Year 11 Knowledge Organiser

Knowledge is Power

Contents Page

English

Week 1 – Love's Philosophy by Percy Shelley	
Summary	The speaker in Love's Philosophy is trying to persuade a young woman to be with him romantically, kiss him, and give in to her desires.
Quotes	• 'The fountains mingle with the river/And the rivers with the ocean' • 'What is all this sweet work worth/If thou kiss not me?' • 'Nothing in the world is single,/All things by a law divine.'
Structure	• The poem is comprised of two stanzas, both regular in rhyme. • Both stanzas start with examples to persuade the woman and finish with a rhetorical question. • The poem uses simple language, common in romanticism. • Each stanza is a long sentence, punctuated with colons and semi colons, giving a childish tone which reflects the speaker's persistence.
Context	Shelley was a romantic poet, using natural imagery in a lot of his poetry to explore both romance and the relationship between man and nature. Although known for scandalous relationships, Shelley is best known for his marriage to Mary Shelley, the poet of Frankenstein. Shelley died at the age of 29, by drowning.

Week 2 – Porphyria's Lover by Robert Browning	
Summary	Porphyria's Lover is written as a dramatic monologue from the perspective of the male lover. The monologue is of a fatal meeting between him and his lover. Eventually the speaker strangles his lover with her own hair as a way to claim and own her.
Quotes	• 'it tore the elm-tops down for spite and did its worst to vex the lake' • 'no pain felt she I am quite sure she felt no pain.' • 'And yet God has not said a word!'
Structure	• The poem is written in a single stanza as a dramatic monologue. • The characters are mirrored at the beginning and end of the poem. • At the start, the man is still and calm, whilst the woman isn't. This then switches at the end when the woman is dead.
Context	Browning was married to Elizabeth Barrett Browning (Sonnet 29), and was a well known Victorian poet. He was most famous for his dramatic monologues, often having a dark tone in them. This poem was part of a two poem collection called 'Madhouse Cells', with the second poem also having a disturbed male narrator.

Week 3 – Sonnet 29 by Elizabeth Browning	
Summary	The speaker tells her lover how much she thinks of him, loves him and how much she wants him to be by her side. She uses an extended metaphor of a tree to present her feelings.
Quotes	• 'I think of thee! – my thoughts do twine and bud' • Rustle thy boughs and set they trunk all bare' • I will not have my thoughts instead of thee/Who art dearer, better!'
Structure	• The poem is a Petrarchan sonnet, a highly controlled form. • Although controlled, Browning manipulates it to create a tone of excitement and impatience. • The volta (turning point) appears earlier than usual, emphasising the speaker's desire to be with her lover.
Context	Barrett Browning grew up with a controlling father who refused to let any of his daughters marry. She became a successful poet, and eventually entered into a secret relationship with Robert Browning, who she later married. Due to this, she was disinherited by her father.

English

Week 4 – Neutral Tones by Thomas Hardy	
Summary	The speaker reminisces about an unpleasant memory. On this day that he and his lover stood by a pond as he recalls how he believed his lover found him boring and had fallen out of love.
Quotes	• 'Few leaves lay on the starving sod' • 'The smile on your mouth was the deadest thing' ' • Keen lessons that love deceives'
Structure	• The poem is written in four regular quatrains, suggesting highly controlled thought as if he thinks of the memory often. • t is written in a circular structure, beginning and ending by the pond. • The circular structure reflects Hardy's inability to move on from this painful memory.
Context	Hardy was a Victorian poet and most of his work was autobiographical. A lot of his poems were about his relationships. Influenced by the romantics, a lot of Hardy's poetry was about his first wife Emma, who he became estranged from. However this poem was written about a relationship before his marriage to Emma.

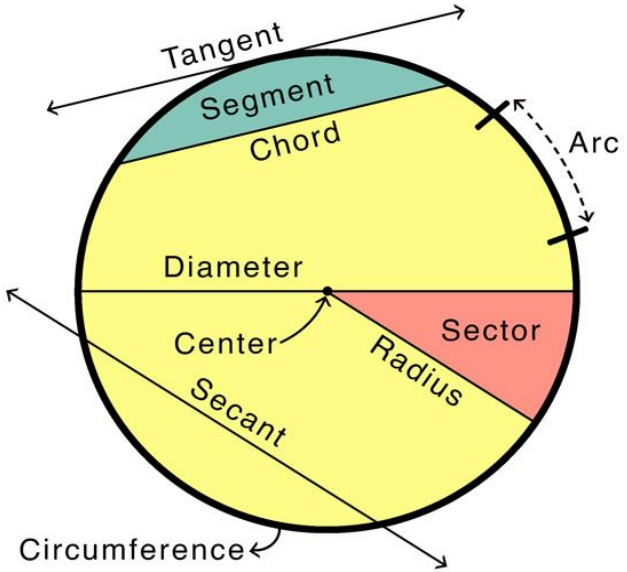
Week 5 – Farmer's Bride by Charlotte Mew	
Summary	The poem tells the story of a young woman and her unhappy marriage to an older farmer. They have been married for three years, and she is still frightened of him and other men.
Quotes	• 'Like the shut of a winter's day/Her smile went out' • 'Happy enough to chat and play/With birds and rabbits… So long as men-folk keep away.' • 'The short days shorten and the oaks are brown'
Structure	• The poem has irregular stanzas, but a clear rhyme scheme (although the pattern is also irregular). • The irregular stanzas reflect the strange relationship between the farmer and his bride. • As the structure becomes more and more irregular, it highlights the farmer's inability to control his thoughts and feelings.
Context	Mew is from the Victorian era and came from a poor family with a lot of mental health illness. Her poems often had a male persona and she was recognised by other great poets for having a clear talent. This poem symbolises the treatment of women in Victorian society, and also the natural world versus the industrial revolution.

Week 6 – Sonnet 29 by Elizabeth Browning	
Summary	The speaker tells her lover how much she thinks of him, loves him and how much she wants him to be by her side. She uses an extended metaphor of a tree to present her feelings.
Quotes	• 'I think of thee! – my thoughts do twine and bud' • Rustle thy boughs and set they trunk all bare' • I will not have my thoughts instead of thee/Who art dearer, better!'
Structure	• The poem is a Petrarchan sonnet, a highly controlled form. • Although controlled, Browning manipulates it to create a tone of excitement and impatience. • The volta (turning point) appears earlier than usual, emphasising the speaker's desire to be with her lover.
Context	Barrett Browning grew up with a controlling father who refused to let any of his daughters marry. She became a successful poet, and eventually entered into a secret relationship with Robert Browning, who she later married. Due to this, she was disinherited by her father.

