KNOWLEDGE ORGANISER BOOKLET

YEAR 10 – CYCLE 2

2025-2026

CORE & HUMANITIES

Name:

Tutor Group:

Contents

CORE & HUMANITIES

Instructions for Use

For all of your subjects, there are certain **facts** that you **need** to know in order for you to best understand the content you study in lessons.

In this booklet are ***Knowledge Organisers*** for each subject which contain the core concepts that you have to know to be successful in your lessons.

The **first 15 minutes** of Home Learning is the same in all subjects (apart from Maths) and should be completed in your single **Home Learning exercise book**:


Look: read a specific section of the *Knowledge Organiser*.


Cover: cover it over or put it to one side;


Write: from memory, write out as much of the information as you can remember for that section;


Check: check back with the *Knowledge Organiser*. Anything missing or incorrect, add in purple pen.


Review: information you didn't recall the first time you may wish to check in a different format, such as repeating the process or creating revision cards.

The next lesson, your teacher will check that you have completed this process and you will be quizzed in your subject lesson to see what you can recall.

Instructions for Use : Example

Show My Homework **for Geography says: 'Knowledge Organiser: How to Read Grid References'.**

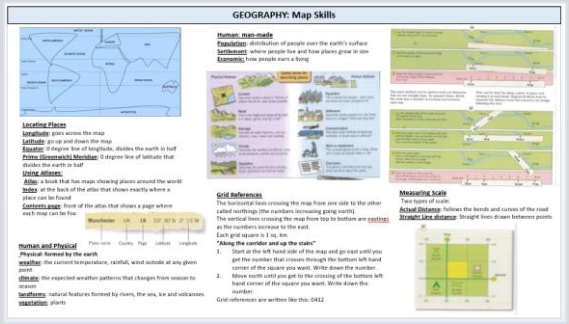
1. L**OOK:** carefully read the section of the *Knowledge Organiser* which you are learning.

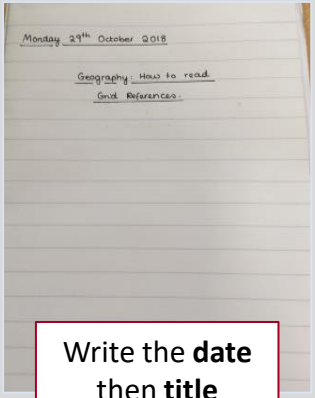
2. **COVER:** cover it over or put it to one side.

3. **WRITE:** write out as many details as you can from memory.

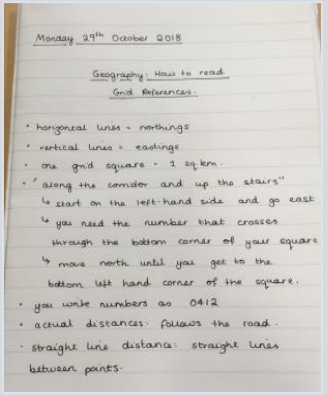
4. **CHECK:** check back over your answer with the *KO*. Anything which is missing or incorrect, add in in **purple pen**.

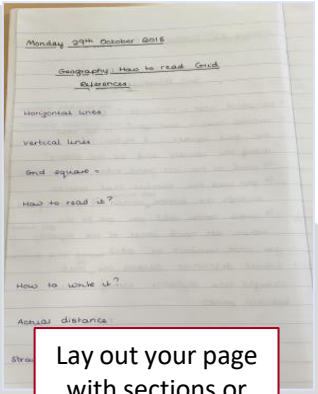
5. **REVIEW:** if you had significant gaps or parts you didn't understand, repeat the process from Step 1.



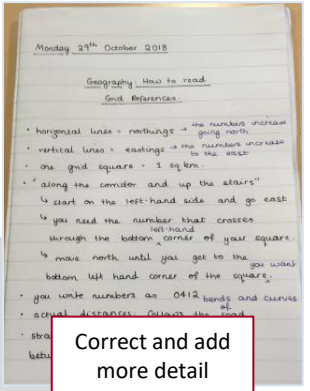


Write the **date** then **title** (**subject: focus**)





Lay out your page with sections or questions to help



Correct and add more detail using your purple pen.

sparx is your Maths homelearning

You do not have a knowledge organiser for maths. This is because the best way to remember and understand mathematics is to do it. Write your Sparx password in the space below so you don't forget it.

Sparx username: ……

Sparx password: ……

How do I log on?

Go to www.sparxmaths.uk. Select ***Kingsbridge Academy*** and enter your username and password.

What do I have to do each week?

Complete all of your Compulsory Section Sparx homework and get it 100% correct. If within your hour of home learning time you should complete the target and optional sections which are designed to help you make better progress in Maths.

How long should it take?

Sparx will adjust your homework so it should take about 1 hour. If you find yourself taking longer than this you should make sure you are coming for help on the difficult bits.

When should I do it?

You should complete your Sparx homelearning in the 4 allocated 15 minute slots in your homelearning timetable

What if I get stuck or can't do it?

You can watch the videos, ask a friend or parent or ask a maths teacher (in person or by email).

Why do I get different questions to my friend?

Sparx creates a custom homework just for you – because you are an individual. We are really pleased that we are able to offer you personalised homework.

Why do I have to do 100%?

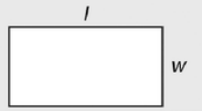
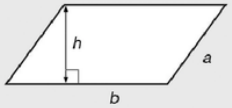
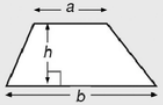
We care about you and believe that you deserve to do well in maths. Students who do all questions learn more and get better results.

GCSE Maths

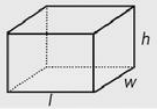
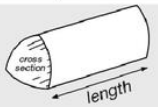
For GCSE Maths you are required to learn the following formulas.

Maths

Areas

Rectangle = $l \times w$	
Parallelogram = $b \times h$	
Triangle = $\frac{1}{2} b \times h$	
Trapezium = $\frac{1}{2}(a + b)h$	

Volumes

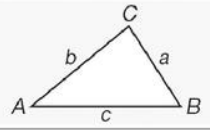
Cuboid = $l \times w \times h$	
Prism = area of cross section × length	
Cylinder = $\pi r^2 h$	
Pyramid = $\frac{1}{3}$ × area of base × h	

Trigonometric formulae

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2} ab \sin C$



Quadratic equations

The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$, where $a \neq 0$, are given by $x = \frac{-b \pm \sqrt{(b^2-4ac)}}{2a}$

Compound measures

Speed

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

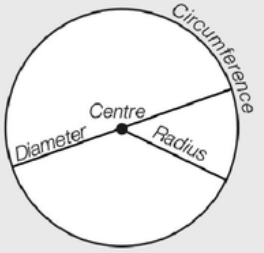
Density

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

Pressure

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

Circles

Circumference = $\pi \times$ diameter, $C = \pi d$	
Circumference = $2 \times \pi \times$ radius, $C = 2\pi r$	
Area of a circle = π x radius squared, $A = \pi r^2$	

Foundation tier formulae

Higher tier formulae

William Shakespeare's Macbeth: Knowledge Organiser

Key Vocabulary

	Word	Example:
	**supernatural** – linked to forces beyond scientific understanding; against nature	The witches **supernatural** powers allow them to conjure up hallucinations for Macbeth
	**manipulation** – the act of controlling or heavily influencing someone	Lady Macbeth's skilful **manipulation** of her husband leads him to murder.
	**conscience** – a person's sense of what is right and wrong	Before murdering Duncan, Macbeth wrestles with his **conscience.**
	**ambition** - a strong desire to do or achieve something	Macbeth's **ambition** is driven by Lady Macbeth's persuasion.
	**dominate** - To control someone or something because you have more power or influence.	Lady Macbeth's lengthy speeches allow her to **dominate** Macbeth.
	**fate** - the development of events outside a person's control.	Banquo is happy to leave things to **fate**, whereas Macbeth takes control of his own destiny.
	**duplicitous** – being two-faced; deceitful	Lady Macbeth's **duplicitous** nature is shown by her ability to welcome Duncan while also plotting his death.
	**malevolent** – having or showing a wish to do evil to others	The witches appear to be **malevolent** beings who enjoy causing harm.

