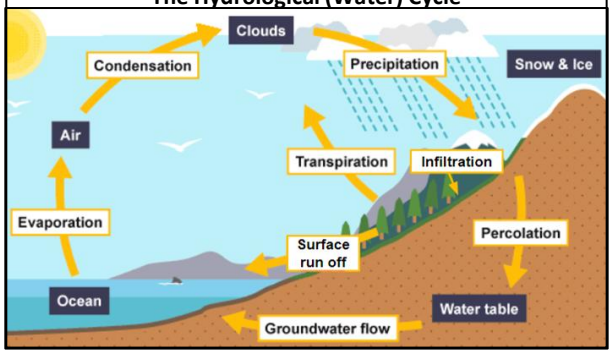
International agreements...

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Overview

Relief = the height and steepness of the land.
Upland areas = areas of high or hilly land, e.g. the Cambrian Mountains, Grampian Mountains, and Pennines.
Lowland areas = areas of low-lying land, often near the sea, e.g. The Norfolk Broads, The Fens, and the London Basin.
Rivers = large natural streams of water flowing in a channel to the sea, a lake, or another river, e.g. the River Severn, the River Thames, and the River Trent.

Sediment = natural material that has been broken down, e.g. rocks, pebbles, or sand.
Erosion = sediment being broken down by moving water.
Transportation = sediment being moved by water.
Deposition = sediment being dropped when the water loses kinetic energy.

The Hydrological (Water) Cycle



Erosion	**Hydraulic action**	Waves or river water crash against rocks and compress air in the cracks, which puts pressure on the rocks. Over time, this widens the cracks and causes part of the rock to break away.
	Abrasion	Sediment in the water scrapes and rubs against the rock.
	Attrition	Sediment in the water smashes against each other and breaks into smaller fragments, getting smoother and smaller over time.
	Solution	Chemicals in the water dissolve the rock.
	Vertical erosion	Erosion happening downwards. This deepens the river channel making it V shaped in the upper course of the river
	Lateral erosion	Erosion happening sideways. This widens the river channel in the middle and lower courses of the river.
Transport	**Traction**	Large sediment like boulders are rolled along the river bed.
	Saltation	Smaller sediment is bounced along the river bed.
	Suspension	The smallest sediment like silt and clay are carried along in the water.
	Solution	Soluble materials dissolve in the water.
Deposition		Sediment is dropped by the water when it loses kinetic energy.

A Relief Map of the UK

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Overview

Relief =
Upland areas =

Lowland areas =

Rivers =

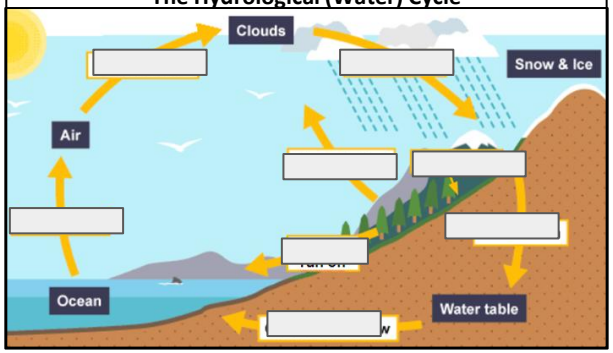
Sediment =

Erosion =

Transportation =

Deposition =

The Hydrological (Water) Cycle



Erosion	Hydraulic action	
	Abrasion	
	Attrition	
	Solution	
	Vertical erosion	
	Lateral erosion	
Transport	Traction	
	Saltation	
	Suspension	
	Solution	
Deposition		

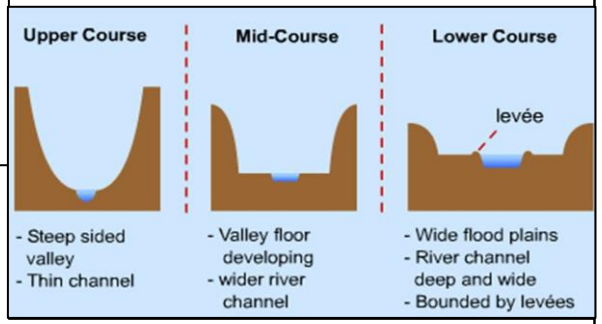
A Relief Map of the UK

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Rivers

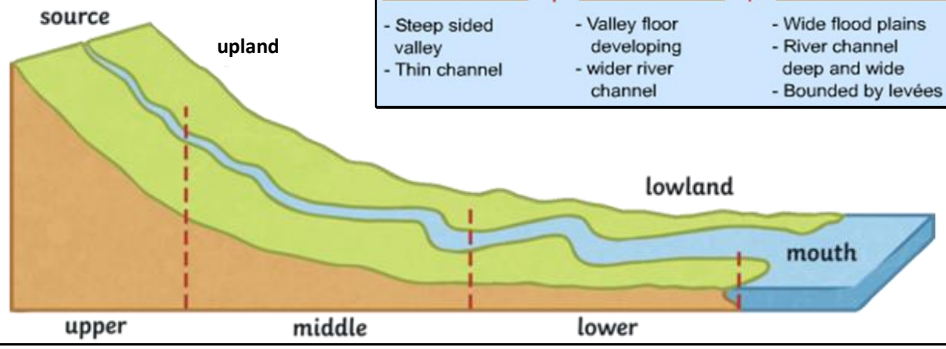
Cross profiles show the shape of the river channel and valley.

Long profiles show the Gradient (steepness) of the river from source to mouth.

Cross Profiles of a River



Long Profile of a River

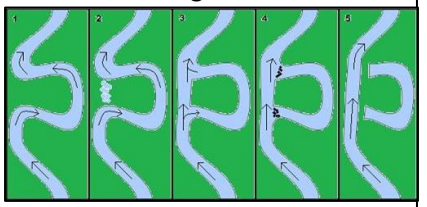


Middle Course Landforms Formation - Created by Erosion & Deposition

Meanders

1. Rivers develop large bends called meanders in the middle and lower course.
2. The current is faster on the outside of the bend because the channel is deeper and there is less friction. The fast current creates river cliffs through erosion.
3. The current is slower in the inside of the bend because the channel is shallower. This means there is deposition in this area forming river beaches.

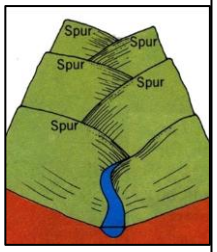
Oxbow Lakes



1. Meanders get larger over time.
2. Erosion causes the outside of the bends to get closer until there is just a small piece of land left between them called the neck.
3. The river eventually breaks through this land (commonly during a flood) and the river flows along the shortest course.
4. Deposition eventually cuts off the old meander forming an oxbow lake.

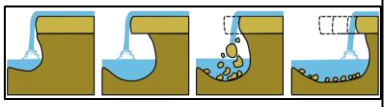
Upper Course Landforms Formation - Created by Erosion

V-shaped Valleys and Interlocking Spurs



1. In the upper course of the river most of the erosion is vertical because the water has more gravitational potential energy. This creates deep v-shaped valleys.
2. Weathering keeps the v-shaped valley sides steeply sloped.
3. Rivers aren't powerful enough to erode laterally, so wind around the high hillsides in their path. The hillsides interlock (overlap) with each other and these are interlocking spurs.

Waterfalls

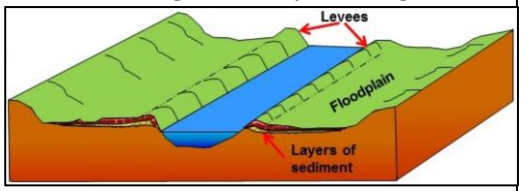


1. A river flows over a layer of more resistant (hard) rock on top of less resistant (soft) rock.
2. The less resistant (softer) rock is eroded by hydraulic action and abrasion faster than the more resistant (harder) rock creating a step in the river.
3. As water goes over the step the erosion continues which creates steep drop and abrasion creates a deep plunge pool at the bottom of the waterfall.
4. The resistant rock is undercut leaving an overhang. This eventually collapses.
5. Over time, the waterfall retreats leaving a gorge (narrow steep sided valley).

Lower Course Landforms Formation - Created by Deposition

Floodplains

1. When a river floods, the water deposits sediment across the flat valley floor.
2. Over time, this builds up layers of sediment making the valley floor higher.
3. The flat land near the river channel which floods is called a floodplain.



Levees

1. During flooding, sediment is deposited on the floodplain.
2. The largest sediment (rocks) will be deposited closest to the river bank.
3. Over time this builds up natural embankments (raised bits) along the edges of the river called levees.

Estuaries

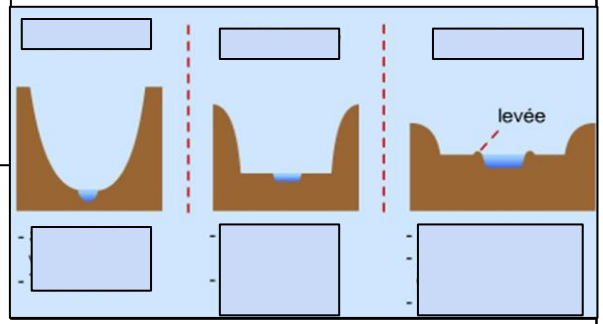
1. Where a river enters the sea at its mouth, tidal sea water will flood its banks every high tide and the river water will lose kinetic energy.
2. These processes both cause deposition.
3. As sediment builds up, mudflats form and this part of the river is called an estuary. Salt marshes can form on the edges of estuaries.

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Rivers

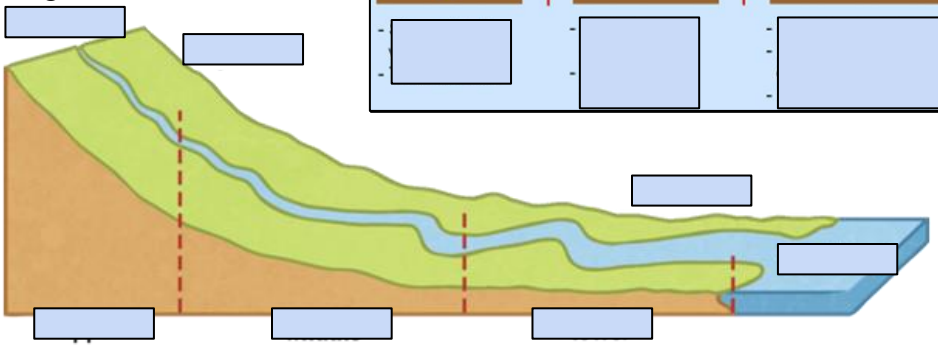
Cross profiles

Long profiles

Cross Profiles of a River



Long Profile of a River

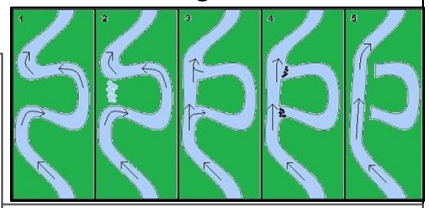


Middle Course Landforms Formation - Created by Erosion & Deposition

Meanders

1.
2.
3.

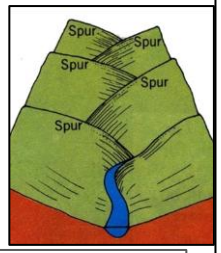
Oxbow Lakes



1.
2.
3.
4.

Upper Course Landforms Formation - Created by Erosion

V-shaped Valleys and Interlocking Spurs



1.
2.
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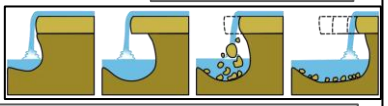
Waterfalls



1.
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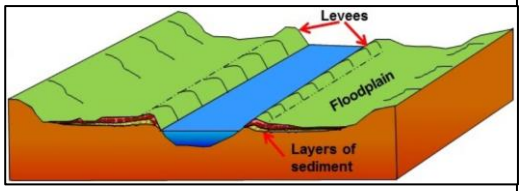
Lower Course Landforms Formation - Created by Deposition

Floodplains

1.
2.
3.



Levees

1.
2.
3.

Estuaries

1.
2.
3.

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Rivers

Flood Hydrographs

Flood hydrographs = graphs showing a precipitation event like a storm and how this affected a river's discharge. Sometimes called "Storm hydrographs".

Precipitation = rainfall and is shown as bars, measured in mm. Taller bars show more precipitation. More bars show a longer period of precipitation.

Discharge = amount of water in the river and is shown as a line, measured in cumecs. The shape and steepness of the line tells us how quickly the precipitation reached the river channel and, therefore, how likely the river is to flood.

Peak discharge = the maximum amount of water in the river.

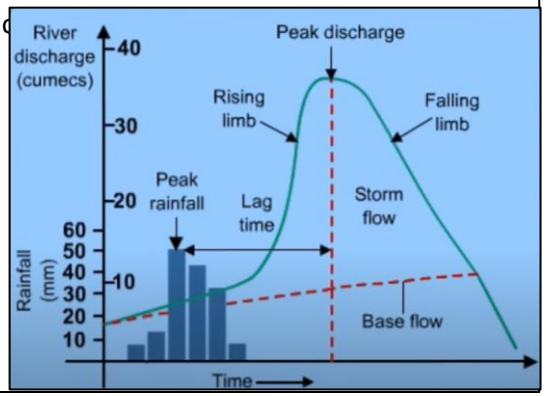
Peak rainfall = the maximum amo

Rising limb = shows the increase in discharge after rain.

Lag time = the delay between peak rainfall and peak discharge.

Falling limb = shows discharge returning back to normal levels.

Storm flow = all the extra discharge due to the rain storm.



Flood Management in Banbury

Banbury is located 50km north of Oxford on the River Cherwell. It often floods here, costing millions of pounds and affecting hundreds of homes.