Maths

Key Word	Definition
Area of Rectangle and Parallelogram	$base \times height$
Area of Triangle	$\frac{base \times height}{2}$
Area of Trapezium	$\frac{a+b}{2} \times height$
Area of Circle	$\pi \times radius^2$
Circumference	$\pi \times diameter$
Prism	A 3D shape with a constant cross section
Cross section	The shape you get when you cut through an object (front face)
Volume of any prism	Area of cross section × depth
Surface area	The total area of the surface of a three-dimensional object.

Parts of a Circle



Key Word	Definition
Discrete Data	Data that can only take certain values. These values do not have to be whole numbers, but they are fixed values..
Continuous Data	Data that can take any value e.g. height, weight, temperature, length.
Grouped Data	Data grouped together into categories (class intervals)
Class interval	When data is collected and arranged in a class, and the width of this class is known as the class interval.

Key Word	Definition
Diameter	A straight line that passes through the centre of the circle
Radius	A straight line from the centre to the circumference (half the diameter)
Tangent	A straight line that touches the circumference at a point
Segment	The smallest part of a circle made when it is cut by a chord.
Chord	A straight connecting two points on a circle's circumference.
Arc	Part of the circumference.
Sector	A sector is formed when two radii of the circle meet at both ends of the arc.
Secant	A straight line that intersects a circle in two points.

Science - Forces

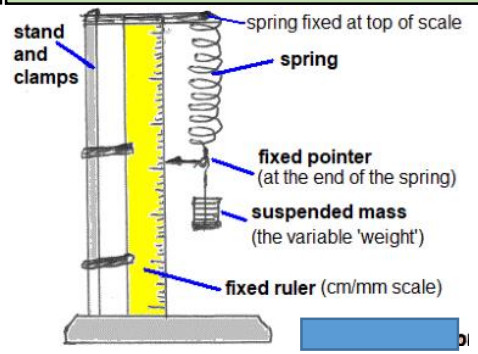
Section 1: Key terms	
1 Scalar	A value with **magnitude (size) only,** e.g. **speed, distance.**
2 Vector	A value with **magnitude (size)** and **direction,** e.g. **all forces, displacement, velocity.**
3 Contact force	Force between objects that are **touching** e.g. friction, air resistance.
4 Non-contact force	Force between **separate objects** e.g. gravitational force, magnetic force.
5 Weight	The **force of gravity** acting **on an object's mass**. Measured using a **newtonmeter**.
6 Centre of mass	The **single point** at which the **object's weight appears to act**.
7 Resultant force	A resultant force is a **single force** that has the **same effect as all the forces** acting on an object.
8 Work done	Work is done when an **object is moved through a distance**. When work is done **against friction** there is a **temperature rise**.
9 Momentum (HT)	Moving objects with mass have momentum. Momentum is "**mass in motion**".
10 Conservation of momentum (HT)	In a closed system, the **total momentum before an event is equal to the total momentum after the event**.

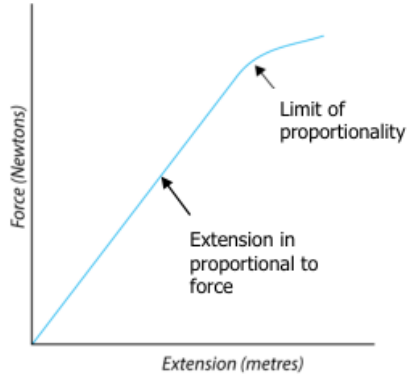
Section 2: Equations to learn			
	Equation	Symbol equation	Units
11	Weight = mass x gravitational field strength	W = m g	Weight – newtons (N) Mass – kilograms (kg) GFS – newtons per kilogram (N/kg)
12	Work done = force x distance	W = F s	Work done – joules (J) Force – newtons (N) Distance – metres (m)
13	Force = spring constant x extension	F = k e	Force – newtons (N) Spring constant – newtons per metre (N/m) Extension – metres (m)
14	Distance = speed x time	s = v t	Distance – metres (m) Speed – metres per second (m/s) Time – seconds (s)
15	Acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$	a = $\frac{\Delta v}{t}$	Acceleration = metres per second squared (m/s^2) Velocity = metres per second (m/s) Time = seconds (s)
26	Resultant force = mass x acceleration	F = m a	Force – newtons (N) Mass – kilograms (kg) Acceleration = metres per second squared (m/s^2)
17 (HT)	Momentum = mass x velocity	p = m v	Momentum – kilograms metres per second (kg m/s) Mass – kilograms (kg) Velocity = metres per second (m/s)

Gravitational field strength	Gravity exerted around an object.	Earth's gfs = 9.8N/kg	***An arrow can be used to show vectors***	***Length of arrow = magnitude of vector***
				Direction of arrow = direction of vector

10N →

Forces and elasticity

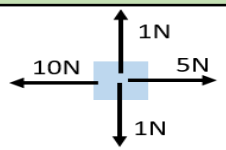




Elastic deformation	The object has been stretched but returns to its original length
Inelastic deformation	The object has been stretched but does not return to its original length
Extension	The difference between stretched and unstretched lengths
Stretching a spring	Force = spring constant X extension, F = k X e
	EPE = ½ X spring constant X $(\text{extension})^2$, EPE = ½ ke^2
Elastic Potential energy (EPE)	***Energy stored in a stretched spring***
Limit of proportionality	
Beyond this point the spring is permanently deformed	