Plot Overview

Act 1: Macbeth is influenced to consider treason	The play **opens with three witches** chanting on a bleak moorland. **In the next scene we hear a battle report in which a soldier Macbeth bravely fought in a battle to defend Scotland.** On a bleak Scottish moorland, Macbeth and Banquo, two of King Duncan's generals, discover three strange women (witches). **The witches prophesy that Macbeth will be promoted twice: to Thane of Cawdor and King of Scotland. Banquo's descendants will be kings.** Macbeth and Banquo want to know more, but the "weird sisters" disappear. **Soon afterwards, King Duncan names Macbeth Thane of Cawdor as a reward for his success in the recent battles.** The promotion seems to support the prophecy. The King then proposes to make a brief visit that night to Macbeth's castle. **Lady Macbeth receives news from her husband about the prophecy and his new title. She vows to help him become king by whatever means are necessary...**
Act 2: Duncan is murdered. Macbeth is named as king.	Macbeth returns to his castle, followed almost immediately by King Duncan. **The Macbeths plot together to kill Duncan and wait until everyone is asleep.** At the agreed time, Lady Macbeth gives the guards drugged wine **so Macbeth can enter and kill the King. He regrets this almost immediately, but his wife reassures him.** She leaves the bloody daggers by the dead king just before Macduff arrives. When **Macduff discovers the murder,** Macbeth kills the drunken guards in a show of rage. **Duncan's sons, Malcolm and Donalbain, flee**, fearing for their own lives.
Act 3: Banquo is murdered. The Thanes become unhappy.	**Macbeth becomes King of Scotland** but is plagued by feelings of insecurity. He remembers the prophecy that Banquo's descendants will inherit the throne **and arranges for Banquo and his son Fleance to be killed. In the darkness, Banquo is murdered, but his son escapes** the assassins. At his state banquet that night, **Macbeth sees the ghost of Banquo** and worries the courtiers with his mad response. Lady Macbeth dismisses the court and unsuccessfully tries to calm her husband.
Act 4: Macbeth returns to the witches	**Macbeth seeks out the witches who say that he will be safe until a local wood, Birnam Wood, marches into battle against him. He also need not fear anyone born of woman.** They also prophesy that the Scottish succession will still come from Banquo's son. **Macbeth embarks on a reign of terror, slaughtering many, including Macduff's family.** Macduff had gone to seek Malcolm (one of Duncan's sons who fled) at the court of the English king. Malcolm is young and unsure of himself, but Macduff, pained with grief, persuades him to lead an army against Macbeth.
Act 5: Lady Macbeth dies; Macbeth is killed in battle	**Macbeth feels safe in his remote castle at Dunsinane until he is told that Birnam Wood is moving towards him.** Malcolm's army is carrying branches from the forest as camouflage for their assault on Macbeth's stronghold. Meanwhile, an over-wrought and guilty **Lady Macbeth walks in her sleep** and tells her secrets to her doctor. **She takes her own life.** As the **final battle** commences, Macbeth hears of Lady Macbeth's suicide. In the midst of a losing battle, Macduff challenges Macbeth. Macbeth learns Macduff is the child of a caesarean birth, realises he is doomed, and submits to his enemy. **Macduff triumphs and brings the head of the traitor Macbeth to Malcolm. Malcolm declares peace is crowned king.**

William Shakespeare's Macbeth: Knowledge Organiser

Key Context:

Great Chain of Being: Jacobeans believed in a God-given hierarchy [order of power] on Earth: everyone had their place and should be content with it. Macbeth's actions disrupt this natural order.

The Divine Right of Kings: Jacobeans believed that the king was God's chosen representative on Earth. To try and take his place would be to try and overpower God's will. Malcolm has to become king at the end for the divine right to be restored.

Women's Roles: While women were not powerless, they did have less power than men of the same social position. A woman's status was linked to her husband's position. Women's belonged to their fathers and husbands.

The Supernatural: Jacobeans believed in the reality of the supernatural, and James I had a strong personal interest. He viewed witchcraft as a malevolent force that people should fear. To side with the supernatural was to go against God.

The Gunpowder Plot: Just before Macbeth was written. Guy Fawkes tried to commit treasons by blowing up Parliament and killing James I. The play is a warning against treason: the image of the 'flower and serpent' is significant here as it is a direct link to the event.

Character Function

Macbeth: Tragic hero: his weak nature and excessive ambition lead to his decision to kill Duncan. His **transformation from noble warrior to cruel tyrant** shows how ambition can lead to the downfall of even the bravest of men.

Lady Macbeth: Powerful manipulator: her immediate thoughts are towards murder, and she aligns herself with the supernatural in order to give her the mental strength to achieve her desire for power. Her **change from dominance to emotional fragility illustrates the idea that ambition is destructive and** shows that anyone who tries to go beyond their God-given role will face dire consequences.

King Duncan: Rightful king: while not necessarily without flaws, he is the ruler chosen by God and is **a virtuous character** who is the victim of Macbeth's treachery. His murder causes nature to be disrupted.

Banquo: Macbeth's loyal friend: Banquo learns that his sons will be kings but is **happy to let fate take its course** and leave this to chance. He is noble until the end, providing **a contrast with Macbeth's tyranny.**

The Witches: These characters prophecies Macbeth's rise to greatness and may be seen as the catalyst to his downfall. They also foretell his end, although their speech in riddles manipulates Macbeth into viewing himself as invincible. **The witches are social outcasts and not to be trusted.**

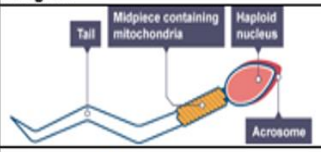
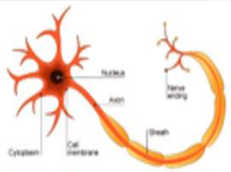
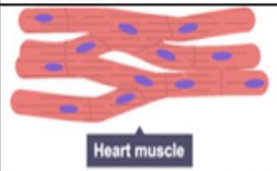
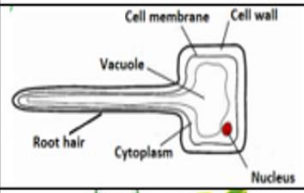
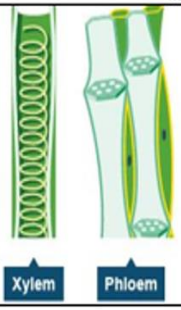
Key Quotations

1.5 'Come, thick night, and pall me in the dunnest smokes of hell' 5.1 She has light by her continually.'	M: 'Will all great Neptune's ocean wash this blood clean from my hand?' LM: 'A little water clears us of this deed.'	3W: 'Fair is foul and foul is fair.' M: 'So foul and fair a day I have not seen.'
'Hie thee hither, that I may pour my spirit in thine ear.'	'The instruments of darkness tell us truths, / Win us with honest trifles, to betray's / In deepest consequence'.	'The raven himself is hoarse That croaks the fatal entrance of Duncan under my battlements'
'Leave all the rest to me'	'All the perfumes of Arabia will not sweeten this little hand.'	'Look like the innocent flower but be the serpent under't.'

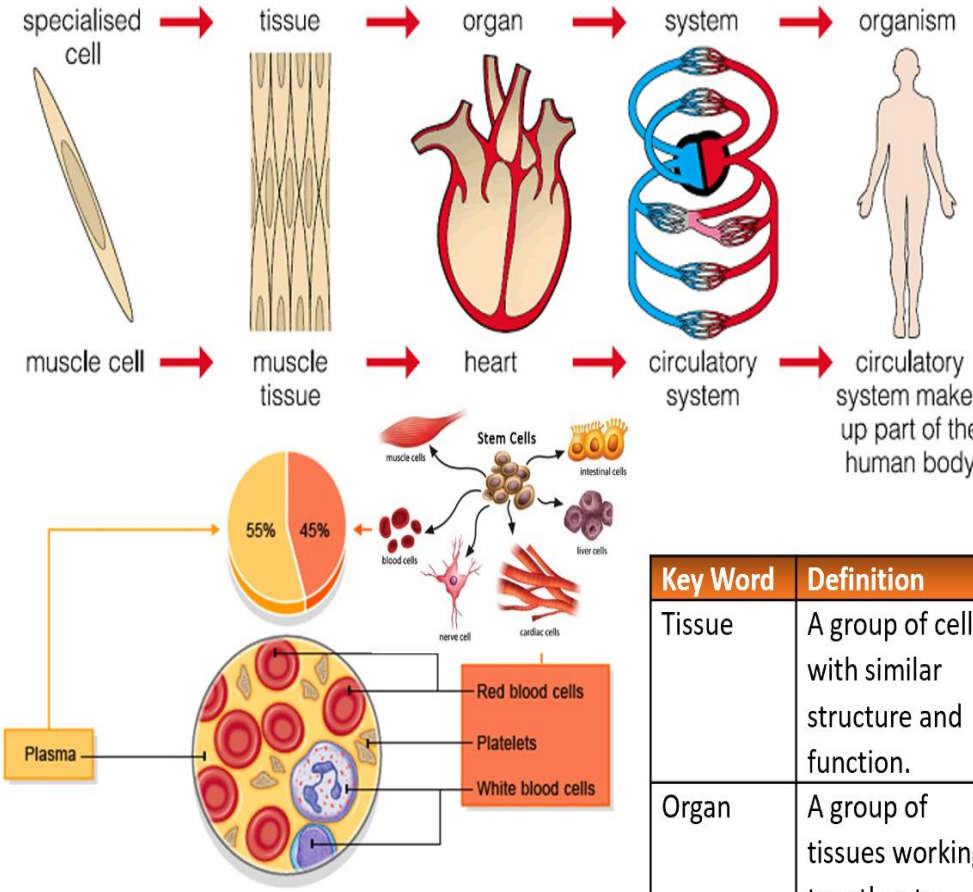
Themes and Ideas:

Ambition	Being overly ambitious is Macbeth's fatal flaw, especially as the ambition is for personal gain. Ambition must be tempered by morality.
Female Power	In *Macbeth*, women with power are seen as untrustworthy. Female power leads to evil consequences. The women with power are also purposefully presented as going against expectations of femininity.
The Supernatural	The supernatural forces are powerful and beyond human control. They are manipulative and not to be trusted. They are dangerous.
Bravery and Nobility	Extreme violence and murder is an act of bravery and nobility when performed for the benefit of king and country, not for personal gain.
Appearance and Reality	Appearances are often deceptive: it is wrong to judge a person's character based on superficial appearances. It is easy to be deceived.