- **Raising the A361** (the main road into Banbury) and building new drains under it, means that the road is less likely to be flooded or eroded.
- **A 2m tall wall around Banbury FC's grounds** has protected it from floods.
- **A Biodiversity Action Plan** led to ponds being created and trees & hedgerows being plants to store more water and create new habitats.
- **A new flood storage area** means that extra rainwater could be collected in a temporary reservoir behind a 2.8km long embankment near Banbury

Causes of River Flooding

Physical Causes	Human Causes
• **Heavy rain** or a **long period of rainfall** leading to saturated soil.	• **Urbanisation** (building more towns & cities) leading to more surface runoff.
• **Impermeable rock** under the soil, stopping water being absorbed.	• **Deforestation** reducing the number of trees there to intercept (catch) rainfall and soak up groundwater.
• **Steep relief** (slopes) channeling water quickly into rivers.	

Effects of River Flooding

Social Effects	Economic Effects	Environmental Effects
• Homelessness as homes are damaged.	• Unemployment as businesses must close.	• Animals are displaced as their habitats flood.
• Drinking water can be contaminated by sewage and waste.	• Expensive costs of repairing buildings & infrastructure.	• Sewage and toxic waste can get into rivers.

Managing River Flooding

Hard Engineering	Soft Engineering
• **Dams** to store excess water in reservoirs.	• **Preparation** for floods, e.g. laying sandbags or evacuating.
• **Channel straightening** to drain the area more quickly.	• **Afforestation** = planting more trees to intercept and soak up water.
• **Embankments** (man-made levees) to contain the river.	• **Floodplain zoning** = having fields near rivers, but building housing, factories, hospitals further away.
• **Flood relief channels** to store excess water during a flood.	• **River restoration** = allowing rivers to flood naturally in some places.

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Rivers

Flood Hydrographs

Flood hydrographs =

Precipitation =

Discharge =

Peak discharge =

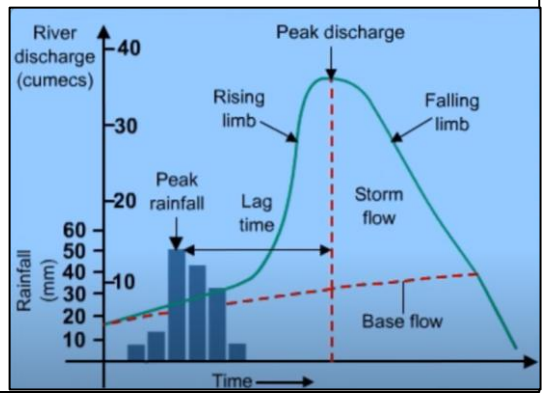
Peak rainfall =

Rising limb =

Lag time =

Falling limb =

Storm flow =



Flood Management in Banbury

Banbury is located ___km north of _____ on the River _____. It often floods here, costing _____of pounds and affecting hundreds of _____.

- **Raising the A361**
- **A 2m tall wall around Banbury FC's grounds**
- **A Biodiversity Action Plan**
- **A new flood storage area**

Causes of River Flooding

Physical Causes	Human Causes
•	•
•	•
•	

channeling water quickly into rivers.

Effects of River Flooding

Social Effects	Economic Effects	Environmental Effects
•	•	•
•	•	•

Managing River Flooding

Hard Engineering	Soft Engineering
• **Dams**	• **Preparation**
• **Channel straightening**	• **Afforestation**
• **Embankments**	• **Floodplain zoning**
• **Flood relief channels**	• **River restoration**

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Coasts

Waves

Waves are created by the friction of wind blowing over the surface of the water. When the waves reach the coast, the bottom section slows down due to friction with the sea bed, so the upper section topples over and the wave breaks.

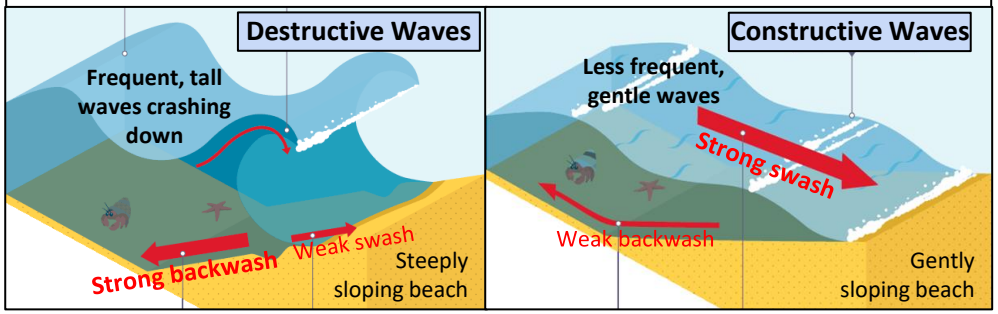
Fetch = the distance waves have travelled. Longer fetch → larger waves.

Swash = water from waves pushing their way up the beach.

Backwash = water from the waves washing back down the beach due to gravity.

Destructive waves = frequent waves with a stronger backwash, which create steep, narrow pebble beaches. They are tall, so crash onto and erode the beach.

Constructive waves = less frequent waves with a stronger swash, which create gently sloping, wide sandy beaches. They are smaller, causing more deposition.



Weathering and Mass Movement

Weathering = the breaking down of rocks *in situ*, so where they aren't moving.

Biological weathering = Plant roots or animals pushing into cracks in the rock.

Chemical weathering = Rocks being dissolved by chemicals in the rainwater.

Mechanical weathering = Freeze-thaw is one example, where water freezes in cracks in the rock, expanding and breaking it up.

Mass movement = the shifting of rocks and loose sediment down a slope due to gravity. Mass movement is more likely where there's lots of weathering.

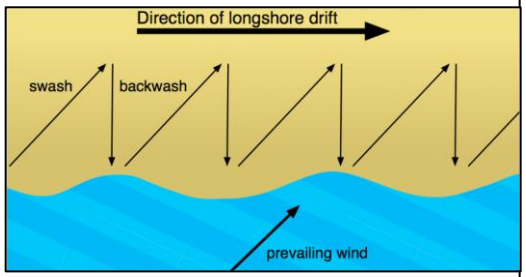
Slides (e.g. landslides)= rocks and sediment shifting in a straight line.

Slumps = rocks and sediment shifting with a rotation (like slumping in a chair).

Falls (e.g. rockfalls) = rocks and sediment falling down steep slopes.

Longshore Drift (LSD)

Longshore drift transports sediment along the coastline. It happens when the prevailing (most common) wind direction creates waves which hit the coast at an angle. The swash pushes sediment up the beach diagonally while the backwash pulls it straight back down due to gravity. This repeats and transports sediment along the coast.



Depositional Landforms on the Coast

Beaches

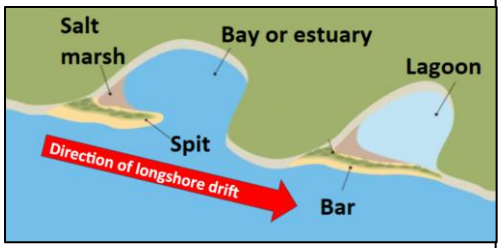
Constructive waves deposit sediment in sheltered areas on the coast, such as bays. The waves slow down, so deposition occurs, forming beaches.

Spits

1. Spits for where there's a sharp bend in the coastline.
2. LSD transports sediment past the bend and deposits it.
3. Over time, this sediment builds up and forms new land. This is the spit.
4. Strong winds can curve the end of a spit, creating a hook.
5. The area behind the spit is sheltered and a salt marsh can form here.

Bars

1. If a spit reaches the other side of a bay, it is called a bar.
2. The sheltered water behind a bar is called a lagoon.



Sand dunes

1. Sand is deposited on beaches by LSD and moved up the beach by the wind.
2. Sand will get caught in obstacles like rocks, branches, or plants.
3. Plants & grasses begin to grow in the sand. Their roots stabilise the sand, forming an embryo dune.
4. Over time, the sand blows further inland, so the oldest dunes migrate inland.
5. New embryo dunes then form near to the coast.

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Coasts

Waves

Waves are created by

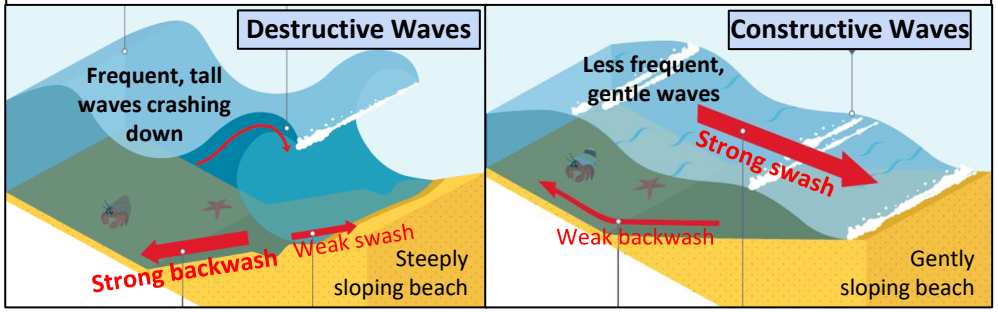
Fetch =

Swash =

Backwash =

Destructive waves =

Constructive waves =



Weathering and Mass Movement

Weathering =

Biological weathering =

Chemical weathering =

Mechanical weathering =

Mass movement =

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Slumps =

Falls (e.g. rockfalls) =

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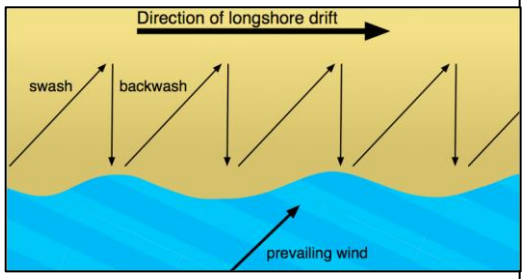
Longshore drift transports sediment along the coastline. It happens when



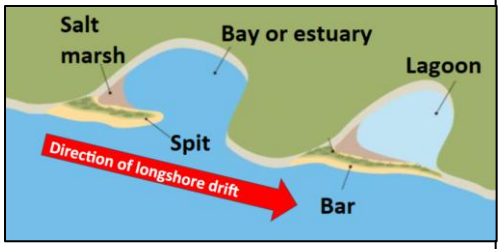
Depositional Landforms on the Coast

Beaches

Spits

Bars

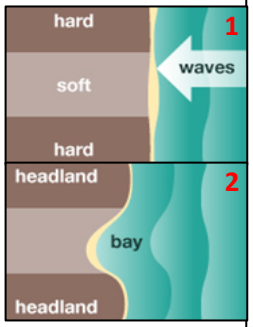
Sand dunes



GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Coasts

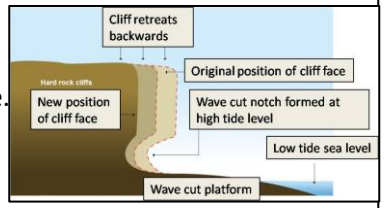
Erosional Landforms on the Coast

Bays and Headlands



1. On discordant coastlines, there are alternating bands of more resistant (hard) and less resistant (soft) rock.
2. The bands of less resistant rock erode more quickly, forming sheltered bays with beaches in them.
3. The bands of more resistant rock are left as headlands, which are surrounded by water on three sides.

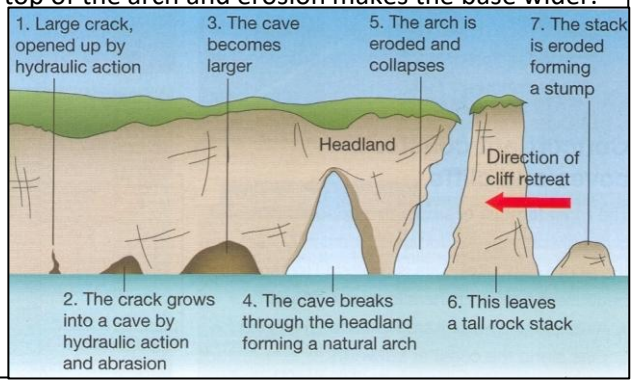
Wave Cut Platforms



1. Waves cause erosion at the base of sea cliffs.
2. The erosion creates a notch (indent) at the bottom of the cliff, which gets larger over time.
3. Eventually, the cliff above the notch collapses.
4. This repeats over time and leaves a wave cut platform where the cliff used to be.

CCASS (Crack, Cave, Arch, Stack, Stump)

1. Headlands stick out to sea, as they are made of more resistant rock, but they still have weaknesses and cracks in them.
2. Hydraulic action from waves will widen the cracks in the headland.
3. Over time, this will form caves in the headland.
4. Eventually, erosion from the waves hitting the back of the cave will erode all the way through the headland, leaving an arch.
5. Weathering weakens the top of the arch and erosion makes the base wider.
6. Eventually, the top of the arch will collapse, leaving a stack.
7. The stack will be eroded by waves hitting its base. When it collapses, it leaves a rocky stump, which might be covered by water at high tide.



Coastal Erosion

Coastal erosion is when the land is eroded by waves over time. This can cause infrastructure like roads, pipes, and cables as well as buildings to fall into the sea.

The effects are similar to flooding on rivers. However, river flooding will drain away with time, whereas coastal erosion cannot be reversed.

Managing Coastal Erosion

	Defence	What it is	Benefits	Costs
Hard Engineering	Sea Wall	A wall made out of a hard material like concrete that reflects waves back to sea.	It prevents erosion of the coast. It also acts as a barrier to prevent flooding.	It creates a strong backwash, which erodes under the wall. Sea walls are very expensive to build and to maintain.
Hard Engineering	Gabions	A wall of wire cages filled with rocks usually built at the foot of cliffs.	The gabions absorb wave energy and so reduce erosion. They're cheap and easy to build.	They're ugly to look at and the wire cages can corrode over time.
Hard Engineering	Rock Armour	Boulders that are piled up along the coast. (It's also sometimes called rip-rap.)	The boulders absorb wave energy and so reduce erosion and flooding. It's a fairly cheap defence.	Boulders can be moved around by strong waves, so they need to be replaced.
Hard Engineering	Groynes ← longshore drift	Wooden or stone fences that are built at right angles to the coast. They trap material transported by longshore drift.	They create wider beaches which slow the waves. This gives greater protection from flooding and erosion. They're a fairly cheap defence.	They starve beaches further down the coast of sand, making them narrower. Narrower beaches don't protect the coast as well, leading to greater erosion and floods.
Soft Engineering	Beach Nourishment and Reprofiling	Sand and shingle from elsewhere (e.g. from the seabed) or from lower down the beach that's added to the upper part of beaches.	It creates wider beaches which slow the waves. This gives greater protection from flooding and erosion.	Taking material from the seabed can kill organisms like sponges and corals. It's a very expensive defence. It has to be repeated.
Soft Engineering	Dune Regeneration	Creating or restoring sand dunes by either nourishment, or by planting vegetation to stabilise the sand.	Sand dunes provide a barrier between the land and the sea. Wave energy is absorbed which prevents flooding and erosion. Stabilisation is cheap.	The protection is limited to a small area. Nourishment is very expensive.