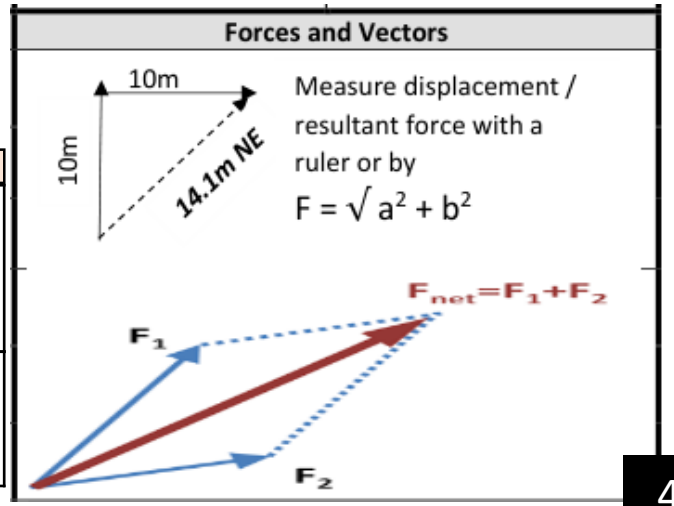
Contact and Resultant forces

Object moves left with a force of 5N



HIGHER ONLY

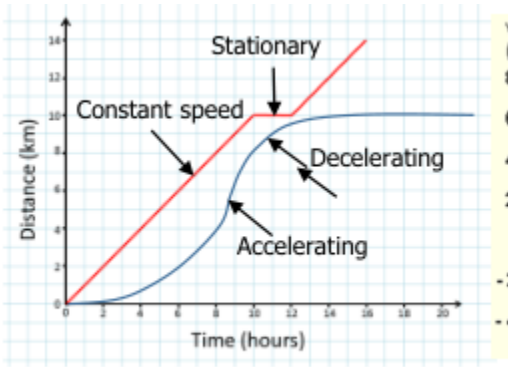
Resolving forces	***An object pulled with a force at an angle***	A single force can be split into two components acting at right angles to each other.
Free body diagram	***Show magnitude and direction of all forces upon an object***	



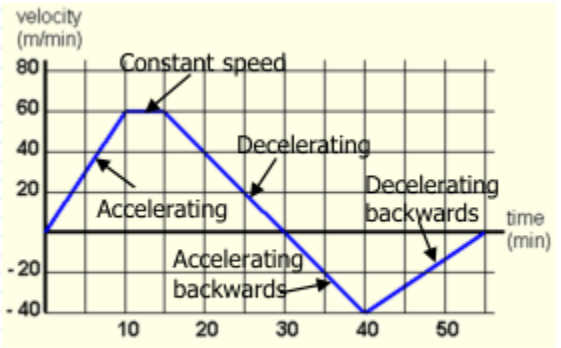
Science - Forces

Section 5a: Motion	
25 Displacement	The **distance** an object moves and the **direction** in which it occurs. A **vector** quantity.
26 Velocity	The **speed** of an object in a **particular direction**.
27 Acceleration	The change of an object's speed in a certain amount of time. If an object is **falling near the surface** of the Earth its **acceleration will be 9.8m/s^2**.
28 Terminal velocity	The **maximum speed** of a moving object. Occurs when the **force moving** an object (e.g. gravity) is **balanced by frictional forces** (e.g. air resistance).
29 Circular motion (HT)	An object **moving in a circle** has **constant speed but changing velocity**. This is because the direction in which the object is moving is constantly changing, and velocity is a vector quantity that measures direction and speed.

30 Distance-time graph	31 Velocity-time graph
Constant speed - straight line	Constant speed - horizontal line
Accelerating - curved line upwards	Accelerating - straight line with velocity increasing
Decelerating - curved line going towards horizontal	Decelerating - straight line with velocity decreasing
Stationary - horizontal line	Stationary - horizontal line on x-axis (velocity = 0)
	Moving backwards - below x-axis
Gradient of line can be calculated to give speed	Gradient of line can be calculated to give acceleration or deceleration



32 Distance-time graph



33 Velocity-time graph

Common Speeds		
walking 1.5 m/s,	running 3 m/s,	cycling 6 m/s

Distance travelled	***Area under the graph shape***

Forces, acceleration and Newton's Laws of motion

Newton's first Law	***Balanced forces***	When the resultant force on an still object = 0, the object is stationary.
		When the resultant force on a moving object = 0, the object is at a constant speed.
Newton's second Law	***Unbalanced forces***	When the resultant force is greater than 0, the object accelerates. It could speed up, slow down or change direction.
Newton's third Law	***Equal and opposite forces***	When two objects interact the forces exerted are equal and in an opposite direction.

Forces and braking

Frictional forces decelerate a moving object and bring it to rest.	Speed affects both thinking and braking distances.	Typical reaction time = 0.7s

Thinking distance	***Distance travelled whilst the driver reacts***
Braking distance	***Distance travelled whilst the car is stopped by the brakes***
Stopping distance	***Total thinking and braking distances***

Factors affecting stopping distances		
	Drivers reaction times	Drinking alcohol, taking drugs, tired.
	Braking distances	Weather conditions, worn brakes or tyres, road surface, size of braking force.

HIGHER ONLY

Inertial mass	***How difficult it is to change the velocity of an object***
Inertial mass = force ÷ acceleration	
If the mass is large, to change velocity a big force is needed.	

Braking and kinetic energy	***Work done by braking force, reduces kinetic energy***	Kinetic energy decreases, temperature of brakes increases due to frictional forces.

Momentum	
	p = m X v
	Momentum = mass X velocity

Conservation of momentum
When two objects collide, the momentum they have before the collision = the momentum they have after the collision
Closed system = no external forces acting on it.

Science – Forces – Triple only

Moments, levers and gears	
M = F X d	
Moment = force x distance	
Moment	Turning effect of a force about a pivot
Lever	A small force exerted with a long lever applies a large force
Gears	Increase or decrease the rotational effect of a force
Principle of moments	In a balanced system, the sum of the clockwise moments = the sum of the anti-clockwise moments
Momentum	Is a vector
	Momentum = mass x velocity
	P = m x v
	•In a closed system the total momentum before = total momentum after. •Air bags, seat belts, crash mats, cycle helmets, cushioned surfaces etc. all work by increasing the time taken to stop therefore reducing the force.
Changes in momentum (HT)	Force is applied to stop momentum If momentum changes slowly, the force applied is small so less damage.

$$F = m \frac{\Delta v}{\Delta t}$$

Force as rate of change of momentum
The force acting on an object is equal to the rate of change of momentum.

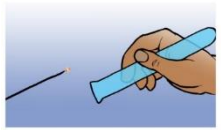
Pressure	
Pressure = Force ÷ Area	
P = F ÷ A	
Pressure = height X density X gfs	
Moment	The **forces** on a system causing an object to **rotate**
Fluid	a liquid or a gas.
Pressure	The **force** provided from particles hitting a surface at **right angels** to it.
Upthrust	The **resultant force** from the weight (down) and the pressure of water (up)
Atmosphere	A thin layer of air around the Earth.
Pressure in liquids (HT)	•The deeper underwater you go the higher the pressure. •This is because the liquid is more dense so there are more particles. •This means there are more collisions at 90o so more pressure
Upthrust of submerged liquids HT.	•An object in water experiences a greater pressure on the bottom than on the top. •This resultant force is UPTHRUST. •An object floats if it's weight = upthrust. •An object less dense than the liquid displaces a volume of liquid equal to its weight so will FLOAT. •An object sinks if weight is more than upthrust
The atmosphere	The atmosphere gets less dense with increasing altitude. The number of air particles above a surface decreases as height increases, so pressure decreases with height.