Biology Year 10 – Cycle 2- Organisation

Name of Cell	Diagram	Adaptations
Sperm cell		• Nucleus contains DNA for fertilisation. • Acrosome contains enzymes to digest the egg. • Mitochondria release energy from respiration so the sperm move.
Nerve cell (neurone)		• Long to extend over the body. • Has extension and branches to communicate with other cells. • Covered with a fatty sheath which insulates the axon to speed up nervous impulses.
Muscle cell		• Muscle cells contain filaments of protein that slide over each other to cause muscle contraction. • Contain many well-developed mitochondria to provide the energy for muscle contraction.
Root hair cell		• The root hair cell has a large surface area to provide contact with soil water. • It has thin walls so as not to restrict the movement of water.
Xylem and Phloem		**Xylem** • No end walls on xylem vessels, so there is a continuous column of water running through them. Walls thickened with lignin for support. **Phloem** • Dissolved sugars and amino acids transported up and down the stem. Companion cells, adjacent to the sieve tubes provide energy required to transport substances in the phloem.

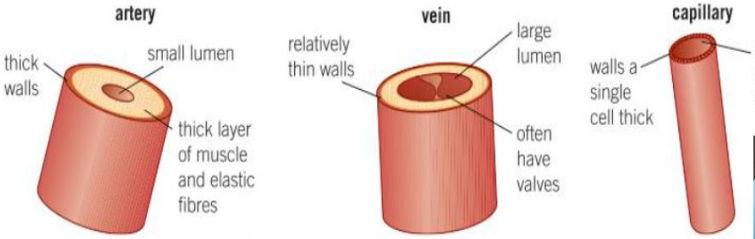
Differentiate	The process whereby cells become specialised for a certain function.
Specialise	Having developed special features that allows a certain job/role to be carried out.



Component	Function(s)
Plasma	Transporting carbon dioxide, digested food molecules, urea and hormones; distributing heat
Red blood cells	Transporting oxygen
White blood cells	Ingesting pathogens and producing antibodies
Platelets	Involved in blood clotting

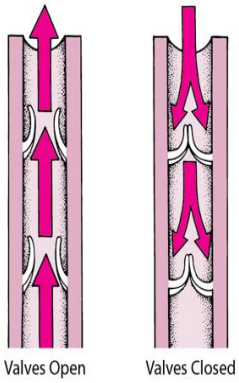
Key Word	Definition
Tissue	A group of cells with similar structure and function.
Organ	A group of tissues working together to perform a function.
Organ system	Groups of organs working together to perform a function and form an organism.

Biology Year 10 – Cycle 2- Circulatory System



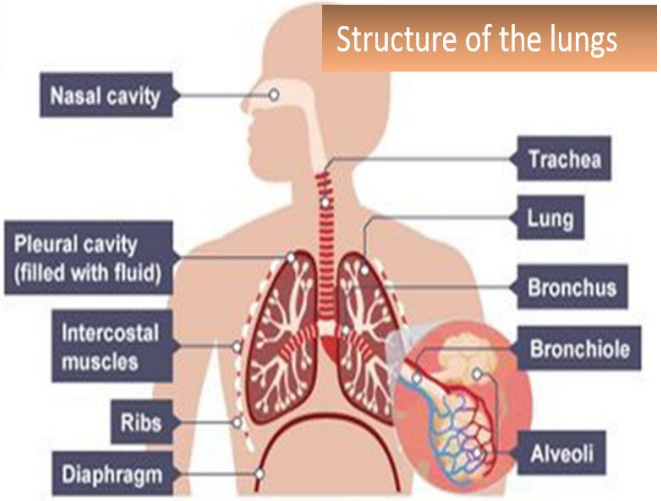
Arteries	Veins
Carry blood **away** from the heart	Carry blood towards the heart
Carry *oxygenated* blood, except for the **pulmonary artery**	Carry *deoxygenated* blood, except for the **pulmonary vein**
Carry blood under **high** pressure	Carry blood under **low** pressure
Thick muscular and elastic walls to pump and accommodate blood	**Thin** walls - have less muscular tissue than arteries
No valves present	Valves to prevent back flow of blood
Very narrow lumen	Have a wide lumen
Pressure from heart forces blood along	Pressure from skeletal muscles forces blood along

Veins have valves

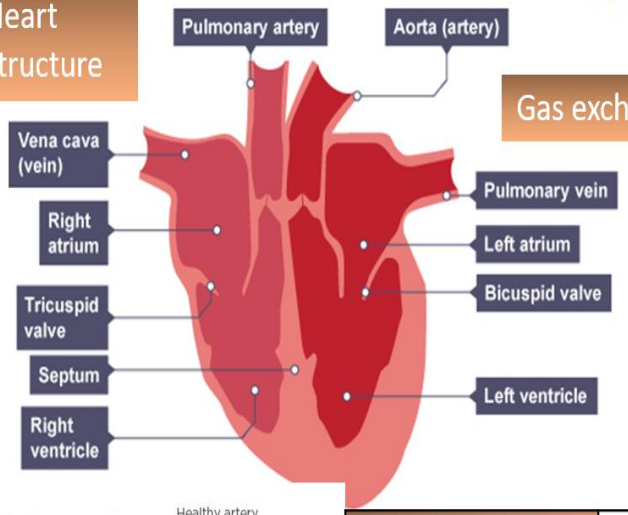


pacemaker

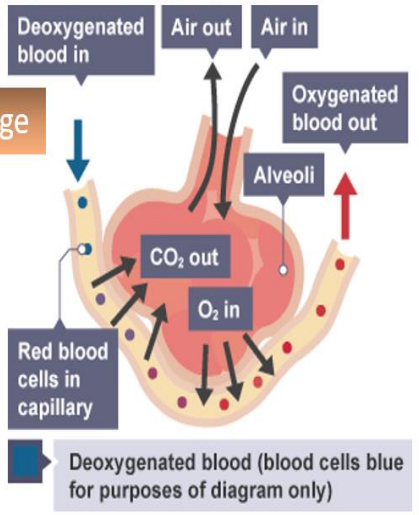
Structure of the lungs

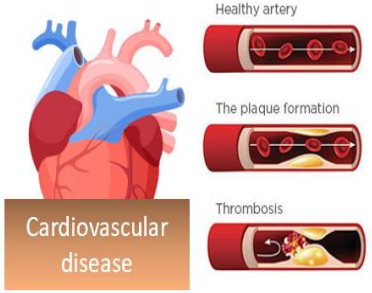


Heart structure



Gas exchange



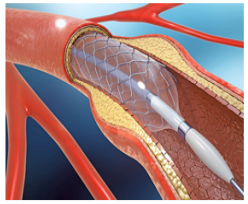


Cardiovascular disease

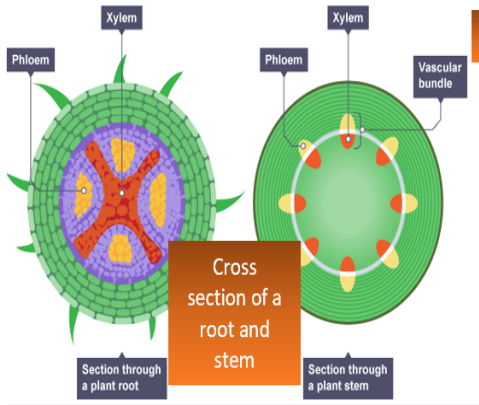
The effectiveness of a gas exchange system is increased by:	Having a large surface area
	A thin membrane – short diffusion path.
	An efficient blood supply.
	Being well ventilated.