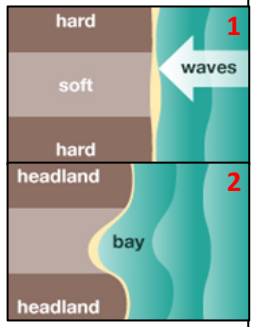
Managed Retreat

Managed retreat is when the land on the coast is left to flood and be eroded by waves. The flooded land creates a salt marsh, which provides some protection for things further inland. Therefore, managed retreat is cheap and easy, but doesn't protect the coast from erosion, so may be unpopular.

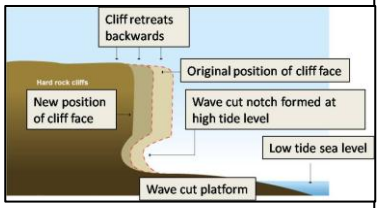
GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Coasts

Erosional Landforms on the Coast

Bays and Headlands



Wave Cut Platforms



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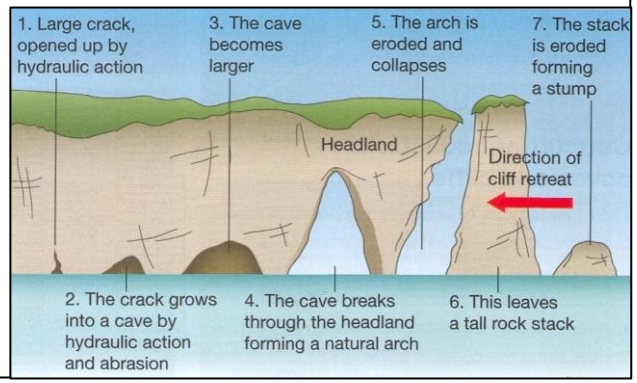

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Managed Retreat

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GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Coasts

Dorset Coast

The Dorset Coast is located on the south coast of England.

Coastal Management Example - Preston Beach in Weymouth, Dorset

1996 Beach Management Plan

- 200,000m^3 of beach recycling.
- A rock groyne built at the south end of the beach.
- A sea wall built later.

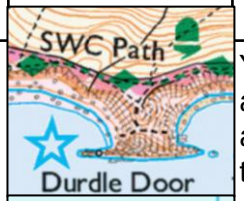
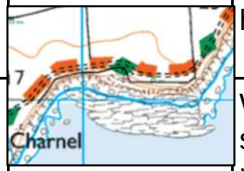
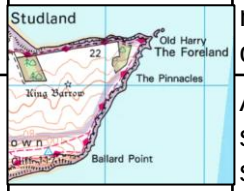
Benefits

- The main road is better protected.
- 86 houses are protected.
- The area looks nicer, encouraging tourism.
- Lodmoor nature reserve was protected.

Costs

- Shingle for beach recycling came from nearby Furzy Cliffs leaving them less protected and damaging vegetation.
- The local council had to raise taxes to cover the costs of building and long term maintenance.

Coastal Features of the Dorset Coastline

Landform	Type of landform	Example on the Dorset Coast	Photograph of the Landform	What it looks like in a photograph	OS map showing the landform	What it looks like on an OS map
Arch	**Erosional**	Durdle Door		A hollow space in a section of protruding (sticking out) rock.		You can't see arches from above, so they're not always marked on maps.
Stack		Old Harry		A tower of free-standing rock left isolated from the mainland.		Circles of land like tiny islands off the tips of headlands.
Wave Cut Platform		Kimmeridge		A flat platform of rock at the bottom of a cliff. Covered at high tide.		White cloudy-shaped areas marked like rocks sticking out into the sea.
Headland/ Cliffs		Ballard Point		An area of land sticking out to sea, surrounded by water on 3 sides.		An area of land sticking out to sea, surrounded by water on 3 sides.
Bay	**Depositional**	Swanage Bay		A semi-circle of water where the sea comes in between two headlands.		A semi-circle of water where the sea comes in between two headlands.
Bar		Chesil Beach		A long line of sand stretching between		A long, thin line of land connecting two

GCSE Geography Knowledge Organiser - Paper 1 Section C: Physical Landscapes in the UK - Coasts

Dorset Coast

The Dorset Coast is located on the…

Coastal Management Example - Preston Beach in Weymouth, Dorset

1996 Beach Management Plan

- .

Benefits

Costs

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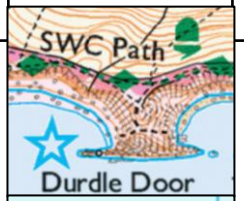
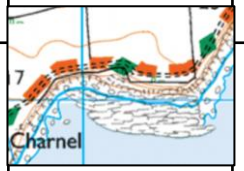
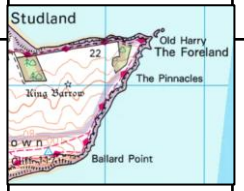
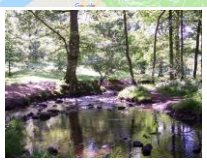
Arch	Erosional					
Stack						
Wave Cut Platform						
Headland/ Cliffs						
Bay	Depositional					
Bar						

Blackpool Brook

Location Information:
Blackpool Brook is a small river that can be found in the Forest of Dean, near Blakeney. It is in Western Gloucestershire and can be found on the Northern side of the River Severn. The water ends up entering another brook and then flows into the River Severn.



Why is this location appropriate :

✔ Close proximity to school (relatively)

✔ Evidence of fluvial (river) processes at work

✔ The size of river makes it safe and therefore appropriate to undertake fieldwork in

✔ The River has obvious physical processes taking place but also incorporates human interactions (fieldwork by many schools taking place, children playing in the river, dog walking etc. Therefore disturbance on the natural environment can be seen). Also management technique in the form of a dam are used which again shows human interaction on the physical landscape.

Question for Fieldwork:

*"Does Blackpool Brook follow theory (Bradshaw's Model) with distance downstream***? We chose this question and hypothesis as it had been learned in lessons linked to Paper 1 and the study was easily achievable.**

Hypothesis: The velocity will increase with distance downstream

Risk Assessment

Potential Hazard	What is the Risk?	Safety Measures (to reduce the risk)
Weather	1. Rain could leave mossy rocks slippery 2. Extreme heat (heatwave) 3. Extreme cold (snow/rain)	1. Don't run or walk on mossy rocks 2. Apply sun cream, wear sun hat, drink enough water to stay hydrated 3. Have winter clothing including thick coat and waterproofs
Environment	1. Tree roots covered by fallen leaves 2. Foxes, badgers, wild boars	1. No running and walk away from trees near the water's edge where roots may be exposed 2. Stay as a group and if seen, do not approach or antagonise them
Activities and Methods	1. Weil's disease	Don't drink water. Wash hands and apply antibacterial gel after contact with the river water. No eating when in contact with the river and hands washed/sanitised before eating any food.

Methods of primary (and quantitative) data collection: Velocity

Step-by-step guide	Advantages of method	Disadvantages of method
At site 1 (upstream), measure a length of 5 metres down the centre/middle of the channel using the measuring tape. Drop the float (satsuma) and start the stopwatch. Time how long it takes for the float to travel 5 metres. Repeat 2 more times and take an average. **This process is then repeated at 2 further sites downstream. To calculate the velocity: distance divided by time. The units will be metres per second. Record readings into booklet provided.**	1. Straightforward 2. Relatively easy to complete 3. Satsuma is biodegradable if lost	1. Human error in timings and measurements 2. Satsuma can be affected by drag/friction if comes into contact with the bed load. 3. Satsuma doesn't necessarily stay in the centre of the river channel thus effecting distance 4. Standing in river effects river's flow.

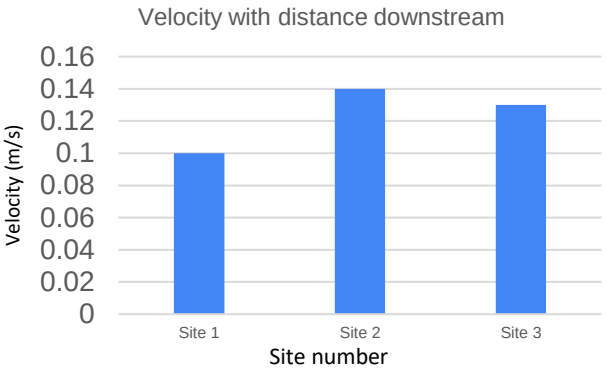
Secondary (and qualitative) data collected: You studied annotated photographs of previous fieldwork undertaken in the river.
Justification: Finding out the average velocity at 3 stages of Blackpool Brook should give you an indication of if the velocity increases and therefore proves Bradshaw's Model, or not if the case may be. This will then allow you to prove or disprove your hypothesis.

Methods of data presentation

After getting the data, you have to present the data in an appropriate way. The best (and only in this instance) way to present the data showing velocity with distance downstream in a river is to create a bar graph. The x axis will show the site number and the y axis will show velocity in metres/second. It has to be a bar graph and not a line graph as the site numbers show categorical **data. (If you had done sites showing distance downstream which is continuous data, then a line graph would be the appropriate data presentation technique to use).**
This bar graph will be visually impactful as a trend should be able to be seen instantly.
Although a simple way of presenting data, it mirrors the simple nature of the investigation. The data collected is accurate as an average was taken at each site (original test and 2 repeats to create the average).

Table of Results for Velocity with distance downstream

Site 1	Site 2	Site 3
0.10m/s	0.14m/s	0.13m/s



General overview of what the data showed

- **The velocity increased (the river flow was faster) as it travelled from site 1 to site 2. (0.10m/s to 0.14m/s). Proving hypothesis.**
- **The velocity then dropped slightly going downstream to site 3. (0.14m/s to 0.13m/s). Disproves hypothesis**
- **Overall the velocity increased with distance downstream from site 1 to site 3 (0.10m/s to 0.13m/s) Proving hypothesis.**

- **This data was analysed by looking at the bar graph and looking at the bars to see if the velocity had increased (bigger bar) or decreased (smaller bar).**

Links

- **Overall, the velocity did increase with distance downstream**

Anomaly

- **There is an obvious anomaly at site 3 as the velocity should have increased as it had done from site 1-2 and as per the theory in Bradshaw's model.**
- **This anomaly was due to a man-made (small-scale) constructed dam which stores the water and releases the river water slowly. This dam was between site 2 and 3 and explains why the velocity decreased between site 2 and 3.**
- **PLEASE NOTE: This was done on purpose when planning the investigation so human interaction/interference could be incorporated into the physical fieldwork**

Overall conclusions that can be made

Simply put, the hypothesis can be accepted as our velocity did increase overall with distance downstream (0.10m/s to 0.13m/s).

However, the anomaly shows that there is variance in our river's velocity but in this instance, it is down to human interference (the man-made dam)

Our investigation also tells us that more evidence (data) would be required in order to fully support (or to reject) our hypothesis.

As a result, it would be difficult to justify our question as a resounding yes as not enough evidence was gathered (plus we only focused on one aspect of Bradshaw's model). But we do have enough evidence (just) to accept our hypothesis (that velocity increases with distance downstream) as per the theory suggested in Bradshaw's Model.

Evaluation

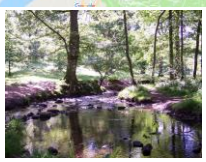
Method	Problems encountered/Limitations	How this could be improved
Using a satsuma as a floating device	- Satsuma catching with the bedload in shallow water. Resultantly meant that time was not being recorded entirely accurately. - Satsuma veering off to one side as per the current meaning that 5 metres was not always measured accurately.	Using a flow metre/hydroprop would eliminate this problem and give more accurate and reliable readings.
People being in the river whilst measuring	This will affect the current of the water and will then affect the validity of the results being taken	Have students stood to the side of the flowing current and make sure stood still before and during the measurements/timing process.
Inaccuracy with measuring	Often 5 metres was not measured out correctly meaning the resultant velocity readings would be invalid	Have multiple people measuring/checking measurement readings for more accurate and reliable results.
Only 3 sites recorded	Meant that it was difficult to definitively prove the hypothesis, especially with the added problem of the man made dam.	Record more sites to give a more accurate set of results. (For example, measure 5 sites upstream of the dam and 5 sites downstream of the dam)

Overall I feel that the fieldwork was completed well. The methods were simple yet effective. However, if doing this again, it would be beneficial to take measurements at more sites upstream and downstream of the man-made dam to give a better picture of what happened to the velocity with distance downstream .

In terms of analysis, the data presentation was easy to complete and it provided a good visual of the results collected. However, more data would need to be collected in order to gain a more compelling case for proving the hypothesis. But as per the results, there is just about enough evidence to suggest that the velocity did increase with distance downstream which correlated with the theory in Bradshaw's model.

Blackpool Brook

Location Information:
Blackpool Brook is a small ____ that can be found in the Forest of ____, near Blakeney. It is in Western _____ and can be found on the Northern side of the River ____. The water ends up entering another brook and then flows into the River Severn.



Why is this location appropriate :

✔ ____ proximity to ____ (relatively)

✔ Evidence of fluvial (____) processes at work

✔ The size of river makes it ____and therefore _____ to undertake fieldwork in

✔ The River has obvious physical processes taking place but also incorporates ____ interactions (fieldwork by many ____ taking place, ____ playing in the river, ____ walking etc. Therefore disturbance on the natural environment can be seen). Also management technique in the form of a ____ are used which again shows human interaction on the physical landscape.