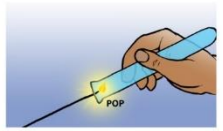
Science – Chemical analysis

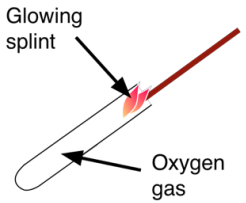
Section 1: Key terms	
1 Pure	A pure substance is a single **element** or **compound**, **not mixed** with any other substance.
2 Formulation	A **mixture** that has been designed as a useful product. Formulations are made by mixing the components in **carefully measured quantities**. Formulations include **fuels**, **cleaning agents**, **paints**, **medicines**, **alloys**, **fertilisers** and **foods**.
3 Melting point	The **temperature** at which a substance turns from a solid to a liquid.

Section 3: Chromatography	
8 Chromatography	A method used to **separate mixtures** into their different chemicals.
9 Solvent	The chemical that **dissolves the sample** in chromatography.
10 Solvent front	The **maximum distance** the **solvent moves** up the paper.
11 Stationary phase	The **medium** (e.g. paper) through which the **mobile phase passes** in **chromatography**.
12 Mobile phase	The **solvent** (e.g. water) that carries the sample (e.g. ink) in **chromatography**.
13 R_f value	A value (always less than 1) that shows how far the substance has moved compared to the solvent. Equation: R_f = distance moved by substance / distance moved by solvent

Section 4: Testing for Gases			
	Gas	**Procedure**	**Positive Result**
17	Hydrogen	Hold a **lit splint** at the end of a test tube producing gas.	Hydrogen burns with a **pop** noise.
18	Oxygen	Hold a **glowing splint** in a test tube of the gas.	The splint **relights** if oxygen is present.
19	Carbon dioxide	Bubble gas through a solution of **limewater**.	Carbon dioxide causes the limewater to turn **milky**.
20	Chlorine	Place **damp litmus paper** in the gas.	The litmus is **bleached white** if chlorine is present.



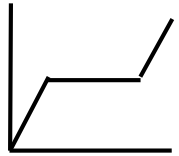


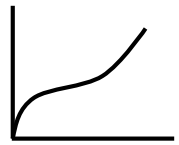


Pure substances	A pure substances is a single element or compound, not mixed with any other substance.	Pure substances melt and boil at specific temperatures. Heating graphs can be used to distinguish pure substances from impure.

Impure substances do not melt at specific temperatures

Melting point of a pure substance

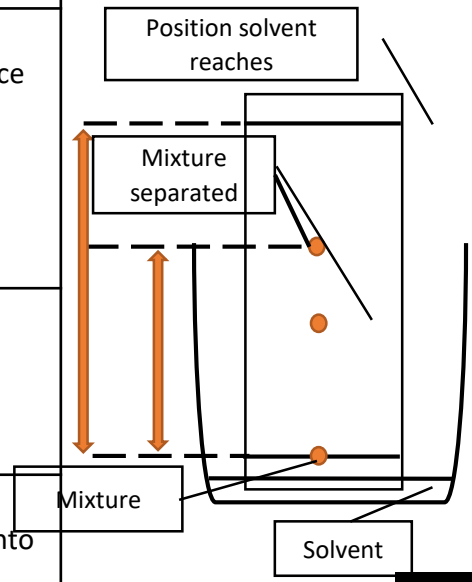




Melting point of an impure substance

Formulation	A formulation is a mixture that has been designed as a useful product.
How are formulations made?	By mixing chemicals that have a particular purpose in careful quantities.
Examples of formulations.	Fuels, cleaning agents, paints, medicines and fertilisers.

GCSE Required Practical–Identifying substances using chromatography	
Explain how paper chromatography separates mixtures	Chemicals with a greater affinity to the mobile phase will move a greater distance in a given time Chemicals with a greater affinity to the stationary phase will move a shorter distance in a given time
Explain why it is important the base line is drawn in pencil	The base line is drawn in pencil because pencil does not dissolve so it will not interfere with the results
Explain why the solvent level starts below the base line	The solvent level starts below the base line so the chemicals are not dissolved into the solvent



Science – Chemical analysis

Testing for metal ions

It is possible to test for metal ions using **flame testing.** To carry out a flame test:

- Clean the nichrome wire in hydrochloric acid
- Dip the nichrome wire in the sample
- Place the sample in the flame and observing the colour

Metal Ion	Flame Colour
Sodium, Na^+	Yellow
Lithium, Li^+	Crimson
Potassium K^+	Lilac
Copper, Cu^{2+}	Green
Calcium, Ca^{2+}	Orange-Red

It is also possible to test for metal ions by **adding sodium hydroxide solution.**

Metal	Observation	Equation
Copper, Cu^{2+}	Blue precipitate	$Cu^{2+}(aq) + 2OH^-(aq) \rightarrow Cu(OH)_2(S)$
Iron, Fe^{2+}	Green precipitate	$Fe^{2+}(aq) + 2OH^-(aq) \rightarrow Fe(OH)_2(S)$
Iron, Fe^{3+}	Brown precipitate	$Fe^{3+}(aq) + 3OH^-(aq) \rightarrow Fe(OH)_3(S)$
Magnesium, Mg^{2+}	White precipitate	$Mg^{2+}(aq) + 2OH^-(aq) \rightarrow Mg(OH)_2(S)$
Calcium, Ca^{2+}	White precipitate	$Ca^{2+}(aq) + 2OH^-(aq) \rightarrow Ca(OH)_2(S)$
Aluminium, Al^{3+}	White precipitate – Dissolves in excess sodium hydroxide	$Al^{3+}(aq) + 3OH^-(aq) \rightarrow Al(OH)_3(S)$

Flame emission spectroscopy	*An instrumental method used to analyse metal ions.*	The sample solution is put into a flame and the light that is given out is put through a spectroscope. The output line spectrum, can be analysed to identify the metal ions in the solution. It can also be used to measure concentrations.
Instrumental methods	*Methods that rely on machines*	Can be used to identify elements and compounds. These methods are accurate, sensitive and rapid.