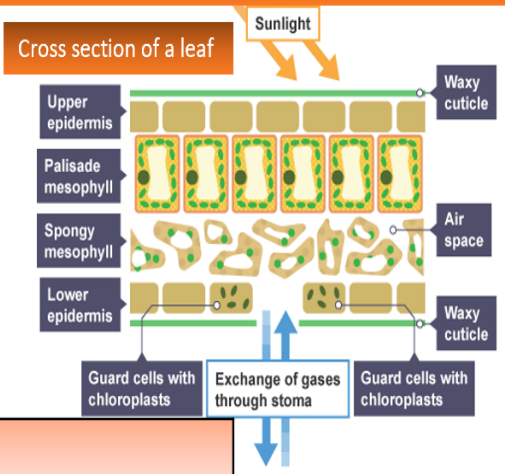
Biology

Evaluate Treatment for Cardiovascular Disease

Treatment	Benefits	Drawbacks
Statins	• Lower cholesterol in the blood. • Might protect against Alzheimer's disease. 	• Need to be taken long term. • Side effects - Head aches, memory loss). • Cannot be taken by pregnant, breast-feeding or have liver disease. • Linked with Type 2 diabetes.
Stents	• Blocked/narrowed coronary arteries stretched open to restore and maintain blood flow. • Used when drugs are less effective. • Offer a longer-term solution. • Made from metal alloys and do not lead to an immune response. • Operation is safe and doesn't involve surgery.	• There is a risk of bleeding, heart attack or stroke. 
Coronary by pass	• Vein stitched around the blocked coronary artery used when stents not effective. • The blocked coronary artery is replaced by the patient's own vein so there is no risk of rejection.	• The surgery is expensive. • There is a risk associated with general anaesthesia.
Heart Transplant	• A person's life can be extended. 	• Shortage of donor hearts. • Needs to take immunosuppressants for life. • Risk of diseases due to above. • Major surgery and takes a long time to recover.

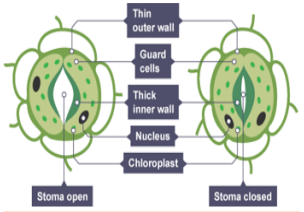
Organisation in plants





Feature	Function
Large surface area	Form maximum absorption of light and optimum absorption of CO_2.
A thin, flattened blade	So water vapour and other gases have a limited distance to diffuse.
Xylem and Phloem in the midrib and veins	Xylem – to transport water and minerals Phloem – to transport sucrose
Air spaces within leaf	For max surface area for diffusion of gases.

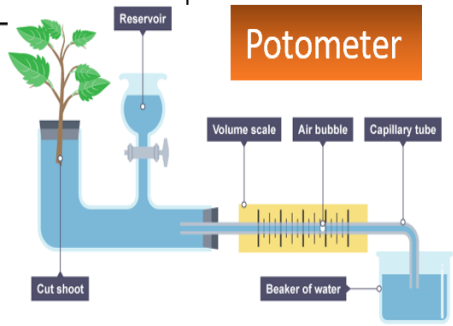
Adaptations of a leaf



Guard cells and stomata control gas exchange and water loss.

A **potometer** can be used to show how the **uptake of water** by a plant changes in different conditions. This gives a good idea of the volume of water lost by the plant in **transpiration**. ***Almost all*** *of the water taken up by the plant is* ***lost in transpiration****, but a small amount is* ***used in photosynthesis****.*

Potometer



Factor	Change in factor	Explanation
Temperature	Increase	More water molecules evaporate, rate of diffusion increases due to increased kinetic energy.
Humidity	Decrease	Reduces concentration of water molecules outside the leaf; diffusion of water vapour from leaf increases.
Air Movement	Increase	Removes more water vapour from the leaf surfaces.
Light intensity	Increase	Increases photosynthesis; stomata open more water vapour lost.

PiXL

Oxidation Is Loss (of electrons) Reduction Is Gain (of electrons)

AQA Chemical Changes 1

Reactions of acids

Acids react with some metals to produce salts and hydrogen.

Reactions with acids	metal + acid → metal salt + hydrogen	magnesium + hydrochloric acid → magnesium chloride + hydrogen zinc + sulfuric acid → zinc sulfate + hydrogen

HT ONLY: Reactions between metals and acids are redox reactions as the metal donates electrons to the hydrogen ions. This displaces hydrogen as a gas while the metal ions are left in the solution.

Oxidation and reduction in terms of electrons (HT ONLY)

Ionic half equations (HT only)

For displacement reactions	*Ionic half equations show what happens to each of the reactants during reactions*	For example: The ionic equation for the reaction between iron and copper (II) ions is: $Fe + Cu^{2+} \rightarrow Fe^{2+} + Cu$ The half-equation for iron (II) is: $Fe \rightarrow Fe^{2+} + 2e^-$ The half-equation for copper (II) ions is: $Cu^{2+} + 2e^- \rightarrow Cu$

Neutralisation of acids and salt production

Acid name	Salt name
Hydrochloric acid	Chloride
Sulfuric acid	Sulfate
Nitric acid	Nitrate

sodium hydroxide + hydrochloric acid → sodium chloride + water

calcium carbonate + sulfuric acid → calcium sulfate, + carbon dioxide + water

Neutralisation	*Acids can be neutralised by alkalis and bases*	An **alkali** is a soluble base e.g. metal hydroxide. A **base** is a substance that neutralises an acid e.g. a soluble metal hydroxide or a metal oxide.

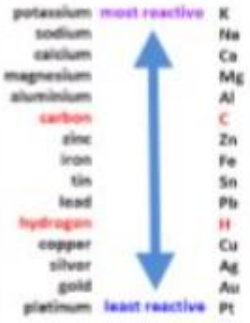
Metal oxides

Metals and oxygen	*Metals react with oxygen to form metal oxides*	magnesium + oxygen → magnesium oxide $2Mg + O_2 \rightarrow 2MgO$
Reduction	*This is when oxygen is removed from a compound during a reaction*	e.g. metal oxides reacting with hydrogen, extracting low reactivity metals
Oxidation	*This is when oxygen is gained by a compound during a reaction*	e.g. metals reacting with oxygen, rusting of iron

Reactivity of metals

The reactivity series

Metals form positive ions when they react	*The reactivity of a metal is related to its tendency to form positive ions*	The reactivity series arranges metals in order of their reactivity (their tendency to form positive ions).
Carbon and hydrogen	*Carbon and hydrogen are non-metals but are included in the reactivity series*	These two non-metals are included in the reactivity series as they can be used to extract some metals from their ores, depending on their reactivity.
Displacement	*A more reactive metal can displace a less reactive metal from a compound.*	Silver nitrate + Sodium chloride → Sodium nitrate + Silver chloride



Extraction of metals and reduction

Extraction using carbon

Metals less reactive than carbon can be extracted from their oxides by reduction.	For example: zinc oxide + carbon → zinc + carbon dioxide

Unreactive metals, such as gold, are found in the Earth as the metal itself. They can be mined from the ground.

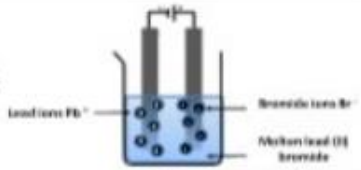
	Reactions with water	Reactions with acid
Group 1 metals	*Reactions get more vigorous as you go down the group*	*Reactions get more vigorous as you go down the group*
Group 2 metals	*Do not react with water*	*Observable reactions include fizzing and temperature increases*
Zinc, iron and copper	*Do not react with water*	*Zinc and iron react slowly with acid. Copper does not react with acid.*

Electrolysis

Process of electrolysis	*Splitting up using electricity* — When an ionic compound is melted or dissolved in water, the ions are free to move. These are then able to conduct electricity and are called electrolytes. Passing an electric current though electrolytes causes the ions to move to the electrodes.
Electrode	*Anode / Cathode* — The positive electrode is called the anode. The negative electrode is called the cathode.
Where do the ions go?	*Cations / Anions* — Cations are positive ions and they move to the negative cathode. Anions are negative ions and they move to the positive anode.

Extracting metals using electrolysis

- *Metals can be extracted from molten compounds using electrolysis.*
- *This process is used when the metal is too reactive to be extracted by reduction with carbon.*
- *The process is expensive due to large amounts of energy needed to produce the electrical current. Example: aluminium is extracted in this way.*



Higher tier: You can display what is happening at each electrode using half-equations:
At the cathode: $Pb^{2+} + 2e^- \rightarrow Pb$
At the anode: $2Br^- \rightarrow Br_2 + 2e^-$

The ions discharged when an aqueous solution is electrolysed using inert electrodes depend on the relative reactivity of the elements involved.

At the negative electrode	Metal will be produced on the electrode if it is less reactive than hydrogen. Hydrogen will be produced if the metal is more reactive than hydrogen.
At the positive electrode	Oxygen is formed at positive electrode. If you have a halide ion (Cl^-, I^-, Br^-) then you will get chlorine, bromine or iodine formed at that electrode.