Question for Fieldwork:

*"Does _____ Brook follow theory (Bradshaw's Model) with distance downstream***? We chose this question and hypothesis as it had been learned in lessons linked to Paper 1 and the study was easily achievable.***

Hypothesis: The _____will increase with distance downstream

Risk Assessment

Potential Hazard	What is the Risk?	Safety Measures (to reduce the risk)
Weather		
Environment		
Activities and Methods		

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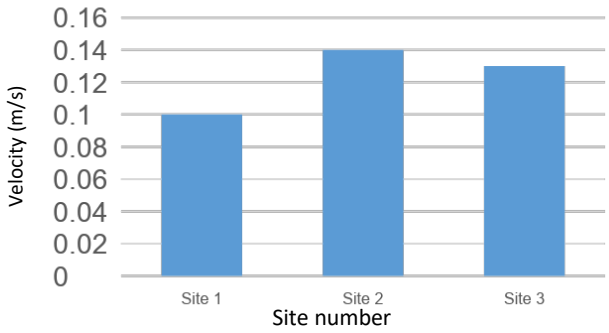

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Links

- **Overall, the _____ did _____ with distance downstream**

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Simply put, the hypothesis can be accepted as our _____did increase overall with _____ downstream (0.10m/s to 0.13m/s).

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Evaluation

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People being in the river whilst measuring		
Inaccuracy with measuring		
Only 3 sites recorded		

Overall I feel that the fieldwork was _____ well. The _____ were simple yet effective. However, if doing this again, it would be beneficial to take _____ at more sites _____ and downstream of the man-made ____ to give a better picture of what happened to the _____ with distance downstream .

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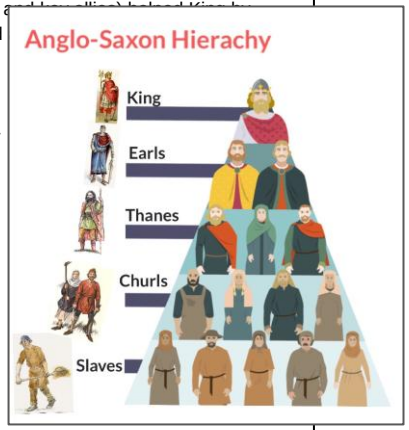
Anglo-Saxons - Normans Paper 2 - Key Topic 1 1060-66

Anglo-Saxon Society

- King (anointed by God, law-maker)
  - Taxes (ability to control taxes)
  - Land (could give and take away land)
  - War (ability to raise an army)
  - Laws (creating new laws)
  - Money (Controlled production of silver pennies)
- Earls (aristocracy, competed for loyalty)
  - E.g. Godwin of Wessex, Leofric of Mercia, Siward of Mercia
  - Collected taxes (taking ⅓ for themselves)
  - Oversaw justice and law
  - Raise an army (Lord to many thegns)
  - *Could often challenge the King:(e.g. Godwin in 1050 - Godwin family more powerful and rich. Godwin refused to punish Dover for attacking the Boulogne embassy. Godwin refused, was exiled, returned in 1051 and allowed his Earldom back.*
- Thegns (4000-500 by 1060, holds land)
- Ceorls (free to work for other Lords)
- Slaves (10%, treated as property)

Witan (council of elders, Churchmen and [illegible]) helped King by discussing religious, foreign and land



Local Government

- Shire, Hundred (100 hides of land), Tithing (10 households, or tithing = 10%)
- Shire Reeve (collected taxes inc. geld tax, fines, finding soldiers for the Fyrd (General: local, Select Fyrd: anywhere in England)
- Collective Responsibility (use of hue and cry, blood feuds and Wergild)

The Church was vital for everyday life: centres of knowledge, hospitals, provided sacraments (marriages, baptisms), held land, advised the King.

The Godwin family were very important

- Land (Harold of Wessex 1053, Tostig of Northumbria 1055, Gyrth of Anglia 1057)
- Wealth (richest family in the Kingdom)
- Thegns (had control over lots of thegns)
- Influence over the Church (had loyal bishops on their side)
- Political marriages (sister of Harold Godwin, Edith, married King Edwa…

Northumbrian rebellion against Tostig in 1065 caused by:

- Greed (taxed people unfairly)
- Betrayal (allied with Malcolm III of Scotland who raided the Northumbrians)
- Oppression (executed rivals unfairly i.e. Gospatric, abused the law for his own gain)
- Danelaw (ignorant of cultural customs of the North (mainly Danish)
- Ruled by southerners (the Northerners wanted a Northerner)

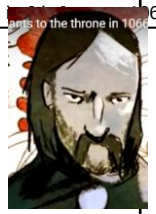
Harold disobeyed the King's orders to repress the people, instead exiling Tostig and placing Morcar as Earl in November 1965. It showed Edward to be ill, and Harold to be strong and decisive.

Succession Crisis - Edward dies on 5 January 1066 but has no heir

The Witan want to decide quickly because war was pending (Against Normandy and Scandinavia) and all the nobles were at Westminster Cathedral ar…

Harold is crowned …066

Harold Godwinson (England)



- Richest man in the Kingdom
- Well-loved by the people
- Support from many thegns and Witan
- English (the Witan did not want foreigners)

William I (Normandy)

- Edward had promised him the throne 1051
- Backed by the Pope
- Great warrior and experienced
- Harold promised William I in the 1064/5 embassy to Normandy
  - Anglo Saxons say Harold was trying to free prisoners Hakon and Wulfnoth
  - Normans say Harold promised allegiance on holy relics

Edgar the Aetheling (Prince)

- Related to old king (nephew)
- No Allies
- Young and inexperienced

Harald Hardrada (Norway)

- Danish, resonated with the North
- Believed his father was owed the crown
- Great warrior
- Support from exiled Tostig

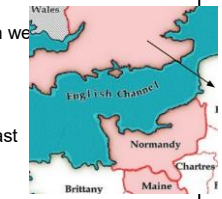
1) **Battle of Fulford in September 1066 victory for Hardrada**

- Hardrada had 200-300 ships, landed in the Humber, outnumbered Edwin and Morcar (6'000 to 9'000)
- Tactical -
  - Hardrada's best troops ambushed from the side
  - Morcar's army had marshland behind, making it difficult to retreat

Harold then marched 185 km north over 5 days leaving the south coast

1) **Battle of Stamford Bridge, victory for Godwinson, 25 September 1066**

- Lack of armour (left on the ships in York)
- Surprise attack (had only ⅔ men, Hardrada was expecting to exchange hostages only)
- Exhausted (fought only 5 days prior)
- Broke the shield wall (Godwinson's men we… housecarls)



These battles were significant because they:

- Displaced Harold's army from south coast
- March back south made his housecarls less battle-ready
- Over-confident

These battles were not significant because

- Moral was high
- They were well-prepared

1) **Battle of Hastings, victory for William I against Harold**

- Harold's army were spotted by Norman scouts early on
- William attacked Senlac Hill failing with archers and foot soldier
- William shows his face to inspire troops
- [illegible]

Willia…
- Le… ta…
- Lu… ng too many casualties)

Anglo-Saxon Society	The Last Years of Edward the Confessor and the Succession Crisis	The Rival Claimants for the Throne	The Norman Invasion
1. Who chose the King?	1. Give one way the Godwin family were important.	1. Which contender was backed by the Pope?	1. What battle happened in September 1066?
2. Give two roles of the King.	2. Where was Harold Earl of?	2. Which contender came from Norway?	2. Give one reason why Hardrada won at Fulford.
3. How much tax did an Earl get?	3. Who did the Godwin family have lots of control of?	3. Which contender was nephew to Edward the Confessor.	3. How many ships did Hardrada have?
4. Give one example of Ealrs challenging the King.	4. What relation was Edward the Confessor to Harold Godwin?	4. What did Harold swear over to William in 1065?	4. How long was Godwinson's journey north to Stamford Bridge?
5. Give one way an Earl was powerful.	5. Where was Tostig Earl?	5. Give one reason why Edgar was a poor choice of King.	5. Give two reasons why Godwinson's army won at Stamford Bridge.
6. Who was at the bottom of Anglo-Saxon society?	6. Give two reasons the Northumbrians rebelled against Tostig.	6. Give one reason why Hardrada believed he should be King.	6. Give one reason why Stamford Bridge was significant for Hastings.
7. Give one way the Witan advised the King.	7. Define Danelaw.	7. Give one ally of Hardrada.	7. What month and year was the Battle of Hastings.
8. Give one role of a shire reeve.	8. Give one person that Tostig assassinated.	8. Give reason why Harold was favoured as King.	8. Give one reason Godwinson's army failed at Hastings.
9. Where did the General Fyrd fight?	9. What happened on 5th Jan 1066?	9. Who promised William the throne in 1051?	9. Give one example of William's excellent leadership.
10. Give two ways the Church was important to Anglo Saxon life.	10 Give one reason the Witan wanted to decide the next King quickly.	10. Why did the North of England favour Hardrada?	10. Give two ways the Norman army was different to eh Anglo-Saxon army.

Anglo-Saxons - Normans Paper 2 - Key Topic 2 1066-87

Following the invasion, the Earls could have launched a revolt:

- London fortified
- supported an English King Edgar
- Northumbria and Mercia were still powerful

But the Earls of England submit to William in 1066 in Berkhamstead

- William had access to royal treasury
- He was an effective leader
- He gained many troops on the way to London through fear

Revolt of the Earls (1068)

Causes

- William promised Edwin could marry his daughter, but then ignored it
- Loss of land (Morcar's Northumbrian lands given to Copsi, an old loyal thegn instead, land grabs)
- Poor government (FitzOsbern seized land unlawfully)
- Heavy taxes (used to make Normandy wealthy, not England)
- Building of castles (Castleries displaced people)

Events

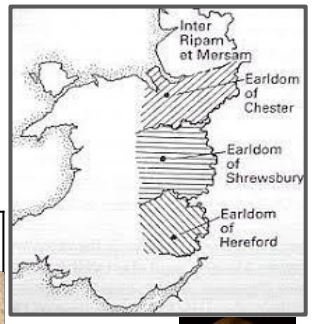
- Edwin and Morcar fled, gathered support (Gospatric, Waltheof, Edgar)
- William marched on Warwick, built castles in Northampton, and the revolt collapsed instantly
- English armies were not united

Consequences

- Edgar fled to Scotland, which became a new threat for William
- William intimidated Anglo-Saxons through an awesome show of strength

Rebellion of the North 1069

- Robert Cumin installed as a brutal replacement for Northumbrian Gospatric in Jan 1069
- Anglo Saxon mob killed the brutal Norman Earl, Robert Cumin and 900 Norman soldiers
- King Sweyn's naval fleet met with Edgar's in September
- York was burned to the ground, 3000 Normans slaughtered in September
- The invaders were difficult to fight as they scattered and started revolts elsewhere e.g. Shrewsbury and Chester
- Harrying the North caused by:
  - Rebellions 1068,69,70-1
  - Difference in culture (Danelaw)
  - Threat of Danish invasion
- Consequences
  - Famine and cannibalism
  - 60% of land was wasteland
  - Population halved
  - Reduced threat of Danish invasion
  - William now knew to instal Normans instead of replacing Anglo-Saxons
  - William's life-long penance to the Church



Revolt of Hereward the Wake 1071

- King Sweyn returns in 1070 for money, sets up in the marshy Isle of Ely
- Hereward lost his lands to Normans and so allied with Sweyn
- Guerilla War (ambush war)
- William used castles and rapid responses to revolt
- William had to pay resentful soldiers with Church money
- Carried out more royal ceremonies
- Danes ran off with the treasure, the defenses at Isle of Ely were breached
- Morcar /Hereward captured
- Eadric the Wild also gave up his revolt in Shrewsbury

1) **William rewarded Anglo-Saxons and Normans** for their **loyalty** through land (Odo got Kent, FitzOsbern got Hampshire), gifts (e.g. the Pope), and revenue (e.g. Gospatric and Northumbria), geld tax (to pay the mercenaries)

1) **William created Marcher (border) Earldoms** to control resistance on the Welsh border (Hereford, Shrewsbury and Chester). These smaller, no need for permission to build towns, the Earls had more power, they were exempt from tax, and they could build castles without the King's permission.