Testing for non-metal ions

Non-metal ion	Test	Observation
Chloride, Cl^-	Add nitric acid following by silver nitrate	White precipitate
Bromide, Br^-		Cream precipitate
Iodide, I^-		Yellow precipitate
Sulfate, SO_4^{2-}	Add dilute acid, followed by barium chloride	White precipitate
Carbonate, CO_3^{2-}	Add dilute acid	Fizzing, gas produced turns limewater cloudy

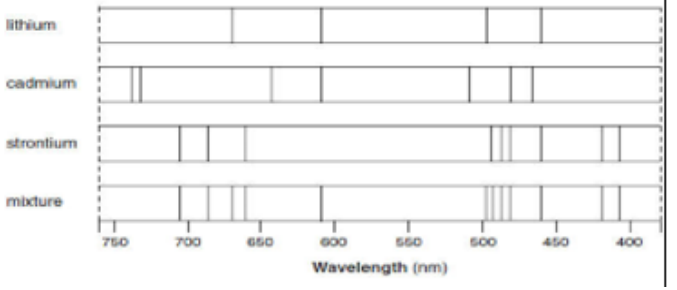
Instrumental Analysis

Describe the advantages of instrumental analysis	The advantages of instrumental analysis are: • Rapid – information can be obtained very quickly • Sensitive – only a small amount of substance needs to be used
Describe the disadvantages of instrumental analysis	The disadvantages of instrumental analysis are: • Instruments require specialist training • Instruments are often very expensive

Line spectra can be used to identify what elements are present in an unknown sample. The unknown has to be **compared against reference spectra** to identify what elements are present

If the lines are in the **same pattern** and **positions**, then the element is present

e.g. In the mixture to the right, both **strontium** and **lithium** are present.



Science – Chemical analysis

Flame tests (chem only)	
Element	Colour flames
Lithium	Crimson
Sodium	Yellow
Potassium	Lilac
Calcium	Orange-red
Copper	Green

Metal hydroxides (chem only)	
Sodium hydroxide	Is added to solutions to identify metal ions.
White precipitates	Aluminium, calcium and magnesium ions form this with sodium hydroxide solution.
Coloured precipitates	Copper (II) = blue Iron (II) = green Iron (III) = brown

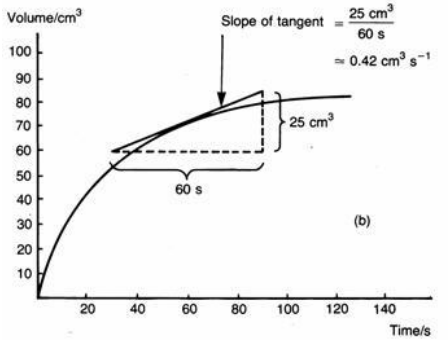
Carbonates, halides and sulfates (chem only)	
Carbonates	React with dilute acids to form carbon dioxide.
Halide ions	When in a solution, they produce precipitates with silver nitrate solution in the presence of nitric acid.
Sulfate ions	When in a solutions they produce a white precipitate with barium chloride solutions in the presence of hydrochloric acid.

Flame emission spectroscopy		
Flame emission spectroscopy	An instrumental method used to analyse metal ions.	The sample solution is put into a flame and the light that is given out is put through a spectroscope. The output line spectrum, can be analysed to identify the metal ions in the solution. It can also be used to measure concentrations.

Instrumental methods		
Instrumental methods	Methods that rely on machines	Can be used to identify elements and compounds. These methods are accurate, sensitive and rapid.

Science- Rates

Rate of chemical reaction	This can be calculated by measuring the quantity of reactant used or product formed in a given time.	Rate = $\frac{\text{quantity of reactant used}}{\text{time taken}}$ Rate = $\frac{\text{quantity of product formed}}{\text{time taken}}$



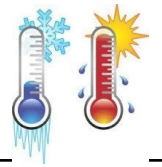
Quantity	Unit
Mass	Grams (g)
Volume	cm^3
Rate of reaction	Grams per cm^3 (g/cm^3) HT: moles per second (mol/s)

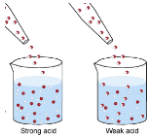
Catalyst	A catalyst changes the rate of a chemical reaction but is not used in the reaction. If a catalyst is used in a reaction, it is not shown in the word equation.
Enzymes	These are biological catalysts.
How do they work?	A catalyst provides **an alternative pathway** with a **lower activation energy** so more particles have the required activation energy needed for a successful collision

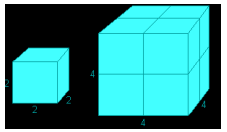
Measuring the rate of reaction

State how to calculate the rate of reaction	Rate of reaction = $\frac{\text{Change in amount of chemical}}{\text{Time taken}}$
Describe what happens during a chemical reaction in terms of particles and collisions	Reactant particles need to collide with enough energy to break the bonds. This is known as the activation energy. The particles will rearrange and form the products

Collision theory and activation energy







Collision theory	Chemical reactions can only occur when reacting particles collide with each other with sufficient energy.	Increasing the temperature increases the frequency of collisions and makes the collisions more energetic, therefore increasing the rate of reaction. Increasing the concentration, pressure (gases) and surface area (solids) of reactions increases the frequency of collisions, therefore increasing the rate of reaction.
Activation energy	This is the minimum amount of energy colliding particles in a reaction need in order to react.	

Factors which affect the rate of reaction

Describe how to increase the surface area of a substance	Breaking a substance down into smaller pieces increases the surface area	
Explain how increasing the surface area affects the rate of reaction	As the surface area is increased **the rate of reaction increases**, because there are **more reactant particles exposed** so **more successful collisions in a given time**	
Explain how increasing the concentration affects the rate of reaction	As the concentration is increased **the rate of reaction increases**, because there are **more reactant particles in a given volume** so **more successful collisions in a given time**	
Explain how increasing the temperature affects the rate of reaction	As the temperature is increased the **rate of reaction increases**, because **more reactant particles have the activation energy** needed so **more successful collisions** in a given time	
Define the term 'catalyst'	A catalyst is a chemical which **speeds up** the rate of reaction **without getting used up**	
Describe the advantages and disadvantages of using a catalyst	Advantages • increase the rate of reaction • do not get used up • only small amounts are needed	Disadvantages • often rare metals which can expensive • catalyst can become poisoned b impurities in reactants

Science- Rates

Reversible reactions

Reversible reactions	In some chemical reactions, the products can react again to re-form the reactants.
Representing reversible reactions	A + B ⇌ C + D
The direction	The direction of reversible reactions can be changed by changing conditions: A + B ⇌ (heat / cool) C + D
Equilibrium in reversible reactions	When a reversible reaction occurs in apparatus which prevents the escape of reactants and products, equilibrium is reached when the forward and reverse reactions occur exactly at the same rate.