Electrolysis of aqueous solutions

AQA Chemical Changes 2

Reactions of acids

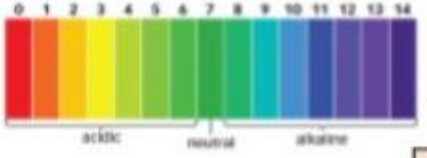
Strong and weak acids (HT ONLY)

Strong acids	*Completely ionised in aqueous solutions e.g. hydrochloric, nitric and sulfuric acids.*
Weak acids	*Only partially ionised in aqueous solutions e.g. ethanoic acid, citric acid.*
Hydrogen ion concentration	*As the pH decreases by one unit (becoming a stronger acid), the hydrogen ion concentration increases by a factor of 10.*

Soluble salts

Soluble salts	*Soluble salts can be made from reacting acids with solid insoluble substances (e.g. metals, metal oxides, hydroxides and carbonates).*
Production of soluble salts	*Add the solid to the acid until no more dissolves. Filter off excess solid and then crystallise to produce solid salts.*

The pH scale and neutralisation



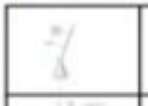
You can use universal indicator or a pH probe to measure the acidity or alkalinity of a solution against the pH scale.

In neutralisation reactions, hydrogen ions react with hydroxide ions to produce water:
$H^+ + OH^- \rightarrow H_2O$

Acids	*Acids produce hydrogen ions (H^+) in aqueous solutions.*
Alkalis	*Aqueous solutions of alkalis contain hydroxide ions (OH^-).*

Titrations (Chemistry only)

Titrations are used to work out the precise volumes of acid and alkali solutions that react with each other.



1. Use the pipette to add 25 cm^3 of alkali to a conical flask and add a few drops of indicator.

2. Fill the burette with acid and note the starting volume. Slowly add the acid from the burette to the alkali in the conical flask, swirling to mix.

3. Stop adding the acid when the end-point is reached (the appropriate colour change in the indicator happens). Note the final volume reading. Repeat steps 1 to 3 until you get consistent readings.

Calculating the chemical quantities in titrations involving concentrations in mol/dm^3 and in g/dm^3 (HT ONLY):

$2NaOH(aq) + H_2SO_4(aq) \rightarrow Na_2SO_4(aq) + 2H_2O(l)$

It takes 12.20cm^3 of sulfuric acid to neutralise 24.00cm^3 of sodium hydroxide solution, which has a concentration of 0.50mol/dm^3.

Calculate the concentration of the sulfuric acid in g/dm^3

0.5 mol/dm^3 x (24/1000) dm^3 = 0.012 mol of NaOH

The equation shows that 2 mol of NaOH reacts with 1 mol of H_2SO_4, so the number of moles in 12.20cm^3 of sulfuric acid is (0.012/2) = 0.006 mol of sulfuric acid

Calculate the concentration of sulfuric acid in mol/ dm^3

0.006 mol x (1000/12.2) dm^3 =0.49mol/dm^3

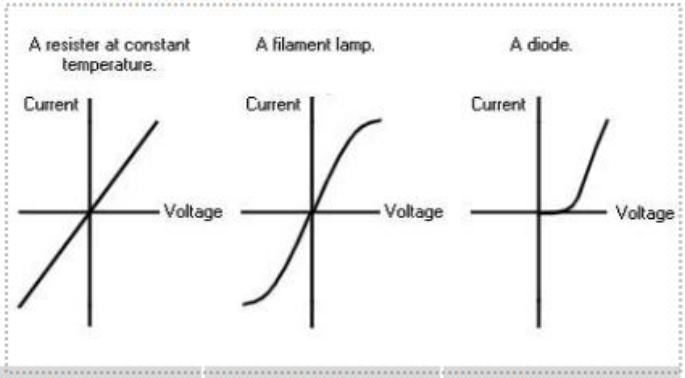
Calculate the concentration of sulfuric acid in g/ dm^3

H_2SO_4 = (2x1) + 32 + (4x16) = 98g
0.49 x 98g = 48.2g/dm^3

P2 Electricity – Yr10 Cycle 2: Knowledge Organiser

Physics

I-V Characteristics



Ohmic conductor	Filament lamp	Diode
At a constant temperature, current is directly proportional to the p.d. across the resistor.	As current increases, the resistance increases. The temperature increases as current flows	Current flows when p.d. flows forward. Very high resistance in reverse.

Series and Parallel Circuits

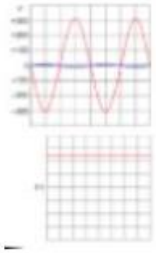
Series circuit	Current is the same in all components.	Total p.d. from battery is shared between all the components.	Total resistance is the sum of each component's resistance.
Parallel circuit	Total current is the sum of each component's current.	p.d. across all components is the same.	Total resistance is less than the resistance value of the smallest individual resistor.

Series	Parallel
A circuit with one loop	*A circuit with two or more loops*

Thermistor	LDR
Resistance varies with temperature	*Resistance varies with light intensity*
Resistance decreases as temperature increases.	Resistance decreases as light increases.

National Grid	*Distributes electricity generated in power stations around UK*

Alternating current	Direct current
p.d. switches direction many times a second, current switches direction	*p.d. remains in one direction, current flows the same direction*
Generator.	Cell or battery.



Energy Transfers

P = V x I Power = voltage x current.
$P=I^2R$ Power= current squared x resistance
V = I x R Voltage = current x resistance.
Q = I x t Charge = current x time.
E = V x Q Energy = voltage x charge.
E = V x I x t Energy = voltage x current x time.
Total cost = number of units x cost per unit.

'Earthing' a safety device; Earth wire joins the metal case.	Mains supply: *Frequency 50Hz, 230V*

Ammeter	*Set up in series with components*
Voltmeter	*Set up parallel to components*

3 pin plug			
	Live - Brown	Carries p.d from mains supply.	p.d between live and earth = 230V
	Neutral - Blue	Completes the circuit.	p.d. = 0V
	Earth – Green and Yellow stripes	Only carries current if there is a fault.	p.d. = 0V

Lesson 1 Components of an ecosystem

An ecosystem is a **community of plants and animals** that interact with one another and their physical environment.
Ecosystems can be any size.
Local e.g. a pond or under a dead log-
Regional e.g. the upland moorland of the Pennines
Global e.g. tropical rainforest. Also called biomes.

At each (trophic) level of the food chain the number of individuals declines. This is because not all individuals in any trophic level are consumed (eaten). This means not all energy is passed up to the next trophic level.

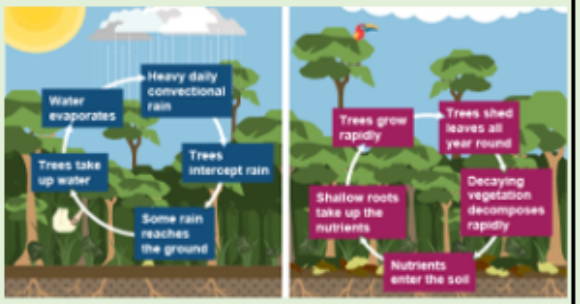
A small-scale ecosystem – A Freshwater Pond
Variations in the amount of light, water and oxygen available in different parts of a pond
Pond producers :turn sunlight into energy
Plants – including Marsh Marigold, Reed Mace, Water Lily
Pond consumers:
Water boatmen, Great diving beetle, small fish (stickleback), Frogs, Heron, Dragonfly, Kingfisher
Decomposer: Return (break down organics mater) nutrients to the soil

1. Define an ecosystem.
2. Name the missing scale of ecosystem: regional, global and _____
3. What happens to the number of individuals at each level of the food chain?
4. Name a small scale ecosystem.
5. Pond producers turn _____ into energy.

Lesson 2 Nutrient Cycling

Soil is the top layer of the earth that is composed of disintegrated rock particles, humus, water and air.
Litter is organic matter in and on the soil, it includes humus and leaf litter.
Biomass is the total mass of living organisms, mainly plant tissue, per unit area. It is a store of energy and is also known as standing crop.

Nutrient cycling happens rapidly in tropical rainforests as it is very hot and wet. It occurs very slowly in cold environments



1. Soil is made up of broken down rock particles, h_____, water and a_____.
2. What is litter?
3. What does biomass store?
4. Nutrient cycling happens slowly in tropical rainforest – true or false?
5. Shallow roots take up _____ from soil.

Lesson 3 Impacts of components of an ecosystem

If any component within an ecosystem is changed it will have a knock on effect on the rest of the ecosystem.
An example of where this happened was in **Yellowstone National Park in the USA** when they reintroduced wolves in 1995.

16 packs of grey wolves introduced. Each pack kills one elk a day. More kills by wolves = more food for scavengers Reduction in predation from coyotes leads to **increase in mice and voles**

Elk population falls from 20,000 to 10,000 in 8 years. Reduction in grazing pressure.