1) **William built castles** (motte and bailey) (drawbridge, motte, bailey, keep, moat, palisade, 32km close together)
   a)Strategic (built in convenient locations, e.g. rivers, passes)
   b) Military base (control places of unrest)
   c) Base (used to gather local Lords, thegns, nobles)
   d)Symbolised Norman power

Quick to build, cheap, local people can see it, height advantage	Fire-risk, can rot, cannot hold large numbers, weaker than brick

1) **Land ownership:**
   - William owned all the land
   - William could take land by forfeit (legal), land grabs (illegal)
   - William gave out Anglo-Saxon land to Normans to encourage loyalty
   - Landholding carried obligations (military service and geld tax)
   - William used reliefs (paying King to inherit land)
   - William replaced thegns with tenants in chief (Norman aristocrats, churchmen) who could reallocate land from thegns

1) **Consolidate royal power**
   - Journeying around England (people recognised his face and authority)
   - His face on writs and coins (people constantly used his coins)
   - Oath-taking (promises were important to Normans)
   - Royal ceremonies (went to Westminster and Gloucester regularly to meet important officials and write laws)
   - Military victories (won respect of the Pope and people)

The Revolt of the Earls 1075 led by Normans (Ralph de Gael, Roger de Bruteil) and Anglo-Saxon Waltheof)

- Roger lost land, lost control of the sheriffs to William
- Ralph assumed lost power and wealth

The revolt failed because

- Waltheof told Lanfranc of the rebellion, Lanfranc tried to discourage it and reported it to William
- William had lots of support (Bishop Wulfstan and Abbott of Evesham) which repressed Roger's army in Herefordshire
- The Danes fled back home

William was now be cautious of Norman challengers and increased his awareness of Danish threats

Establishing Control	Causes and Outcomes of the Anglo-Saxon Resistance 1068-71	Legacy of Resistance to 1087	Revolt of the Earls 1075
1. Give one reason why the Earls could have launched a revolt,	1. Give one cause of the 1068 Revolt fo the Earls.	1. Give one cause of the Harrying of the North.	1. When was the Revolt of the Earls (the Norman one..!)
2. What did William have access to in 1066 in Winchester?	2. Give one reason why Morcar was upset.	2. Give one short term consequence of the Harrying of the North.	2. Give two Norman conspirators.
3. Give one other reason why the Earls submitted to William at Berkhamstead in 1066.	3. Give one Norman who illegally seized land.	3. Give one long term consequence of the Harrying of the North.	3. Give one Anglo-Saxon conspirator.
4. Give one Marcher Earldom	4. Where did William stamp out the 1068 revolt by building a castle?	4. Who owned all the land by 1066?	4. Give two reasons why Roger wanted revenge.
5. Give one noble that was rewarded with land	5. Give one consequence of the 1068 revolt.	5. Give one method the Normans took land.	5. Why did Waltheof contribute to the failure?
6. Give one person who was rewarded with gifts.	6. Who was murdered in York causing the Rebellion of the North in 1069?	6. Give two responsibilities that owning land had.	6. Give one example of Anglo-Saxon support for William .
7. Give one feature of a Marcher Earldom/	7. Give one reason the rebellions were hard to repress.	7. What did all Normans and Ango-Saxons have to pay upon inheriting land?	7. Who was in charge of England in 1075, and successfully repressed the rebellions?
8. Give one purpose of a motte and bailey castle.	8. Give one consequence of the Rebellion of the North.	8. Give one way that tenants-in-chief (previously thegns) were still powerful.	8. Where was Roger's army repressed?
9. Give one advantage of a motte and bailey castle.	9. Where was Hereward's Revolt in 1071?	9. How did coins increase the King's power?	9.. Give one other reason why the Revolt failed.
10. Give one disadvantage of a motte and bailey castle.	10. Give one reason why the Revolt failed.	10. Give two locations where William journeyed to increase his power.	10. Give one long-term consequence of the revolt .

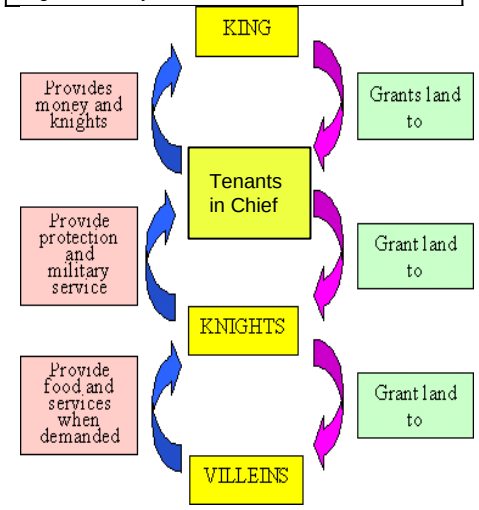
Anglo-Saxons - Normans Paper 2 - Key Topic 3 1066-88

Feudal System - land for loyalty hierarchy

- King
- Tenants in Chief
  - Social (distributed land and settling local law and order)
  - Military (provided troops)
  - Economic (collected tax)
  - Political (advised the King)
- Knights (vassals, under tenants)
  - Provide 40 days of service to the King
- Peasants (serfs / villeins)
  - Land Service (manual labour)
  - Slavery now banned

William enforced a **relief system**: forcing people to pay to inherit land

William enforced **homage**: pledging allegiance to the King 'I become your man'



William increased the power of the Church in Norman England

- William replaced Stigand (Anglo-Saxon archbishop) with Lanfranc (Norman archbishop) who was more loyal and ruthless in 1070
- The Church was important in Medieval were
  - Educated
  - Rich
  - Helped the King design laws
- **Lanfranc's Reforms**
  - Helped King with new writs (laws)
  - Rebuilt churches
  - Celibacy for Priests
  - Archdeacons (new role, looked after Church Courts)
  - Church Courts for clergy
  - Reinforced Norman rule
- **Normanisation** of the Church increased the power of the
  - God's power was intimately tied to King's
  - Church lands were under William's influence
  - Now bishops pledged loyalty to William

William achieved power through centralisation

- Homage
  - Forcing tenants-in-chief to pledge allegiance to the King: 'I become your man'
- Influence in the Church (Normanisation)
- Geld tax (1084 and 1086 heavily taxed years)
- Domesday Book 1086
  - Record of people, livestock, buildings, land
  - Financial purpose; calculates how much tax tenants have to pay
  - Military purpose; indicates how many soldiers William could raise
  - Legal purpose; settle land disputes
- Knight Service
- Feudal System
- Owning lands
  - King kept 18% of land
  - Used Royal Forests as private hunting grounds
  - Royal Forests introduced Forest Laws
- Reducing the roles of the Earls to decrease threat of challengers
- Sheriff system
  - All Norman by 1071
  - Collected taxes
  - Checked shires gave enough soldiers
  - Answered to the King only
  - Took a share of the money from tax
  - Hated by the Anglo-Saxons as they performed land grabs

Changes to Society

1. The Normans built huge cathedrals such as Winchester and Westminster Hall
2. Norman aristocratic culture was about showing off wealth and power
   - Shaving the backs of heads, hunting, rich garments, chivalry in literature
3. Normans increased the power of the Church through enacting penance
   - Every Hastings soldier had to pay on year penance for every life taken
4. Normans changed the language of the law and courts to Latin, and French
5. Nobility/aristocracy
6. English became a mix of Saxon and Norman Language

William left **regents** in power when he was in Normandy:

- Odo of Bayeux and William Fitzosbern caused too many problems (1066-71)
- Archbishop Lanfranc (1071-)
- Matilda in Normandy

William the Conqueror

- Brutal, tough, resilient,
- Great warrior
- Religious and repentant (asked for forgiveness on his deathbed)
- Wanted to prove his legitimacy

Bishop Odo's Rebellion

- **Bishop Odo (William's half-brother)**
  - Hated by the Anglo-Saxons as he took too much illegal land grabs
  - Too ruthless in Northumbria and threatened William's control
  - Threatened William by taking the King's knights to Rome

Odo was imprisoned in 1082 by William

1. William's first son, Robert Curthose, who after being bullied rebelled against William and invaded Rouen castle
2. Robert defeated William in a skirmish which was humiliating for William, signifying that sons were willing to challenge their fathers for power
3. William eventually ordered Robert to succeed him, forcing the Norman barons to swear allegiance to the new King
4. William's second son, William Rufus, had Lanfranc's support instead, and so William was coronated in 1087
5. When Odo was released from prison, he led a rebellion against William II in favour of Robert
6. Odo's rebellion failed because

a. William II had the Norman Barons support
b. English people's support due to promised reforms

Feudal System and the Church		Norman Government	Norman Aristocracy	William I and his Sons
1. Who was at the top of Feudal system?	11. Who replaced Stigand as Archbishop of Canterbury in 1070?	1. Define centralisation	1. Give two new cathedrals the Normans built.	1. Give one characteristic of William I.
2. Give two functions of the tenants in chief.	12. Give one role of the Church in Norman society.	2. Give two years where William raised geld tax.	2. Give one aim of Norman aristocracy.	2. What relation was Bishop Odo to William?
3. Who did the tenants-in-chief control under them?	13. Give two of Lanfranc's reforms.	3 When was the Domesday Book made?	3. . Give two examples of Norman aristocratic culture.	3. Give one reason the Anglo-Saxons hated Bishop Odo.
4. How many days service did a Knight owe to William?	14. What was the process of Norman control of the Church called?	4. Give one function of the Domesday Book.	4. What did Normans perform after Hastings?	4. Give one reason William began to distrust Bishop Odo.
5. What did the peasants at the bottom of the system owe William?	15. Church lands were under whose influence?	5. How much land did the King keep for himself?	5. What was the new language of the courts and law?	5. When was Bishop Odo imprisoned by William?
6. Give one change the Normans made to Anglo-Saxon society.	16. Bishops were appointed by whom?	6. Give one consequence of the Forest Laws.	6. What did the language of English become?	6. Who did William order to inherit the throne?
7. What did the King 'give out'?	17. What did Bishops have to perform?	7. Give one reason why William reduced the power and land of the Earls.	7. What language did the aristocracy speak in England?	7. Who did Lanfranc support for the throne instead?
8. What did the King 'get in return'?		8. Give one way that sheriffs changed under the Normans.	8. Define regent	8. When was William II coronated?
9. What was relief?		9. Give one way the King increased his control over Sheriffs.	9. Who were the regents until 1071?	9. Why did Bishop Odo raise a rebellion with Robert Curthose?
10. What did a Knight, peasant and tenant in chief say when performing homage?		10. Give one reason why the Anglo-Saxons resent the Norman sheriffs?	10. Give one way the regency of Lanfranc (after 1071) was a success.	10. Give one reason why Bishop Odo's rebellion failed.

Paper One – Christianity beliefs and teachings Part 1

Key words

Denomination, monotheistic, doctrine, Trinity, Holy Spirit, original sin, Genesis, Cosmological, Teleological, myth, omnipotent, Omni benevolence, omniscience, transcendence, immanent, Word,

To link Christian beliefs about creation with the trinity.

'The spirit of God' hovering over the waters.
Christians use this passage to argue that the Holy Spirit was active at the beginning of creation.
"In the beginning was the **Word**, and the Word was with God, and the Word was God."
Most theologians argue that the **'Word'** refers to God the Son, Jesus.
This shows that not only was the Holy Spirit involved in creation, but the Son as well.
The reference to the creation of the earth shows that the world was made by God.

To describe the Genesis account of creation. The book of Genesis begins "In the beginning God created the heavens and the earth."

Day 1-2 Water covered earth
Day 3 Dry land and plants
Day 4 Sun, moon and stars
Day 5 Sea and flying creatures
Day 6 Land animals and Man
Day 7 God rested

To explain some of the qualities of God

Christians believe that God has various qualities and attributes. They believe that God is perfect and that these qualities are proof of God's perfections.

Descriptions of God (the nature of God)

• All powerful (omnipotent) because he created the world (Genesis). There is nothing God cannot do or achieve. "Nothing is impossible with God."

All loving – God sent Jesus to die on the cross so man's sins could be forgiven. This encourages Christians to love each other.
"God so loved the world that he gave his one and only son."
"Love is patient, love is kind. It does not envy, it does not boast, it is not proud. It always protects, always trusts, always hope, and always perseveres. Love never fails." 1 Corinthians 13: 3-4

• Judge – God (Jesus) will judge everyone on Judgement Day (Teachings in parable of Sheep and Goats). God is believed to be the perfect giver of justice. Therefore Christians should do all things to prevent wrongs.

• Eternal – God has no beginning and no end

• All-knowing (omniscient) God knows everything, which has happened, is happening and will happen.

To explain different Christian beliefs about creation

Christians believe that God created the earth. One story about the creation of the world is found in **Genesis**.
Many Christians believe that although it may not be scientifically accurate, this account contains religious truth.
Some Christians believe that the account should not be read as an accurate account, but as a **myth.**
Design argument- **teleological** William Paley used this argument to explain the existence of God. Anything that has been designed needs a designer. There is evidence that the world has been designed. If the world has been designed then there must be a designer, this must be God.
The First Cause Argument/ **Cosmological** (Thomas Aquinas) If we look at things in the world, we see that they have a cause. Anything caused to exist must be caused to exist by something else. Everything has to have a beginning. The only possible first cause of the universe is God, therefore God must exist.

To describe Christian belief in the nature of God

Around one in three of the world's population claim to be Christians. Christianity is founded on the belief that over 2000 years ago Jesus died and rose from the dead.
The three main branches/**denominations** of Christianity (Catholic, Orthodox and Protestant) now exist side by side.
For all denominations within Christianity their belief in God is universal.
Christianity is a **monotheistic** religion. A key Christian statement of belief is the Nicene Creed which states "We believe in one God."
Christians consider God to be holy, which means set apart from everything else for a special purpose.

To understand and analyse the concept of the oneness of God and the Trinity

The **doctrine** of the **Trinity** is the Christian belief that: There is One God, who is Father, Son, and Holy Spirit.
The Trinity describe that there is only one God, each person of the Trinity is fully God and the persons of the Trinity are not the same.
God the Father: revealed by the Old Testament to be Creator, Lord, Father and Judge.
God the Son: who had lived on earth amongst human beings.
God the **Holy Spirit**: who filled them with new life and power.

To investigate the problem of evil and suffering

Many people questions God's **benevolence** when faced with evil and suffering.
Christians believe that a just God treats all people fairly, and they can trust God when things appear wrong.
The story of the '**fall**' shows Adam and Eve giving into temptation, free will to make a choice- 'the

Paper One – Christianity beliefs and teachings Part 1

Key words

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Day 7 God ____

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Christians believe that God has various _____ and _____. They believe that God is ____ and that these qualities are ____ of God's perfections.

Descriptions of God (the ____ of God)

• All powerful (_____) because he _____ the world (Genesis). There is nothing God _____ do or achieve. "____ is impossible with God."

All _____ – God sent Jesus to ____ on the cross so man's ____ could be forgiven. This encourages Christians to ____ each other.
"God so loved the world that he gave his one and only son."
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• ____ – God (Jesus) will judge everyone on Judgement ____ (Teachings in parable of ____ and ____). God is believed to be the ____ giver of ____. Therefore Christians should do all things to prevent ____.

• ____ – God has no beginning and no end

• All-knowing (_____) God ____ everything, which has happened, is happening and will happen.

To explain different Christian beliefs about creation

Christians believe that God ____ the ____. One story about the creation of the world is found in ____.
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The three main branches/_____ of Christianity (Catholic, Orthodox and Protestant) now exist side by side.
For all denominations within Christianity their belief in God is _____.
Christianity is a _____ religion. A key Christian statement of belief is the _____ Creed which states "We believe in one _____."
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The Trinity describe that there is only one God, each ____of the Trinity is fully God and the persons of the Trinity are not the same.
God the Father: ____by the Old Testament to be ____, Lord, Father and _____.
God the ____: who had lived on earth amongst human beings.
God the **Holy** ____: who filled them with new ____ and power.