Energy changes and reversible reactions

If one direction of a reversible reaction is exothermic, the opposite direction is endothermic. The same amount of energy is transferred in each case.

For example: Hydrated copper sulfate ⇌ (endothermic / exothermic) Anhydrous copper + Water sulfate

Changing conditions and equilibrium (HT)

The relative amounts of reactants and products at equilibrium depend on the conditions of the reaction.

Le Chatelier's Principles	States that when a system experiences a disturbance (change in condition), it will respond to restore a new equilibrium state.
Changing concentration	If the concentration of a reactant is increased, more products will be formed . If the concentration of a product is decreased, more reactants will react.
Changing temperature	If the temperature of a system at equilibrium is increased: - Exothermic reaction = products decrease - Endothermic reaction = products increase
Changing pressure (gaseous reactions)	For a gaseous system at equilibrium: - Pressure increase = equilibrium position shifts to side of equation with smaller number of molecules. - Pressure decrease = equilibrium position shifts to side of equation with larger number of molecules.

Reversible Reactions

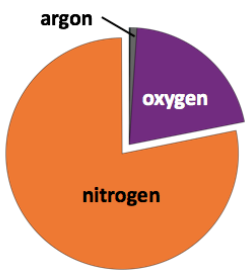
State what is meant by the following symbol	The symbol indicates the reaction is reversible ⇌
State what is meant by the term 'closed system'	A system in which no matter enters or leaves
Describe the conditions at dynamic equilibrium	At dynamic equilibrium: • The concentration of the reactants and products are constant • The rate of the forward and reverse reactions are equal

The Haber Process : CHEMISTRY ONLY

Write the word and symbol equations for the Haber process	Nitrogen + Hydrogen ⇌ Ammonia $N_2 + 3H_2 \rightleftharpoons 2NH_3$
State the sources of the raw materials used in the Haber process	Nitrogen - The atmosphere Hydrogen - Natural gas
Explain the conditions which would give the highest yield of ammonia	**Decreasing the temperature** would cause the position of equilibrium to oppose the change and increase the temperature by favouring the exothermic reaction (forward reaction) **Increasing the pressure** would cause the position of equilibrium to oppose the change and decrease the pressure by favouring the side with fewer molecules (forward reaction)
Explain why a low temperature is not used during the Haber process	A low temperature is not used because the rate of reaction would be too slow
Explain why a high pressure is not used during the Haber process	A high pressure is not used as it would cost too much money to generate a high pressure

Science- Atmosphere - Triple

Proportions of gases in the atmosphere



Gas	Percentage
Nitrogen	~80%
Oxygen	~20%
Argon	0.93%
Carbon dioxide	0.04%

The Earth's early atmosphere

Volcano activity 1st Billion years	Billions of years ago there was intense volcanic activity	This released gases (mainly CO_2) that formed to early atmosphere and water vapour that condensed to form the oceans.
Other gases	Released from volcanic eruptions	Nitrogen was also released, gradually building up in the atmosphere. Small proportions of ammonia and methane also produced.
Reducing carbon dioxide in the atmosphere	When the oceans formed, carbon dioxide dissolved into it	This formed carbonate precipitates, forming sediments. This reduced the levels of carbon dioxide in the atmosphere.

How oxygen increased

Algae and plants	These produced the oxygen that is now in the atmosphere, through photosynthesis.	carbon dioxide + water → glucose + oxygen $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$
Oxygen in the atmosphere	First produced by algae 2.7 billion years ago.	Over the next billion years plants evolved to gradually produce more oxygen. This gradually increased to a level that enabled animals to evolve.

How carbon dioxide decreased

Reducing carbon dioxide in the atmosphere	Algae and plants	These gradually reduced the carbon dioxide levels in the atmosphere by absorbing it for photosynthesis.
Formation of sedimentary rocks and fossil fuels	These are made out of the remains of biological matter, formed over millions of years	Remains of biological matter falls to the bottom of oceans. Over millions of years layers of sediment settled on top of them and the huge pressures turned them into coal, oil, natural gas and sedimentary rocks. The sedimentary rocks contain carbon dioxide from the biological matter.

The Composition and Evolution of Earth's Atmosphere

State which gases were present in the Earth's early atmosphere	Carbon dioxide, water vapour, nitrogen, methane and ammonia. There was NO oxygen
Describe how the level of water vapour decreased in the Earth's atmosphere	The Earth cooled down which allowed the water vapour to cool and condense to form oceans
Describe how the level of carbon dioxide decreased in the Earth's atmosphere	Carbon dioxide decreased in the following ways: • It dissolved into the oceans • It was used to form sedimentary rocks and fossil fuels • It was absorbed during photosynthesis carried out by plants and algae
Describe how the level of oxygen increased in the Earth's atmosphere	Algae and plants produced oxygen by photosynthesis

Science- Atmosphere - Triple

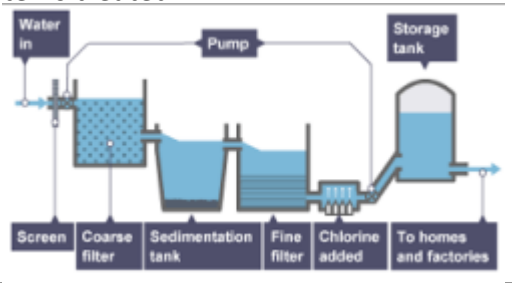
Greenhouse Gases	
State three greenhouse gases	Water vapour, carbon dioxide and methane
Describe why greenhouse gases are important	Greenhouse gases in the atmosphere maintain temperatures on Earth high enough to support life
Describe the greenhouse effect in terms of the interaction of short and long wavelength radiation with matter	**Shorter wavelength radiation** from the sun passes through the Earth's atmosphere. The Earth's surface **absorbs this radiation**. The Earth then **emits radiation with a longer wavelength**. The gree**nhouse gases absorb the longer wavelength radiation.** This causes the Earth to heat up
Describe two human activities that increase the amount of carbon dioxide in the atmosphere.	**Burning fossil fuels** to produce electricity and fuel vehicles releases carbon dioxide into the atmosphere **Deforestation** (cutting down trees) reduces the amount of carbon dioxide that gets absorbed
Describe two human activities that increase the amount of methane in the atmosphere.	**Decomposing waste** in landfill sites produces methane gas **Cattle farming** as cows release methane