Aspen and cottonwood regenerate. There is more tree cover. Increase in bank side trees stabilises river banks so there is less erosion. More woody debris in rivers creates pools and trout habitats

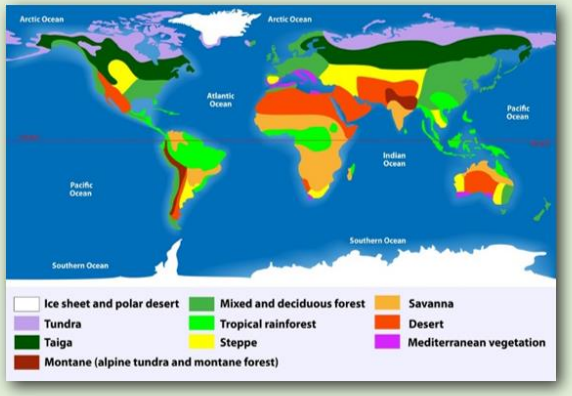
Competition from wolves results in **decrease in coyote population.**

Reduction in grazing pressure. Aspen and cottonwood regenerate. There is more tree cover.

1. What will change to a component of an ecosystem affect?
2. What was reintroduced to Yellowstone in 1995?
3. Why did populations of mice and voles increase?
4. The elf population fell from 20,000 to _____.
5. Why did erosion along river banks decrease?

Lesson 4 Global Ecosystems

Large scale ecosystems are known as **global ecosystems (or biomes)**. They are defined by the type of **vegetation** that grows in the region. Characteristics of ecosystems are determined by **global atmospheric circulation**. and lead to **west-east belts** of vegetation

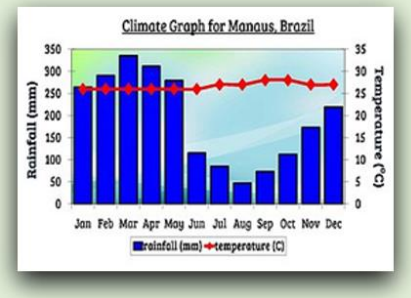


Tropical Rainforests Along equator. Constant 25°C – 30°C and over 250mm rain per month.
Deserts Tropics (Sahara and Australia). Over 30°C and less than 300 mmm per year rain.
Deciduous forests Higher latitudes (W Europe) 5 – 20°C and 500 – 1500 mm rain per year.
Coniferous forest (Taiga) 60°N (Scandinavia / Canada). Cone bearing evergreen trees.
Tundra Above 60°N (Arctic Circle). Less than 10°C and less than 500mm per year rain.

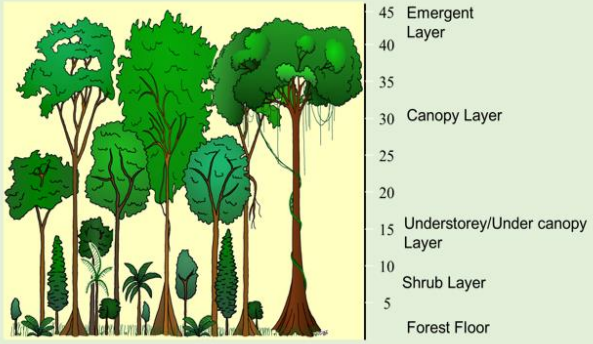
1. Another name for global ecosystems?
2. Ecosystems are defined by the _____ that grows there.
3. Which factor determines type of vegetation?
4. Which 2 ecosystems have low rainfall?
5. Deciduous forest is only found in the Artic, T/F

Lesson 5 Tropical Rainforests Characteristics

Temperatures are high all year (around 28°C).Rainfall is around 250mm per month.



High levels of solar insolation means it is warm (26° C). Air rises and causes clouds and rain (over 200 mm). These are ideal growing conditions for plants. No seasons so plants grow all year
People have fully not disturbed these areas yet



1. The average temperature in TRFs is _____.
2. In Manaus, there is a distinct rainy season between which months?
3. Why is it constantly warm?
4. Which layers are missing? Forest Floor, Shrub layer, Canopy
5. How tall are emergent trees?

Lesson 6 Plant and Animal Adaptations (TRFs)

Animal Adaptations

Three toed sloth - Powerful hooked claws to hang from trees. Fur green from algae giving it good camouflage in trees. Lives in trees (includes mating and giving birth to avoid predators).

Rhino Beetle - Long horn at the front to fight and protect against predators. Curved black back to camouflage against forest floor.

Plant adaptations

Plants on the forest floor are shade tolerant and able to cope in the darker conditions.
Epiphytes grow high up on the branches of trees to gain access to the light.
Lianas wrap themselves around other trees to gain access to light.
Competition for light causes trees to grow fast. straight. Buttress roots support these tall trees.

Drip tip leaves that shed water quickly so they don't snap under the weight of water

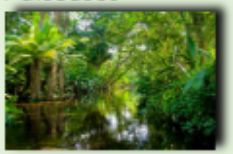
1. Name 2 animals which have adapted to TRFs.
2. The Three Toed Sloth adapted to hide – how?
3. What wraps itself around trees to access light – epiphytes or lianas?
4. Which is an adaptation to getting to daylight – buttress roots, drip tips, tall trees
5. Drip tips _____ water quickly to stop snapping

Lesson 7 Biodiversity Issues in TRFs

Biodiversity?
The variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important and desirable
Diversity is higher in the tropics (not just tropical rainforests) primarily because **there are fewer ecological obstacles** to higher biodiversity.
In the tropics, **plants and animals have the greatest access to consistent energy, water, and carbon**, etc.
Until recently they have **largely been undisturbed** by natural or human processes

Issue
Deforestation

- Individual species become extinct
- Loss of possible cures for diseases
- Biodiversity is reduced



Specific data:
137 plant and animal species are lost every single day due to deforestation.
By 2030, the Amazon Rainforest could lose 30-45% of their main species.

1. Biodiversity is the total number of plants and animals in an ecosystem – True/False?
2. Where is biodiversity highest?
3. Why is this?
4. Name one other issue related to deforestation: species become extinct and lower biodiversity
5. In the next decade how many species could be lost from the Amazon?

Lesson 8 Causes of Deforestation in Malaysia

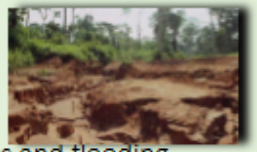
Commercial Farming Largest exporter of palm oil in the world. 1970s wide scale clearing of land. Landowners given tax incentives to produce p. oil
Logging 1980s Malaysia became world's largest exporter of tropical hardwood. Selective logging more recent development
Mineral extraction Rainforest cleared on Peninsula Malaysia (tin and smelting). Drilling for oil and gas has started in Borneo.
Subsistence farming Tribal people practise subsistence farming, traditionally small scale and sustainable. Slash and burn is sust. but can grow out of control.

Hydro-electricity (HEP) Bakun Dam started generating electricity in 2011. Asia's highest dam outside China. 700km2 of forest and farm land flooded. Highly controversial project.
Population Pressure Rapidly growing and industrialising cities has led to transmigration.
Roads Roads being cleared to access mining areas, new settlements and energy projects. Logging requires road building too

1. Which is the following is not a cause of deforestation in Malaysia – HEP, Soil erosion, Logging.
2. Malaysia was the 3rd largest exporter of hardwood in 1980 – T/F?
3. List 3 reasons for building new roads in TRFs
4. Where did mineral extraction take place?
5. Why was the Bakun dam controversial?

Lesson 9 Impacts of Deforestation in Malaysia

Economic gains and losses.
Brings in jobs and income.
Infrastructure opens up new areas for industrial development
Palm oil/rubber provide raw materials for industry
Destroys resources in the long term.
Pollution of water courses
Changes in climate



Soil erosion
Land left unprotected from heavy rain leads to landslides and flooding.
Nutrients are washed away decreasing nutrients in the soil. Rivers silt up.
Contribution to climate change
Trees cut down change the water cycle and make it drier. Rainforests are the lungs of the earth and so when deforested there is more carbon dioxide in the air.
Burning also releases carbon dioxide into the air
Main Range, Peninsula Malaysia
500 km stretch of pristine rain forest
Rich in biodiversity
The highland forest is home to 25% of all plant species in Malaysia
Still many undiscovered plants here, with medicinal qualities

1. Name 1 benefit and 1 problem with deforestation.
2. Soil erosion means nutrients are washed away d_____ nutrients in the soil.
3. Which gas increases in the atmosphere as trees are cut down?
4. How large is the rainforest in the Main Range?
5. Why might plants be socially important?

Lesson 10 Value and sustainable management (TRFs)

TRFs contain **50% of the world's** species.
Many of these species are **yet to be discovered**.
25% of all medicines come from rainforest plants.
200+ tropical plants have **anti-cancer** properties
TRFs provide rubber, hardwoods and other resources that can be harvested sustainably.
Rainforests absorb and **store carbon dioxide**, a gas which is partly responsible for climate change.
They help to **regulate** the planets climate.

Sustainable Management of TRFs
Selective logging. Only fell fully grown trees. Mark sustainable trees for sale.
Conservation & education. WWF (NGO) educate and train conservation workers. Buy threatened areas.
Ecotourism. Minimises damage to the environment and benefits locals – uses local material
International agreements. International Tropical Trade Agreement restricts trade in hard woods.
Debt reduction Donor countries and organisations have reduced debts in return for agreements that rainforest will not be deforested.