To investigate the problem of evil and suffering

Many people questions God's _____when faced with ____and _____.
Christians believe that a just God treats all people ____, and they can trust God when things appear _____.
The story of the '**fall**' shows ____and ____giving into ____, free will to make a choice- 'the **original sin.**'

To explore Christian belief in the afterlife.

Christians believe there is an afterlife. Although the body dies and is buried or cremated, they believe that their unique soul lives on and is raised to new life by God. The body is **mortal** and the soul **immortal.**

Their belief that Jesus rose from the dead three days after his crucifixion (a Roman method of execution) gives Christians hope that if they follow Jesus' teaching and accept him as their Lord and Saviour, then this new resurrection life awaits them.

By being born as a human being (the incarnation), and then dying on the cross, Jesus made this new 'life after death' possible for all.

Jesus said, "I am the resurrection and the life. He who believes in me will live, even though he dies." John 11:25-26

"God so loved the world that he gave his one and only Son, that whoever believes in him shall not perish but have eternal life". John 3:16

To describe Christine belief in heaven and hell

Christians believe that God is just and fair, and so cannot let evil go unpunished.

Most believe in the idea of judgement after death, and that God will treat people in the afterlife according to how they lived their life on earth.

Although **heaven** is often mentioned in the Bible, it is rarely described. Christians therefore have very different ideas about it.

Some believe that heaven is a physical place, where their body goes after death. Others believe that it is their soul that lives on, and that heaven is a state of being united with God.

Christians have very different ideas about hell. Some Christians believe that hell is a place of suffering, and of separation from God. Others (perhaps most) believe that hell is a spiritual state of being separated from God for eternity.

Some Christians believe in the Second Coming **(Parousia**) - the anticipated return of Jesus Christ from heaven to earth

To investigate how the belief in Judgement day may influence a believer.

Christianity teaches that there will be a day of judgement at the end of time and all be judge on their actions and behaviour by Jesus.

The Nicene Creed states "Jesus will come again to judge the living and the dead."

Many Christians believe that after their death their soul will wait for judgement day. From there they will be rewarded into heaven or punished into hell.

A number of Jesus' parables relate to judgement:

Rich man and Lazarus- warns that ignoring the needs of others may have eternal consequences.

Sheep and Goat- This parable shows that on the day of judgement some will be rewarded with heaven for helping others, whilst others are sent to hell.

Genesis 1- "In the beginning God created the heavens and the earth. 2 Now the earth was formless and empty, darkness was over the surface of the deep, and the Spirit of God was hovering over the waters.

And God said, "Let there be light," and there was light. 4 God saw that the light was good, and he separated the light from the darkness. 5 God called the light "day," and the darkness he called "night." And there was evening, and there was morning—the first day."

Parable of the Rich man and Lazarus – " "But Abraham replied, 'Son, remember that in your lifetime you received your good things, while Lazarus received bad things, but now he is comforted here and you are in agony."

Parable of the sheep and goat- Truly I tell you, whatever you did for one of the least of these brothers and sisters of mine, you did for me.

41 "Then he will say to those on his left, 'Depart from me, you who are cursed, into the eternal fire prepared for the devil and his angels. 42 For I was hungry and you gave me nothing to eat, I was thirsty and you gave me nothing to drink,

To explore Christian belief in the afterlife.

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Some believe that heaven is a ____ place, where their body goes after death. Others believe that it is their ____ that lives on, and that heaven is a ____ of being united with ____.

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Paper One – Christianity beliefs and teachings Part 2

Key words

Incarnation, resurrection, immaculate, Christ, Messiah, crucifixion, Sabbath, ascension, salvation, atonement, reconciliation, sin, grace, original sin, eternal,

To explain why the resurrection is important to Christians.

- The women who return to the cave/tomb on the Sunday discovered that the stone was rolled away.
- According to John, Mary Magdalene saw Jesus and told the disciples. The gospels give account of Jesus appearing during the next 40 days. These are called the '**resurrection appearances.'**
- The stories stress the physical natures of Jesus' appearance.
- The resurrections provided proof for a Christian that Jesus was the son of God, showing God's triumph over evil and death.

KPI3- To understand the impact of the crucifixion on Christians today.

- The crucifixion gives Christians confidence that if they accept Jesus' sacrifice, God will forgive them.
- They believe that suffering is part of life.
- God understand what the suffer is going through.

To know and understand the incarnation of Jesus

- For Christians, the belief that Jesus was God in human form is more important that the details of his birth. **(Incarnation)**
- The gospels of Matthew and Luke explain quite clearly that Mary, Jesus 'mother, did not conceive Jesus sexually.
- An angel appears to Mary in Luke's gospel and Joseph in Matthews gospel.
- In both cases the angel confirm that the conception is an **immaculate** conception.
- "But before they came together, she was found to be pregnant through the Holy spirit." Matthew 1:18
- The conception gives evidence to Christians that Jesus in **incarnate**, made flesh in human form, fully God.
- In the gospel account of John, he focuses upon the meaning of the birth. "The Word became flesh." John 1:14
- Christians refer to Jesus as the **Christ.** It comes from the Greek word, Christos, which means 'anointed one.'
- Christians believe that Jesus was the **Messiah.**
- "When Jesus was baptised, a voice from Heaven said 'You are my Son." Mark 1:11

To learn details about the crucifixion of Jesus

- The events leading up to the arrest and **crucifixion** of Jesus are well-told by the Gospel writers, as are stories of the Resurrection.
- In the end the Roman authorities and the Jewish council wanted Jesus dead. He was a political and social trouble-maker.
- He was sentenced to death by Pontius Pilate.
- Christians believe that Jesus was far more than a political radical. For them the death of Jesus was part of a divine plan to save humanity.
- Even though Christians believe that Jesus was the Son of God, it does not mean that he was in some way spared the pain and horror of his crucifixion.
- According to Luke's gospel, Jesus forgave the guards who crucified him.
- According to Marks gospel, one Roman centurion praised God and acknowledged that Jesus had been a righteous man. "Surely this man was the son of God!" Mark 15:39
- As there was insufficient time to bury Jesus because of the **Sabbath** day, the body of Jesus was laid in a cave/tomb.

To analyse the importance of the role of Christ in salvation.

- "For God so loved the world, that he gave his only son." John 3:16. Christians believe that the death of Jesus was central to God's plan of salvation.
- **Atonement** means making up for. Christians believe that Jesus' death was a necessary atonement because human beings could not deal with the problem of selfishness themselves.
- **Reconciliation** is the restoration of relationships. Christians believe that relationship between God and Human needed to be reconciled, and that they could be reunited with him in heaven.
- "Greater love than this, that he lay down his life for his friends." John 15:12-14

To describe Christian beliefs of Sin.

- The story of **original sin** is found in Genesis 3 and inbuilt tendency to disobey God, seen by Adam and Eve.
- God in Christ offered salvation. Most Christians do not take Gen 3 literally.
- **Salvation** means being accepted by God and being assured **eternal life.**
- Salvation through works is the approach is a belief rejected by many Christian s that a relationship with God can be earned.
- The word **grace**, refers to unconditional love form God. Seen in the parable of the prodigal son.
- Christians believe they can receive salvation from Grace.

KPI5: To investigate Christian belief in ascension

- Luke's gospel end with the **ascension** of Jesus. Jesus taking his disciples to a place called Bethany and being 'taken up to heaven.'
- Most Christians do not take this literally, but understand that this is an imagery to express the final appearance and Jesus' successful mission on earth.

Paper One – Christianity beliefs and teachings Part 2

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To explain why the resurrection is important to Christians.

- The _____ who return to the cave/tomb on the _____ discovered that the _____ was rolled away.
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- Most Christians do not take this _____, but understand that this is an _____ to express the final appearance and Jesus' successful mission on _____.

The role of the church in the local community: Food Banks

The Trussell Trust: Founded in 1997 it provides emergency food help and support to people in the UK. Based on the parable of the sheep and goats to aim to end poverty and relieve hunger of people. Due to rising prices, cut in benefits, redundancy and other family issues people need help with food to survive. Food is donated by churches, supermarkets, schools and business and care professionals identify people in need and give vouchers so that they can get food to help them in the short term.

Street Pastors

The parable of the sheep and goats shows how Christians should help others and show agape. Street pastors started in 2003 in London with volunteers to work on the streets to patrol areas to provide a reassuring presence to people at night. The try to focus on responding to anti-social behaviour, drunkenness and fear of crime. They want to help people in practical ways working with the council and the police. They wear blue reflective uniforms to be seen so they can be spotted for people to come to them if they need help. They go out to listen to people, giving advice about where they can go, or to offer flip flops to girls whose shoes have broken or space blankets to help keep people warm. They do not actively go out to preach but work off the basis of the teachings of Jesus to offer help to people who need it.

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Worship	Act of religious praise and devotion. Honouring God.
Liturgical	Church service that follows a set order and structure.
Non liturgical	A service that doesn't have a set order or structure.
Informal	Type of non-liturgical worship that is spontaneous e.g. Quaker and charismatic Christian worship
Prayer	Speaking to God
Lords Prayer	Set prayer taught by Jesus aka the 'Our Father'
Sacraments	Christian rituals where believers receive God's grace (free gift of love)
Eucharist	Aka Holy Communion. Christian sacrament that uses bread and wine to re-enact the Last Supper and commemorate the death and resurrection of Christ.
Baptism	Baptism: Christian sacrament representing entrance into the Christian faith. Usually involves water
Transubstantiation	The belief that the bread and wine actually become the body and blood of Christ
Memorialism	Christ is not present, the Eucharist is carried out in remembrance of Jesus

The role of the church in the local community: Food Banks

The Trussell Trust: Founded in 1997 it provides emergency food help and support to people in the UK. Based on the parable of_____ to aim to end poverty and relieve hunger of people. Due to rising prices, cut in benefits, redundancy and other family issues people need help with food to survive. Food is donated by churches, supermarkets, schools and business and care professionals identify people in need and give vouchers so that they can get food to help them in the short term.

_____

The parable of the sheep and goats shows how Christians should help others and show agape. Street pastors started in 2003 in London with volunteers to work on the streets to patrol areas to provide a reassuring presence to people at night. The try to focus on responding to anti-social behaviour, drunkenness and fear of crime. They want to help people in practical ways working with the council and the police. They wear blue reflective uniforms to be seen so they can be spotted for people to come to them if they need help. They go out to listen to people, giving advice about where they can go, or to offer flip flops to girls whose shoes have broken or space blankets to help keep people warm. They do not actively go out to preach but work off the basis of the teachings of Jesus to offer help to people who need it.

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	Act of religious praise and devotion. Honouring God.
	Church service that follows a set order and structure.
	A service that doesn't have a set order or structure.
	Type of non-liturgical worship that is spontaneous e.g. Quaker and charismatic Christian worship
	Speaking to God
	Set prayer taught by Jesus aka the 'Our Father'
	Christian rituals where believers receive God's grace (free gift of love)
	Aka Holy Communion. Christian sacrament that uses bread and wine to re-enact the Last Supper and commemorate the death and resurrection of Christ.
	Baptism: Christian sacrament representing entrance into the Christian faith. Usually involves water
	The belief that the bread and wine actually become the body and blood of Christ
	Christ is not present, the Eucharist is carried out in remembrance of Jesus

To investigate the nature of prayer and its significance.

•Christians describe prayer as a conversation with God. Prayer can be silent or said out loud. It can use set words, or a person's own words.
•There are many different kinds of prayer, including: adoration - praising God for his greatness - confession - owning up to sin and asking for God's forgiveness thanksgiving - thanking God for his many blessings, petition - asking God for something, - intercession - asking God to help others who need it,
Most Christians believe prayer deepens a person's faith. Praying can help the believer come to a greater understanding of God's purpose for their lives.

To understand what is meant by worship and different forms of worship.

•Worship is an act of showing **devotion** to God.
•This often involves praise, but in Christianity it also covers things such as asking for forgiveness and learning more about God.
• Worship can be formal or informal, in a group or done individually (private worship).
•Liturgical worship involves a set format for worship, it can contain **liturgies.**
•Non liturgical worship is where there is no set structure, or where worship may be spontaneous. Informal worship is worship is more relaxed it is sometimes **charismatic,** it can be help at any time.

Many Christians are **evangelica**l, meaning they believe it is important to spread the 'good news' of Christianity with others so that they might be saved. **Missionary** work means an organised effort to spread Christianity. Christians have suffered **persecution** in the past. Just after Jesus had died, many people began joining the new religion that Jesus had started called Christianity. However, not everyone was happy with this new, rapidly growing religion. One of these people was the Roman Emperor Nero. Under his reign, Christians were persecuted for their beliefs. Many of Jesus' disciples were persecuted and died horrible deaths such as being crucified or boiled alive**. Tearfund** are a Christian charity. They believe their duty is to follow the example of Jesus and help the poor and needy. They work in over 50 countries and provide short and long term aid.

To be able to understand the sacrament of Holy Communion and the different ways Christians celebrate communion.
•The **Eucharist**, which is also called the Holy Communion, Mass, the Lord's Supper or the Divine Liturgy, is a sacrament accepted by almost all Christians.
•The Eucharist is a **re-enactment** of the Last Supper, the final meal that Jesus Christ shared with his disciples before his arrest, and eventual crucifixion.
• Although all denominations recognise the importance of the Eucharist, they differ about its meaning. Roman Catholics believe that although the bread and wine physically remain the same, it is transformed beyond human comprehension into the body, blood soul and divinity of Jesus. This is called **Transubstantiation.**
In some churches (e.g. Roman Catholic) people come to the front to receive communion from the priest, usually in the form of a wafer and some alcoholic wine from a single cup In other churches (e.g. non-conformist) bread is usually set on a table alongside non alcoholic wine in small cups and anyone who wishes to can take some.