Common Atmospheric Pollutants and Their Sources	
Define the term hydrocarbon	A hydrocarbon is a molecule that contains **only carbon** and **hydrogen atoms**.
Describe how carbon monoxide and carbon particles (soot) are produced by burning fuel	When fuel is burnt in a **limited supply of oxygen** **incomplete combustion** occurs which produces carbon monoxide and carbon particles
Describe how sulfur dioxide is produced by burning fuel	**Sulfur impurities** in the fuel **react with oxygen** during combustion producing sulfur dioxide
Describe how nitrogen dioxide is produced by burning fuel	Nitrogen and oxygen **from the air** react at **high temperatures**, from the burning of fuel, to produce nitrogen dioxide
Explain the problems caused by increased amounts of carbon monoxide	It is a colourless, odourless, toxic gas. It binds to the haemoglobin in the blood which prevents oxygen from being carried by red blood cells
Explain the problems caused by increased amounts of carbon particles (soot)	Carbon particles cause **global dimming** which leads to less sunlight reaching the Earth's surface. They can also be breathed in and **damage cells in lungs** leading to health problems.
Explain the problems caused by increased amounts of sulfur dioxide	Reacts with oxygen and water in the atmosphere to **form acid rain**
Explain the problems caused by increased amounts of nitrogen dioxide	Causes **respiratory problems** in humans and can **cause acid rain.**

Climate Change	
Describe the relationship between greenhouse gases and global temperatures	As the greenhouse gases in the atmosphere increase, the global temperatures have increased
Explain why some scientists do not agree humans are responsible for global climate change	It is **very difficult to model the climate fully** and there is some uncertainty in this area
State what is meant by the term peer-review	A peer review is when **scientific research is studied and commented on by expert**s in the same area to check it is valid
Briefly describe four potential effects of global climate change.	Potential effects of global climate change are: • Rising sea levels as ice caps melt • Increasingly common extreme weather events • Changes to the distribution of wildlife species due to changing habitats • Changes in rainfall patterns which could affect areas stability to grow crops
Define the term 'carbon footprint'.	The carbon footprint is the total amount of carbon dioxide and other greenhouse gases emitted over the full life cycle of a product, service or event.
Describe ways to reduce emissions carbon footprint	**Ways to reduce carbon footprint are:** • Increasing renewable energy sources • Making electrical devices more energy efficient • Using carbon capture and storage (CCS) technology • Using carbon neutral fuels

Science- Using Resources - Triple

Using Earth's Resources	
State the term 'finite resource'	Resources that are being used up faster than they can be replaced. There is a **limited amount**.
State the term 'renewable resource'	Resources that can be replaced at the same rate at which they are used up.

Water Treatment	
Define potable water	Water that is safe to drink, it contains low levels of dissolved substances and microbes.
Define pure water	**Only contains water molecules**, it does not contain any dissolved substances or microbes.
Describe how potable water is produced from ground water (fresh water)	• The water is **filtered** through filter beds to remove any solid debris • It is then **sterilised** using chlorine, ozone or ultra violet light to kill any microbes.
State two ways which potable water is produced by the desalination of salty water (sea water)	1. Distillation. 2. Reverse Osmosis.
Describe how potable water is obtained by the distillation of salt water	Salt water is heated to 100°C, the **water evaporates** & **then condensed** forming pure water. The salt is left behind
Describe how potable water is obtained by the reverse osmosis of salt water	Salt water is passed through a **semi permeable membrane** using **pressure**. The water molecules pass through the membrane but many of the dissolved substances cannot.
Describe how sewage and agricultural waste water is treated 	• **Screening** removes large solid particles i.e. grit by passing the sewage through a screen. • **Sedimentation** allows the small solid particles (sediment) to sink to the bottom of the tank forming sewage sludge while the liquid (effluent) remains above. • **Aerobic** biological treatment of the effluent. This removes organic matter and harmful microbes. • **Anaerobic** digestion of the dried sewage sludge.

Life cycle assessments are carried out to assess the environmental impact of products

Life Cycle Assessment (LCAs) and Recycling	
State the four stages of a Life Cycle Assessment	• **Extracting** & processing raw material • **Manufacturing** & packaging • **Use** & operation during its lifetime • **Disposal** at the end of its useful life
State what factors that need to be considered when making a Life Cycle Assessment	Source of **raw material, energy** needed, **water** needed, **pollutants** produced
State three ways of reducing the use of resources	Reduce, reuse, and recycle

Alternative methods of extracting metals (HT)

Alternative Methods of Extracting Metals	
State the difference between high & low grade copper ore	High grade ore – **High % of copper**. Very **fast reactions**. Involves digging, moving and disposing of **large amounts of rock** Low grade ore **– Low % of copper**. Very **slow reactions**. More **environmentally friendly**
State two ways of extracting copper from low grade ore	Phytomining & Bioleaching
Describe how phytomining works	Phytomining uses plants to absorb metal compounds. The plants are harvested & then burned to produce ash that contains metal compounds
Describe how bioleaching works	Bioleaching uses bacteria that feed on copper compounds in low grade ores to produce leachate solutions that contain metal compound

Science- Using Resources - Triple

Using Materials	
Define the term 'corrosion'	Corrosion is the destruction of materials by chemical reactions with substances in the environment
State the conditions needed for iron to rust	Air and water
State the word equation for the rusting of iron	Iron + oxygen + water → hydrated iron oxide
Describe how corrosion can be prevented	Corrosion can be **prevented by applying a coat** that acts as a **barrier**, such as greasing, painting or electroplating
Explain why aluminium does not fully corrode	Aluminium has an **oxide coating** that **protects** the metal from **further corrosion**
State what sacrificial protection is	When a reactive coating is used which contains a more reactive metal, e.g. zinc is used to galvanise iron
Describe how sacrificial protection works	The more **reactive metal** in the coating **reacts** with substances in the environment, **leaving the less reactive metal unreacted**
Define the term alloy	A mixture of **two or more elements**, at least one of which is a **metal**
State the raw materials used to make soda-lime glass	Sand, sodium carbonate & limestone
State a property of borosilicate glass & what it is made from	Sand & boron trioxide. It has a higher melting point than soda-lime glass
State how clay ceramics are made and the properties clay ceramics have	By shaping wet clay & then heating in a furnace. They are generally hard, but brittle. They are electrical insulators and resistant to chemical attack
Describe what a composite is	Composites are made up of **two materials** which are **combined** to **improve the properties** of the product for a particular use.
Describe the structure of a composite	They are made up of the reinforcement & the matrix which binds the reinforcement together, e.g. reinforced concrete