1. TRFs contain 25% of the world's species – T/F.?
2. Explain the importance of trees storing CO_2.
3. Only felling fully grown trees – also known as…?
4. International _____ look to control the trade in hard woods.
5. Why is debt reduction positive for rainforest conservation?

Lesson 11 Characteristics of cold environments

Characteristics of a cold environment:
Polar
The Polar biome is the regions of the planet covered by ice most of the year. This includes large portions of the Arctic and Antarctic.
Climate Winter temperatures often below **-50** °C. Low precipitation levels
Soils are permanently covered by ice during and permanently frozen
Plants – mosses and lichens found on fringes
Animals – Polar bears well adapted. Fur, fat, black nose and footpads

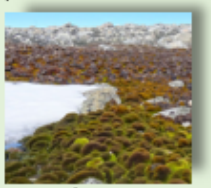
Tundra

Tundra is one of the coldest of all the **biomes**. treeless plain. It is noted for its barren landscapes, extremely low temperatures, little precipitation, poor nutrients, and short growing seasons. ... Permafrost soils
Climate Less extreme – winter temperature may drop to **-20C**. Summers brief. Precipitation mainly snow
Plants – Bearberry – low flowering. Low bushes/small trees

1. Name the 2 types of cold environment.
2. Which regions in the North and South Poles represent the Polar biome?
3. Polar regions have high/low rainfall.
4. Tundra regions are known for their many tree species – T/F?
5. Permanently frozen soil is called _____.

Lesson 12 Plant and animal adaptations (Polar)

Lichens and moss have shallow roots. Lichens can even extract minerals from and grow on rocks. They can tolerate wet and dry conditions



Shrubs e.g. the bearberry are low growing (20 cm) to cope with strong winds. Thick barked stems. Flower and seed formation short time in short summer.
Hairy stems – keep plants warm
Thin and waxy leaves – reduce water loss
Bright red berries eaten and distributed

Polar bear have white fur for camouflage, large padded paws to spread the weight on the ice

Snowshoe hare will shed it white coat during the summer
All animals have large **blubber/ fat** reserves to allow it to service for long periods without food.

1. Lichen and _____ have shallow roots.
2. How have plants adapted to strong winds?
3. What do the bright red berries of the Bearberry encourage?
4. Why can polar bears walk on ice?
5. Animals have fat or b_____ reserves to allow them to go without food for a long time.

Lesson 13 Svalbard Opportunities

Location- Norwegian Territory – Arctic Ocean. Polar climate – 60% glaciers. No farming or trees. Spitzbergen largest island – Longyearbyen largest town 2700 people.

Mineral extraction- Controversial.

Against – Environmentalists – Burning coal increases greenhouse gases

For – coal mining is main economic activity and vital for Svalbard. 300+ employed in mines

Energy developments

Longyearbyen coal-fired power station. Supplies all of Svalbard's energy needs.

Renewable Energy source – **Geothermal energy** – Close to Mid-Atlantic Ridge, constructive plate margin. Hot rocks close to surface and a source of heat to generate electricity.

Carbon capture and storage

Tourism – Growth industry

Longyearbyen 2011 – 70,000 visitors – most from Norway (30,000 cruise passengers. 300 jobs for local people.

Why? Natural environment – Northern Lights Fjords, Glaciers, Wildlife (polar bears). Hiking, kayaking, snow mobile safaris

Fishing – Barents Sea – richest fishing grounds in world. 150 species of fish. Important breeding and nursing grounds for fish stocks

1. Svalbard is a _____ territory.
2. The town of Longyearbyen has _____ people.
3. Name the missing opportunity from this list: Mineral extraction, energy, fishing…….
4. There are 50 species of fish in the Barents Sea: T/F
5. Why is tourism important for local people?

Lesson 14 Svalbard Challenges

Extreme Temperatures Longyearbyen – temperatures in winter-30C. Dangerous – risk of frostbite. Work slow and difficult due to heavy clothing

Inaccessibility – Islands in a remote part of Europe. Only reached by road or ship. No roads in outlying communities. Snowmobiles in winter

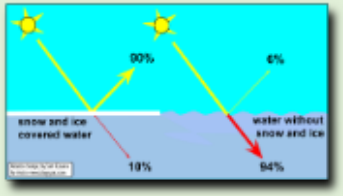
Construction-building houses, shops offices, maintaining roads and mining operations takes place in short summer months. Frozen ground provide solid foundations – although melting of permafrost

Services – Water, electricity and sanitation. Kept off the ground to prevent permafrost thaw and easy maintenance

1. Working in winter temperatures of-___°C is dangerous and can lead to f_____.
2. With only 1 main road the islands are _____.
3. Why is permafrost important for construction?
4. What might happen if permafrost melts?
5. Which is the odd one out – services, low temperatures, mining, inaccessibility

Lesson 15 Value of Cold Environments

Albedo Effect: Ice reflects 90% of light back into space which keeps the planet cool



Carbon and Methane store: The permafrost stores large amounts of these gas

Habitat and home to many unique species and indigenous communities

These places are **wilderness** areas that have remained undisturbed by humans meaning that unique **species** have lived and survived and there is wide "gene pool"

Home for indigenous tribes Some cold environments are inhabited by indigenous people. Often, their culture depends on the preservation of the natural environment.

Svalbard seed and feed bank This stores all the **seeds and genes** from every species in a giant natural fridge in the mountain should an extinction event occur. We have the ability to bring them back.

1. Which effect keeps the planet cooler?
2. Why is permafrost important?
3. U_____ species live and survive in cold environments.
4. Where are seeds and genes stored in case of extinction?
5. The c_____ of tribes is protected

Lesson 16 Strategies to manage cold environments

Why protect cold environments

Indigenous people (e.g. Inuit in Alaska) depend on wildlife for hunting

Home to many birds, animals and plants

Unpolluted regions are important for scientific research on climate change

Beauty attracts tourists

Opportunities for forestry and fishing

Reduce risk:

Using technology – Trans-Alaskan Pipeline. Pipeline raised and insulated to avoid breaking in permafrost. Pipeline can slide in an earthquake therefore stopping leaks. Pipeline raised to allow caribou to migrate

Action from governments

Alaska USA – Companies must protect the environment and recognise rights of native people. Western Arctic Reserve – 9 million hectares of protected area.

Conservation groups – WWF in Canada. Provides scientific information and resources. Works with local communities

Glossary

Ecosystem – a community of plants and animals that interact with one another and their physical environment

Abiotic – Relating to non-living things

Biotic – Relating to living things

Producer – An organism or plant that is able to absorb energy from the sun through photosynthesis

Primary consumer – Creature that eats plant matter. Also known as an herbivore

Secondary Consumer – Creature that eats other animals. Also known as a carnivore

Decomposer – An organism that breaks down dead plant and animal matter

Food chain – The connection between different organisms that rely on one another as their food source

Glossary

Food web – A complex hierarchy of plants and animals relying on each other for food

Biome – A large global ecosystem with flora and fauna adapting to their environment

Biodiversity- The variety of plant and animal life in the world or in a particular habitat

Sustainability – Meetings the needs of the present without affecting the needs of future generations. These needs can be social, economic and environmental

1. Name a social, economic and environmental reason to protect cold environments.
2. Which of these is not a technological strategy to reduce risk in cold environments – pipes raised to allow caribou to migrate, pipes can break and release oil, pipes slide to stop leaks.
3. Name the reserve of 9 million hectares in Alaska.
4. Conservation groups provide i_____ and work with local c_____ to raise awareness.

Notes:

People's Health (Medieval Period 1250-1500) Knowledge Organiser

1	Differences in **Diet** between Country, Town and Monasteries	**Country**: Healthy food (eg. Veg) but bad harvest =starvation. **Towns**: Not so fresh food; using the same cart for food and waste; Butchering animals. **Monastery**: Fish from ponds; bakeries; farming fresh food.
2	Differences in **Housing** between Country, Town and Monasteries	**Country**: No chimney = lung problems. Geese and ducks bring in disease to houses. **Towns**: Rich merchants would have houses with upper floors over street = less light for those below. Dirty gutters and drains. **Monastery**: Stone buildings, separate beds and infirmary for sick.
3	Differences in **Water** between Country, Town and Monasteries	**Country**: Streams and wells for clean water. **Towns**: Conduit (water fountain) but lead pipes could poison people. Water carriers selling water but often from dirty rivers. **Monastery**: Pure spring water pumped into kitchens.
4	Differences in **Waste** between Country, Town and Monasteries	**Country**: Middens and cesspits in back gardens = disease spread. **Towns**: Latrines and more built by Dick Whittington. End of market day, lots of food and dung on streets. **Monastery**: Latrines downstream from freshwater so no contamination.
5	When did the Black Death reach England?	1348
6	What kind of things did people believe caused the Black Death?	Punishment from God; Miasma (bad air); Imbalance of humours; blame on Jews
7	How did people respond to the Black Death?	Confession to Priests/praying; Carrying posies of flowers to purify air; blood-letting
8	What did National Government/King do for public health?	King Edward I ordered authorities in York to clear streets and keep town clear
9	What did local authorities do for public health?	Norwich: People named and shamed for polluting water ways or dumping waste; Carlisle: Couldn't afford to keep streets clean due to Scottish raids.
10	How did local health improve?	Only if the wealthy or the King ordered it or taxation was good enough to pay for it.
11	What did London do for public health?	Piped water to its citizens since the 1230s; a warden appointed to check Thames banks were clean.