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Many Christians are_____ , meaning they believe it is important to spread the 'good news' of Christianity with others so that they might be saved. _____ work means an organised effort to spread Christianity. Christians have suffered _____ in the past. Just after Jesus had died, many people began joining the new religion that Jesus had started called Christianity. However, not everyone was happy with this new, rapidly growing religion. One of these people was the Roman Emperor Nero. Under his reign, Christians were persecuted for their beliefs. Many of Jesus' disciples were persecuted and died horrible deaths such as being crucified or boiled alive**.**
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Worship	Act of religious praise and devotion. Honouring God.
Pilgrimage	A journey made to a holy site for religious reasons.
Christmas	Christian festival celebrating the incarnation of Jesus
Easter	Christian festival commemorating the death and resurrection of Christ
Food banks	The Trussell Trust is a Christian charity that provides emergency food to people in crisis
Street pastors	Christian volunteers who provide free help and support to people, especially those who are out on a Friday or Saturday night.
Mission	A vocation or calling to spread the teachings of Jesus. The Great Commission: Jesus instruction to his followers to go and spread his message "Go and make disciples of many nations"
Evangelism	Spreading the teachings of Jesus
Church growth	Church attendance is falling in the UK, but is increasing rapidly in places like Africa
Reconciliation	The worldwide Church has a mission to heal people's relationship with God and with one another.
Persecution	Christians in places like North Korea and Syria are being persecuted by being attacked, forced to pay extra taxes or forbidden from certain jobs

To describe the role and importance of pilgrimage.

•A **pilgrimage** is a journey made for a religious reason. The believer makes a physical journey but it is also a spiritual journey toward God. Pilgrims may visit the Holy Land, particularly Jerusalem, because it is where Jesus lived and died. Christians go on pilgrimage to grow closer to God and seek a cure for an illness.

The pilgrimage site of **Lourdes** is near the Pyrenees mountains in France. Every year, it is visited by millions of pilgrims, particularly Roman Catholics.

Iona: Scottish island where Christians of all denominations go to pray, read the Bible and meditate

To investigate Christian festivals

Christmas is a Christian festival remembering the birth of Jesus. Here are some of the ways it is celebrated: the story of Jesus' birth (the nativity) is re-told by children through nativity plays, church services often including carol singing, Some Christians start Christmas day with a midnight communion service (mass), gifts might be given or received which reminds Christians of the gift of Jesus

Easter remembers the crucifixion and resurrection of Jesus. Holy week begins with palm Sunday, on Maundy Thursday, Jesus shared the last supper with his disciples. On good Friday Jesus was crucified by the Romans. The Bible says Jesus was innocent and that his death was a sacrifice for people's sins. Throughout the gospels, Jesus says that he will have to die but that his death will save many. Jesus was resurrected on Easter Sunday. Easter is celebrated by giving eggs which are a symbol of new life, Christians might attend church and share communion.

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	Spreading the teachings of Jesus
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YEAR 10 FRENCH KNOWLEDGE ORGANISER

Connectives	
because	**parce que/pusique/car**
and	**et**
but	**mais**
also	**aussi**
then	**puis**
after that	**après ça**
also/equally	**également**
unfortunately	**malheureusement**
furthermore	**en plus**
however	**pourtant/cependant**
therefore	**donc**
for example	**par exemple**
including	**y compris**
after having done that	**après avoir fait cela**

Opinion Phrases	
I believe that	**je crois que**
I think that	**j'estime que**
I would say that	**je dirais que**
I think that	**je pense que**
What I like the most is	**ce que j'aime le plus c'est**
I like it because	**ça me plait parce que**
I'm scared of (flying)	**j'ai peur de (voler)**
it's better than	**c'est meilleur que**
it's worse than	**c'est pire que**
I've always dreamed of (+ infinitive)	**j'ai toujours rêvé de**
I agree with (you/her/him/them/that)	**je suis d'accord avec (toi/elle/lui/eux/ça)**
I don't agree with (you/her/him/them/that)	**je ne suis pas d'accord avec (toi/elle/lui/eux/ça)**

Additional	
everyone	**tout le monde**
there is / was / will be	**il y a / avait / aura**
it is / was / will be / would be	**c'est / c'était / ce sera / ce serait**

Infinitive Phrases	
you/we can	**on peut + infinitive**
in order (to)	**pour + infinitive**
I prefer (to)	**je préfère + infinitive**
I must	**je dois + infinitive**
I/we have to	**il faut + infinitive**
I want	**je veux + infinitive**
I can	**je peux + infinitive**
I would like (to)	**je voudrais + infinitive**
I would like (to)	**j'aimerais + infinitive**
it would be good (to)	**ce serait bien de + infinitive**

Time Phrases	
now	**maintenant**
before	**avant**
from time to time	**de temps en temps**
sometimes	**parfois/quelquefois**
usually	**d'habitude**
yesterday	**hier**
last night	**hier soir**
tomorrow	**demain**
today	**aujourd'hui**
last week	**la semaine dernière**
next week	**la semaine prochaine**
last month	**le mois dernier**
next month	**le mois prochain**
last year	**l'année dernière**
next year	**l'année prochaine**
since	**depuis**
two years ago	**il y a deux ans**
when I was younger	**quand j'étais plus jeune**
when I'm older	**quand je serai plus âgé(e)**
at the moment	**en ce moment**
in the future	**dans le future/à l'avenir**

YEAR 10 FRENCH KNOWLEDGE ORGANISER

Grade 7+ Opinions	
in spite of the fact that	**malgré le fait que**
I must admit that	**je dois avouer que**
I'm excited for it (I await with impatience)	**j'attends ça avec impatience**
I'm tired of it	**j'en ai marre**
my parents say that	**mes parents disent que**
my friends think that	**mes copains pensent que**
either…or…	**soit…soit…**
I am uncomfortable with	**je suis mal à l'aise avec**
I can't be bothered	**j'ai la flemme !**

Si clauses + conditional	
if I had the opportunity	**si j'avais l'occasion**
if I were rich	**si j'étais riche**
if I had the time	**si j'avais le temps**
if I could	**si je pouvais**
if I had to choose	**si je devais choisir**
if I had lots of money	**si j'avais beaucoup d'argent**

Additional	
nevertheless	**néanmoins**
thus/therefore	**du coup**
instead of	**au lieu de**
as soon as possible	**dès que possible**

Grade 7+ Subjunctive Phrases	
so that I can	**pour que je puisse (+ infinitive)**
even though I am	**bien que je sois**
I have to have	**il faut que j'aie**
I have to do	**il faut que je fasse**
before I leave	**avant que je parte**
I have to go there	**il faut que j'y aille**
it's a shame that it's	**c'est dommage qu'il soit**
I doubt that it's important to… (+ infinitive)	**je doute qu'il soit important de…**
I fear that it will rain	**je crains qu'il pleuve**

Grade 7+ Past Tense Expressions	
I would have preferred (to)	**j'aurais préfére (+ infinitive)**
I would have liked (to)	**j'aurais aimé (+ infinitive)**
it would have been great, but…	**ce aurait été genial, mais…**
I had decided that	**j'avais décidé que**
I had always dreamed of	**j'avais toujours rêvé de (+ infinitive)**
I realised that…	**je me suis rendu(e) compte que…**
I was delighted that…	**j'étais ravi(e) que…**
I was in the middle of…	**j'étais en train de (+ infinitive)**

YEAR 10 FRENCH KNOWLEDGE ORGANISER QUIZ

Connectives	
because	
and	
but	
also	
then	
after that	
also/equally	
unfortunately	
furthermore	
however	
therefore	
for example	
including	
after having done that	

Opinion Phrases	
I believe that	
I think that	
I would say that	
I think that	
What I like the most is	
I like it because	
I'm scared of (flying)	
it's better than	
it's worse than	
I've always dreamed of (+ infinitive)	
I agree with (you/her/him/them/that)	
I don't agree with (you/her/him/them/that)	

Additional	
everyone	
there is / was / will be	
it is / was / will be / would be	

Infinitive Phrases	
you/we can	
in order (to)	
I prefer (to)	
I must	
I/we have to	
I want	
I can	
I would like (to)	
I would like (to)	
it would be good (to)	

Time Phrases	
now	
before	
from time to time	
sometimes	
usually	
yesterday	
last night	
tomorrow	
today	
last week	
next week	
last month	
next month	
last year	
next year	
since	
two years ago	
when I was younger	
when I'm older	
at the moment	
in the future	

YEAR 10 FRENCH KNOWLEDGE ORGANISER QUIZ

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in spite of the fact that	
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Si clauses + conditional	
if I had the opportunity	
if I were rich	
if I had the time	
if I could	
if I had to choose	
if I had lots of money	

Additional	
nevertheless	
thus/therefore	
instead of	
as soon as possible	

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I realised that…	
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I was in the middle of…	

Picture Task - PAL

P eople
A ctivity
L ocation

Sur la photo *In the photo* au premier plan *in the foreground* à l'arrière plan *in the background* au centre *in the centre* à droite *on the right* à gauche *on the left* ici *here*	**il y a** *there is/are* **je vois** *I see* je peux voir *I can see* on peut voir *we can see*	**une famille** *a family* **un groupe de copains** *a group of friends* **un garçon / une fille** *a boy / a girl* **un homme / une femme** *a man / a woman* **des personnes / jeunes / ados / touristes** *some people / young people / teenagers / tourists* **beaucoup de monde** *lots of people* **deux filles / trois garçons** *two girls / three boys*			
Il est *he is* **Elle est** *she is* **Ils sont** *they are* **Elles sont** *they are (f)*	**grand(e)(s)** *tall* **petit(e)(s)** *short/small*				
Il a *he has* **Elle a** *she has* **Ils ont** *they have* **Elles ont** *they have (f)*	**les cheveux** *hair*	**longs** *long* **courts** *short*	**et** *and*	**blonds** *blond* **noirs** *black* **bruns** *dark/brown*	**blancs** *white* **roux** *ginger* **châtains** *chestnut brown*
	les yeux *eyes*	**bleus** *blue* **verts** *green* **marron** *brown*			
	l'air **an air** *(a ____ look)*	**heureux/heureuse(s)** *happy* **triste(s)** *sad* **sympa** *kind/nice*			
Il porte *he wears* **Elle porte** *she wears* **Ils/elles portent** *They wear*	**un pull** *a jumper* **un pantalon** *trousers* **une robe** *a dress* **une jupe** *a skirt* **une chemise** *a shirt*		**noir(e)** *black* **bleu(e)** *blue* **vert(e)** *green* **gris(e)** *grey* **blanc(he)** *white*	**rose** *pink* **rouge** *red* **jaune** *yellow* **marron** *brown* **orange** *orange*	
Il est *he is* **Elle est** *she is* **Ils sont** *they are* **Elles sont** *they are (f)*	**en train de** *in the process of*	**manger/jouer/étudier/faire/travailler/regarder/parler/écouter/utiliser/marcher** *eating/playing/studying/doing/working/watching/talking/listening/using/walking*			
Le garçon (à gauche) *the boy (on the left)* **La fille (à droite)** *the girl (on the right)* **L'homme (au centre)** *the man (in the centre)*	**mange/joue/étudie/fait/travaille/regarde/parle/écoute/utilise/marche** *is…eating/playing/studying/doing/working/watching/talking/listening/using/walking*				
Les personnes (au premier plan) *the people (in the foreground)* **Les touristes** *the tourists*	**mangent/jouent/étudient/font/travaillent/regardent/parlent/écoutent/utilisent/marchent** *are…eating/playing/studying/doing/working/watching/talking/listening/using/walking*				
À mon avis *In my opinion* **Je pense qu'** *I think that* **Je dirais qu'** *I would say that*	**ils sont** *they are* **elles sont** *they are (f)*	**dans** *in*	**un restaurant / un hôtel / un collège / un magasin / un cinéma / un bureau / un parc / un centre sportif / un centre commercial**		
		en vacances *on holiday* **sur la plage** *on the beach* **au centre-ville** *in the town centre* **à la campagne / à la montagne** *in the countryside / in the mountains* **chez eux / un ami** *at their house / at a friend's house*			
	il fait beau / il fait mauvais / il fait chaud / il fait froid / il y a du soleil *it's nice weather / it's bad weather / it's hot / it's cold / it's sunny*				

YEAR 10 SPANISH KNOWLEDGE ORGANISER

Connectives	
because	**porque/dado que/puesto que**
and	**y**
but	**pero**
also	**también**
then	**luego**
after	**después**
also/equally	**igualmente**
unfortunately	**desafortunadamente**
furthermore	**además**
however	**sin embargo**
therefore	**por eso**
for example	**por ejemplo**
including	**incluso**

Opinion Phrases	
I believe that	**creo que**
I think that	**pienso que**
I would say that	**diría que**
What I like the most is	**lo que más me gusta es**
What I prefer is	**lo que prefiero es**
I'm scared of (flying)	**tengo miedo de (volar)**
it's better than	**es mejor que**
it's worse than	**es peor que**
I've always dreamed of (+ infinitive)	**siempre he soñado con**
I agree with (you/her/them) / with you	**estoy de acuerdo con (él/ella/ellos) / contigo**
I disagree with (you/her/them) / with you	**no estoy de acuerdo con (él/ella/ellos) / contigo**

Additional	
everyone	**todo el mundo**
there is / was / will be	**hay / había / habrá**
it is / was / will be / would be	**es / fue / será / sería**

Infinitive Phrases	
you/we can	**se puede + infinitive**
in order (to)	**para + infinitive**
I prefer (to)	**prefiero + infinitive**
I must	**debo + infinitive**
I have to	**tengo que+ infinitive**
I want (to)	**quiero + infinitive**
I can	**puedo + infinitive**
I would like (to)	**me gustaría + infinitive**
I would like (to)	**quisiera + infinitive**
I would love (to)	**me encantaría + infinitive**

Time Phrases	
siempre	**always**
almost never	**casi numca**
from time to time	**de vez en cuando**
sometimes	**a veces**
generally	**generalmente**
yesterday	**ayer**
last night	**anoche**
tomorrow	**mañana**
today	**hoy**
last week	**la semana pasada**
next week	**la semana próxima**
last month	**el mes pasado**
next month	**el mes próximo**
last year	**el año pasado**
next year	**el año próximo**
since	**desde hace**
two years ago	**hace dos años**
when I was younger	**cuando era más joven**
when I'm older	**cuando sea mayor**
at the moment	**en este momento**
in the future	**en el futuro**
later in life	**más tarde en la vida**

YEAR 10 SPANISH KNOWLEDGE ORGANISER

Grade 7+ Opinions	
although at the same time	**aunque al mismo tiempo**
I must admit that	**debo admitir que**
I really want to do it	**quiero mucho hacerlo**
I've had enough of	**he tenido bastante de**
I can't stand doing it	**no aguanto hacerlo**
You can (+ infinitive)	**Se puede**
they like (plural)	**les gusta (n)**
the worst thing of all	**lo peor de todo**
I suppose that	**supongo que**

Si clauses + conditional	
if I had the opportunity	**si tuviera la oportunidad**
if I were rich	**si fuera rica**
if I had time	**si tuviero tiempo**
if I could	**si pudiera**
if I had the choice	**si tuviera mi elección**
if it were possible	**si fuera posible**
Si tuviera mi elección	**Si tuviera mi elección**

Grade 7+ Perfect Past Tense	
what I liked the most was	**lo que más me gustó fue**
I have enjoyed (+infinitive) I have eaten	**he disfrut**ado **he com**ido

Key vocabulary	
social media	**las redes sociale**
apps such as …	**aplicaciones como…**
a waste of time	**una pérdida de tiempo**
easy to use	**fácil de usar**

Grade 7+	
if you are very adventurous	**Si eres muy aventuroso**
I would like to visit	**me gustaría visitar**
although I don't have	**aunque no tenga**
it's important that I relax	**es importante que me relaje**
when I go on holiday	**cuando vaya de vacaciones**
when I finish my exams	**cuando termine mis exámenes**
when I earn enough money	**cuando gane bastante dinero**
as far as I know	**que yo sepa**
as far as I remember	**que yo recuerde**

Grade 5+ Key verbs		Infinitive 'to…'
I do	**hago**	hacer
I go	**voy**	ir
I play	**juego**	jugar
I speak	**hablo**	hablar
It helps me	**me ayuda a**	
it saddens me	**me entristece(n)**	
it annoys me	**me fastidia(n)**	
I prefer	**prefiero**	
I don't like it at all	**no me gusta nada**	
It helps me to	**me ayuda a**	
to stay in shape	**estar en forma**	
I do online shopping	**hago compras en linea**	
I watch programmes	**veo programas**	

YEAR 10 SPANISH KNOWLEDGE ORGANISER QUIZ

Connectives	
because	
and	
but	
also	
then	
after	
also/equally	
unfortunately	
furthermore	
however	
therefore	
for example	
including	

Opinion Phrases	
I believe that	
I think that	
I would say that	
What I like the most is	
What I prefer is	
I'm scared of (flying)	
it's better than	
it's worse than	
I've always dreamed of (+ infinitive)	
I agree with (you/her/them) / with you	
I disagree with (you/her/them) / with you	

Additional	
everyone	
there is / was / will be	
it is / was / will be / would be	

Infinitive Phrases	
you/we can	
in order (to)	
I prefer (to)	
I must	
I have to	
I want (to)	
I can	
I would like (to)	
I would like (to)	
I would love (to)	

Time Phrases	
always	
almost never	
from time to time	
sometimes	
generaly	
yesterday	
last night	
tomorrow	
today	
last week	
next week	
last month	
next month	
last year	
next year	
since	
two years ago	
when I was younger	
when I'm older	
at the moment	
in the future	
later in life	

YEAR 10 SPANISH KNOWLEDGE ORGANISER QUIZ

Grade 7+ Opinions	
although at the same time	
I must admit that	
I really want to do it	
I've had enough of	
I can't stand doing it	
I try to (+ infinitive)	
they like (plural)	
the worst thing of all	
I suppose that	

Si clauses + conditional	
if I had the opportunity	
if I were rich	
if I had time	
if I could	
if I had the choice	
if it were possible	
if I had more freedom	

Grade 7+ Past Tense Expressions	
what I liked the most was	
I would have like to	

Key vocabulary	
social media	
apps such as ...	
a waste of time	
easy to use	
to keep in touch	
it (they) can be	

Grade 7+ Subjunctive Phrases	
if you are very adventurous	
I would like to visit	
although I don't have	
it's important that Irelax	
when I go on holiday	
when I finish my exams	
when I earn enough money	
as far as I know	
as far as I remember	

Grade 5+ Key verbs	
I do	
I go	
I play	
I speak	
It helps me	
it saddens me	
it annoys me	
I prefer	
I don't like it at all	
It helps me to	
to stay in shape	
I do online shopping	
I watch programmes	

YEAR 10 SPANISH KNOWLEDGE ORGANISER QUIZ

Speaking vocabulary	
In the photo there is/there are	
In my opinion	
I think that	
I would say that	
I believe that	**creo que**
He/she seems like	

Describing a photo	
In the background	
In the centre	
On the right	
On the left	
In the foreground	
There are 6 people	

Adjectives	
Tall	
Short	
Has green eyes	
Has short hair	
Has dark brown hair	
Happy	
Sad	

verbs	
He/she is	
There is/ there are	
They have	
He/sha has	
He/she wears	
They wear	
They are - description	
They are – location	**Están**
He/she is….+	**Está +**
Eating	**Comiendo**
playing	
watching	
Using	

Clothes	
A green jumper	
Black trousers A white shirt A long dress a red and blue skirt	

In the photo there are xxx people, in the centre there is a girl/boy she/he has short black hair and brown eyes. I would say that they are xxxxx (talking; listening..etc) The person on the right is tall and she seems happy, also she is wearing a blue dress.
They are near a beach and I think that they are on holiday.

Translate:	
What words did you find tricky?	

Picture Task - PAL

P eople
A ctivity
L ocation

En la foto *In the photo* en primer plano *in the foreground* *al fondo in the background* al centro *in the centre* a la derecha *on the right* a la izquierda *on the left* aquí *here*	**hay** *there is/are* **(yo) veo** *I see* **puedo ver** *I can see* **podemos ver** *we can see*	**una familia** *a family* **un grupo de amigos** *a group of friends* **un chico / una chica** *a boy / a girl* **un hombre / una mujer** *a man / a woman* **dos personas / unos jóvenes / adolescentes / turistas** *two people / young people / teenagers / tourists* **mucha gente** *lots of people* **dos chicas/ tres chicos** *two girls / three boys*

Es *he/she is* **Son** *they are*	**alto/a (s)** *tall* **bajo/a (s)** *short*				
Tiene *he/she has* **Tienen** *they have*	**el pelo** *hair*	**largo** *long* **corto** *short*	**y** *and*	**rubio** *blond* **negro** *black* **moreno** *dark/brown*	**blanco** *white* **es pelirroja** *ginger* **castaño** *chestnut brown*
	los ojos *eyes*	**azúles** *blue* **verdes** *green* **marrones** *brown*			
	parece *he/she seems* **parecen** *they seem*	**contento/a (s)** *happy* **triste(s)** *sad* **simpático/a (s)** *kind/nice*			
Lleva *he/she wears* **Llevan** *they wear*	**un jersey** *a jumper* **un pantalón** *trousers* **un vestido** *a dress* **una falda** *a skirt*			**negro/a** *black* **azúl** *blue* **verde** *green* **gris** *grey*	**rosa** *pink* **rojo/a** *red* **amarillo/a** *yellow* **marrón** *brown*

El chico (a la izquierda) *the boy (on the left)* **La chica (a la derecha)** *the girl (on the right)* **El hombre (en el centro)** *the man (in the centre)*	**está** *is*	**comiendo/jugando/estudiando/haciendo/trabajando/mirando/hablando/escuchando/utilizando/andando** *eating/playing/studying/doing/working/watching/talking/listening/using/walking*
Las personas (en primer plano) *the people (in the foreground)*	**están**	

En mi opinión *In my opinion* **Pienso que** *I think that* **Diría que** *I would say that*	**está** *he/she is* **están** *they are*	**en** *in*	**un restaurante / un hotel / un colegio / una tienda / un cine / una oficina / un parque / un polideportivo / un centro comercial**
		de vacaciones *on holiday* **en la playa** *on the beach* **en el centro (de la ciudad)** *in the town centre* **en el campo / en la montaña** *in the countryside / in the mountains* **en su casa/ en casa de unos amigos** *at their house / at a friend's house*	
	hace buen tiempo / hace mal tiempo / hace calor / hace frío / hace sol *it's nice weather / it's bad weather / it's hot / it's cold / it's sunny*		

Year 10 – DT Knowledge Organiser

Properties of materials
The properties of materials determine what it's useful for. Thinking about these properties is super important when it comes to designing a new product.

Working properties

Strength
Strength is the ability to withstand forces without breaking. For example:

- The rope in a tug-of-war resists pulling forces.
- Bridge supports resist compression forces.
- A surfboard resists forces trying to bend it.
- Fabric that contain Kevlar fibres are really strong and resistant to abrasion so they're used in motorcycle clothing.

Hardness
This is the ability to withstand scratching, abrasion or denting. It's very important for tools that cut, like files and drills.

Ductility
Ductile materials can be drawn into a wire e.g. copper.

Elasticity
Elastic materials can stretch and bend and return to their original shape. A spring has good elasticity.

Toughness
If a material is tough, it is hard to break or snap. The material changes shape a bit instead. Armour and bullet-proof vests need to be tough.

Malleability
Materials that are malleable can be bent and shaped. Most metals are malleable. They can be hammered into thin sheets without breaking.

Physical properties

Electrical conductivity
Electrical conductors let electricity travel through them easily. Electrical insulators don't.
Electrical wires need to be conductors, but the coating around the wires must be insulating. Metals are good electrical conductors. Plastics tend to be good insulators.
Some fabrics are blended or coated with an electrically conductive material (e.g. a metal). Gloves can have electrically conductive fingertips so you can still operate touchscreens with them on.

Fusibility
Materials with a high fusibility have low melting points, only a small amount of heating is required to convert these materials to liquids. For example, solder has a high fusibility. This allows it to melt before the materials being soldered together (which have a lower fusibility).

Density
The density of a material is a measure of its mass per unit volume. A table made of solid metal would likely be heavier to carry than an identical table made from plastic. This is because metals tend to be denser.
Density often has units of kg/m3.

Thermal conductivity
Thermal conductors let heat travel through them easily. Thermal insulators don't.
Metals are good thermal conductors. Plastic, board and wood are good thermal insulators.
Pans must be made from good thermal conductors, but their handles are often made from thermal insulators.

Absorbency
Fibres and fabrics that are absorbent are good at soaking up moisture. Paper towels are a good example. Absorbent materials can be dyed easily, but they also dry slower and are more vulnerable to stains.
Natural fibres (e.g. wool, cotton and cellulose fibres that make up paper) are absorbent. Synthetic fibres (e.g. polyester and LYCRA) are not absorbent.

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Year 10 – DT Knowledge Organiser

Hardwoods, softwoods and manufactured boards

Hardwoods

Hardwoods usually grow in warm climates and are slow growing so they're generally more expensive than softwoods. The trees have broad, flat leaves and are deciduous (they lose their leaves in autumn). The wood tends to have a tighter grain and be denser and harder than softwoods, although there are exceptions to this, e.g. balsa.

- **Oak** is light brown. It's tough, durable and very strong. It also has attractive grain markings, especially when quartersawn, and finishes well, so it's used a lot in interior panelling. However, it does corrode steel screws and fittings.
- **Mahogany** is a red-brown colour. It's durable and easy to work with, but it's expensive, so it's used for good quality furniture.
- **Beech** is pinkish-brown. It's hard enough to resist being dented, and can be bent using steam. It's used for chairs and toys.
- **Balsa** is a white or tan colour. For a hardwood, it has a very low density and is very soft. It's softness makes it easy to cut and shape. This combined with a high strength-to-weight ratio, makes it great for modelling.
- **Ash** has a pale cream colour. It's tough and absorbs shock well, so it's used for tool handles and wooden sports equipment. It's all attractive and so is used for furniture.

Softwoods

Softwoods grow in colder climates and are fast-growing. This makes them fairly cheap and readily accessible. The trees have leaves like needles, have cones (e.g. pine) and are coniferous, meaning they keep their leaves all year round.

- **Pine** is yellow with brown streaks. It's quite strong and cheap but 'knotty' which can make it hard to work with. It's used for telegraph poles, fences and cheap furniture.
- **Larch** has an attractive yellow to reddish-brown colour. It's harder, tougher and more durable than most softwoods. It's also resistant to rot which makes it good for decking, cladding the outside of buildings and fence posts.
- **Spruce** is a reddish-brown colour. It's hard and has a good strength-to-weight ratio but it's also very 'knotty' and not very durable. It's used for structural purposes both inside and outside with aircrafts, crates and ship masts.

Manufactured boards

Processed pieces of wood can be combined with glue and pressed into panels. This forms new materials called manufactured boards or manufactured timbers.

- **Medium density fibreboard (MDF)** is made from tiny fibres of softwood timber held together by glue. As it's just bits of timber stuck together, it has no natural grain. It's cheap, dense and has a smooth uniform surface that takes paint and other finishes well. However, it's porous so can be damaged by moisture. It's often used for shelves and flatpack furniture.
- **Plywood** is made up of several layers of softwood or hardwood, glued together with their grain at right angles to one another. This structure makes it very strong for its weight and thickness, compared with solid wood. It's a popular manufactured board, used for building and furniture.
- **Chipboard** is made by compressing wood chips, shaving and sawdust together with glue. It's usually used with a veneered surface. It's cheap and not very strong. It's also absorbent so can be easily damaged by moisture. Chipboard is often used in cheap self-assembly furniture.

Year 10 – DT Knowledge Organiser

Hardwoods, softwoods and manufactured boards

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