Key Terms

Midden	Dunghill consisting of human waste, rotting food and other waste.
Latrines	Early type of toilet
Conduits	A public water fountain
Four Humours	A belief that the body has 4 liquids. If these liquids were imbalanced you would get ill.

People's Health (Early Modern Period 1500-1750) Knowledge Organiser

1	How had people become more healthy by the Early Modern period?	Improvements in farming (like planting clover to increase soil quality) meant few people died of starvation
2	How did the growth of alehouses make people less healthy?	More drunkenness and smoking
3	What were the differences in diet for rich and poor?	**Rich**: Lots of beef, mutton and pork, wine and beer. But rotten teeth from imported sugar. **Poor**: Bread and Veg. Pottage (a veg soup). Healthy diet but not enough calories.
4	What were the differences in getting water for town and country?	**Country**: Clean water from wells and rivers. **Town**: Public water fountains (conduits), water sellers. Not very safe to drink.
5	What were the differences in removing human waste for town and country?	**Town**: Once or twice a week, it was collected by scavengers or rakers. Richer people might have privies (early toilets). **Countryside**: Little had changed from Medieval period. Many peasants built their own cesspits.
6	What were the similarities and differences in responses to the 1665 Plague compared to the 1348 Black Death?	**Similarities**: Same belief in causes. Turning to God, Running away (if rich enough), Avoiding the sick (people reluctant to take food to victims. **Differences**: Physicians (doctors) now wore heavy cloaks and 'beaks' with herbs. Using tobacco to get rid of the plague.
7	How did the National Government respond to the Plague?	1578 – Elizabeth I issued Plague Orders eg. Infected houses should be shut up for 6 weeks
8	How did local government respond to the Plague?	**Cambridge**: Strangers to town needed heath certificate, streets cleaned, stray cats killed.
9	How did local government try to improve health?	**York**: Pigs to be kept in sties; fines for making a dunghill in your garden or throwing waste into street. None of this was very effective.
10	How was the Gin Craze eventually ended?	1751: Anyone selling gin illegally was imprisoned, whipped and faced transportation.

Key Terms

Midden	Dunghill consisting of human waste, rotting food and other waste.
Scavengers/Rakers	People who cleaned the streets
Conduits	A public water fountain
Transportation	To be deported for a crime to, for example, America or Australia
Privies	Early toilets - often plank of wood with a hole over a pit.

People's Health (Industrial Period 1750-1900) Knowledge Organiser

1	Why were living conditions so bad?	**Overcrowded cities** = diseases spread (and still not understood); too much human waste with few privies; poor quality housing. **No help for the poor -** Doctors had to be paid for.
2	Problems with Housing	Back to back houses: few windows so lack of fresh air meant diseases like TB. Overcrowded.
3	Problems with Food	Poor quality food for workers. Mainly lived on bread, potatoes and tea. Malnourished.
4	Problems with Water	Rare to have piped water. Use of contaminated water pumps. Only rich could afford water charges.
5	Problems with Waste	Rarely had sewers. Often one privy for 10 houses. Leaking cesspools contaminated water.
6	What responses to Cholera were ineffective?	Burning tar barrels (miasma), Day of Fasting and Prayer (God). Isolation in cholera hospitals.
7	How effective was the work of John Snow?	Removing water pump at Broad Street in 1854 worked. But only small area of London and the medical community didn't believe his link between water and cholera.
8	What effects did Joseph Bazalgette's sewers in London have?	Cholera struck in 1866 but human waste was carried away so cholera didn't spread.
9	How effective was Edwin Chadwick and the 1848 Public Health Act?	Opposition to his ideas – more taxes to pay for it. 1848 Act was not compulsory.
10	What changes improved health between 1854-1875	**1860 Pure Food Act**; **1867 Working Class got the vote** – now politicians had to listen to their calls for better public health. **Public Health Act 1875** (now councils HAD to clean up towns)
11	How did local authorities improve people's health?	Manchester Corporation dammed Thirlmere Lake and made 96 mile aqueduct to carry water to the centre of the city.
12	What were the key factors that improved people's health in the Industrial period?	**Key individuals** (eg. Snow, Pasteur, Chadwick); **National and Local Government** (eg Public Health Acts); Use of **science/technology** (eg. Germ Theory and Sewers and pumping stations)

Key Terms

Democracy	Being able to vote – important because then politicians have to listen to your views (such as to improve public health)
Back to Back housing	Cheap housing with a front wall but joined to others on side and back. This was to pack in many people.
Laissez-Faire	Means 'Let it Be'. It was the general attitude that the government should not get involved in people's lives (like laws to improve public health). This attitude changed and the government got more involved.
Germ Theory	Louis Pasteur's discovery in 1861. It explained disease – no longer was it miasma or God.
Adulteration	Adding substances to food (eg chalk to make bread) which is cheaper to make but makes it poor quality.

People's Health (Modern Period 1900-Present) Knowledge Organiser		
1	Changing issues with housing	**1919 Housing Act** – created 1/4m new homes for working class; **1930 Housing Act** – councils could force landlords to sell homes to make way for new council houses. By 1979, 42% of people lived in council houses. In 1980, people were given right to buy their council house – now there is a shortage of council housing.
2	Changing issues with food	Canning of foods in 1905. Food is more affordable: by 1937, 37% of income was spent on food. Microwaves and convenience food is less healthy. Issue of rickets is rising as of 2014.
3	Changing issues with air	Smog a problem by mid-century (1952, 12,000 Londoners died from poor air). **1956 Clean Air Act** was passed. Car ownership has increased but initiatives to make it cleaner (eg. Hybrid cars)
4	Why is inactivity a problem?	In 1900, people usually walked to work and work was often active. . WW2 also good for being active as transport was restricted. TV/tablet culture now is not good. 44% of men and 33% of women are overweight.
5	How was the response to the Spanish Flu ineffective?	Hospitals overwhelmed. No vaccinations or antibiotics available.
6	In what ways was the response to the Spanish Flu effective?	In Manchester, James Niven studied flu patterns and organised advice such as leaflets.
7	What negative responses to AIDS were there?	In 1980s, it was called 'gay plague'. Some Fire Service people stopped giving mouth-to-mouth resuscitation.
8	How did attitudes to AIDS change over time?	Princess Diana shook hands with an AIDS victim in 1987. Eastenders ran an AIDS storyline in 1991. AIDS was more understood.
9	How did the government get more involved in public health?	1911 National Insurance Act; NHS in 1948; Campaign against smoking
10	How did the government help to combat smoking?	1964, Cig adverts banned on TV; 1971 warnings on Cig packets; 2007 smoking banned in public
11	Why has the move against smoking been so slow?	Lots of income from tax; Tobacco companies have defended themselves; Smoking is legal.

Key Terms	
Housing Act (1919 & 1930)	1919: required local authorities to provide good homes for all working class people in their area 1930: allowed councils to force private landlords to sell their houses in the slums to the council. The councils could then clear the slums and use the land to build new, clean homes
Clean Air Act (1956)	This required factories and homes in specified areas to burn smokeless fuel. Slowly these smokeless zones grew, and It seemed the problem was over, until mass car ownership happened.
AIDS	A disease that develops from HIV. Its spread through blood and bodily fluids.
National Insurance Act (1911)	Workers, employers and the government must all pay money into a sickness fund. However although this ensured care for the worker, it didn't mean health care for their marriage partner or for their children.

Geography Answer Sheet

Geography Knowledge Organiser Answer Sheet

Lesson 1 1 2 3 4 5	Lesson 2 1 2 3 4 5	Lesson 3 1 2 3 4 5	Lesson 4 1 2 3 4 5
Lesson 5 1 2 3 4 5	Lesson 6 1 2 3 4 5	Lesson 7 1 2 3 4 5	Lesson 8 1 2 3 4 5
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Lesson 13 1 2 3 4 5	Lesson 14 1 2 3 4 5	Lesson 15 1 2 3 4 5	Lesson 16 1 2 3 4 5
Lesson 17 1 2 3 4 5	Lesson 18 1 2 3 4 5	Lesson 19 1 2 3 4 5	Lesson 20 1 2 3 4 5
Lesson 21 1 2 3 4 5	Lesson 22 1 2 3 4 5	Lesson 23 1 2 3 4 5	