The Haber Process & the use of NPK Fertilisers	
Write the word and symbol equations for the Haber process	Nitrogen + Hydrogen ⇌ Ammonia $N_2 + 3H_2 \rightleftharpoons 2NH_3$
State the sources of the raw materials used in the Haber process	Nitrogen - The atmosphere Hydrogen - Natural gas
State the conditions used in the Haber process	Iron catalyst, 450°C, 200atm
Explain why the temperature used in the Haber process is known as compromise temperature	A **low temperature** is would **increase the % yield** of ammonia but the **rate of reaction** would be too **slow**
Explain why the pressure used in the Haber process is known as compromise temperature	A **high pressure** would **increase to rate of reaction & % yield** of ammonia but is not used as it would **cost too much money** to generate a high pressure & **increases the risk of explosions.**
Describe how ammonia is collected during the Haber process	The ammonia is cooled and condensed, any unreacted hydrogen & nitrogen is recycled
State the elements present in NPK fertilisers	Nitrogen (N), phosphorus (P) & potassium (K)
State the equations for the reaction of ammonia with sulfuric acid, phosphoric acid & nitric acid	Ammonia + sulphuric acid → ammonium sulphate Ammonia + phosphoric acid → ammonium phosphate Ammonia + nitric acid → ammonium nitrate
Explain why phosphate rock cannot be used directly as fertiliser	Phosphate rock cannot be used directly as a fertiliser because it is **insoluble in water**. However, suitable salts can be formed when the rock reacts with acids.
State the equations for the reaction of phosphate rock with sulfuric acid, phosphoric acid & nitric acid	Phosphate rock + phosphoric acid → calcium phosphate (triple super phosphate) Phosphate rock + sulfuric acid → calcium phosphate + calcium sulfate (single super phosphate) Phosphate rock + nitric acid → phosphoric acid + ca nitrate

History

Key People/Groups
Elizabeth I – last Tudor Queen of England. Protestant.
Sir William Cecil – was the Secretary of State and person in government Elizabeth was closest to.
Robert Dudley, Earl of Leicester – one of Elizabeth's favorites at Court. Possible suitor.
Henry VIII – Elizabeth's father and previous King of England. He changed the religion of the country from Catholic to Protestant during the English Reformation in 1533.
Anne Boleyn – Elizabeth's mother and Henry's second wife. She was beheaded by Henry.
Mary I (Bloody Mary/Mary Tudor) – Elizabeth's Catholic sister. She was the ruler before Elizabeth and had been unpopular.
The Pope – the Head of the Catholic Church and lives in Rome.
Puritans – an extreme form of Protestantism. They want to develop their own Church, under their own leadership.
Catholics – form of Christianity. Is one of the oldest religions and was England's religion before the Reformation
Phillip II of Spain – the King of Spain. Was married to Queen Mary I until her death. He proposed marriage to Elizabeth when she came to the throne. Valued England as an ally at first.
Duke of Alba – Spanish noble who led the 10,000 Spanish troops to crush the Dutch Revolt.
Thomas Howard Duke of Norfolk – England's most senior nobleman. He was a Protestant. Close links to northern Catholic families. Disliked Cecil and Dudley. Plotted to marry Mary, QOS.
Mary, Queen of Scots – she was a Catholic with a strong claim to the English throne. She was Henry VII's great granddaughter, Elizabeth's second cousin. She was Queen of Scotland and her mother was from a very powerful French noble family, the Guise.

Key Events
1533 – The English Reformation. Henry creates the Church of England, with himself as its leader.
25th January 1533 – Henry marries Anne Boleyn.
7th September 1533 – Elizabeth is born.
1536 – Anne is executed by Henry VIII after being found guilty of treason.
Religious Settlement 1559 – this was a compromise when it came of England's religion designed to be accepted by as many people as possible.
Act of Supremacy 1559 – made Elizabeth supreme governor of the Church of England.
Act of Uniformity 1559 – heavy penalties for those who refused to conform to her Church. Failure to go to Church led to a fine of 1 shilling (£6 today) which was two or three days' pay.
Royal Injunctions 1559 – set of instructions issued by Sir William Cecil to the clergy. It reinforced the two previous Acts. It included how people should worship God and structure of services.
1566 – The Pope issues instructions that Catholics should not attend Church of England services.
Elizabeth's Excommunication 1570 – Elizabeth was "damned to hell by Pope Pius V.
The Ridolfi Plot 1571 – Ridolfi tried to gain the support from the Duke of Norfolk, Phillip of Spain, Mary QOS to overthrow Elizabeth. Mary is put under surveillance and Norfolk is executed (June 1572)
The Throckmorton Plot 1583 – Throckmorton is found with letters to Mary, QOS asking for her support in a plot. He was executed. Walsingham moves against Mary.
The Babington Plot 1586 – Babington sent letters to Mary about a plot for her to become Queen. Were intercepted by Walsingham. Both are executed.

History

Key Term	Definition
Inherit	To gain possessions after someone has died
Treason	An attempt to kill or overthrow the Monarch or betray the country; punishable by death
Royal Court	The nobles, advisors and others who surrounded the Monarch
Nobility	The earls, dukes, lords and ladies; the most respected members of society; they were given special rights and privileges and owned most of the land
Secretary of State	The leader of the Privy Council; a very powerful position
Militia	A non-professional army raised to fight for a particular cause, e.g. to defeat a rebellion or war
Privy Council	A Monarch's private councillors
Gentry	High social class ranked below the nobility; they might be local JPs or hold similar office
Patronage	Land, titles or power given to ensure an individual's support
Poor Laws	Laws introduced from 1601 to deal with the growing problem of poverty
Succeed	To take over the throne
Exile	Being sent to live in another country that is not your own, especially for political reasons
Pope	The head of the Catholic Church
Mass	A Catholic church service
Monopoly	The exclusive right to trade in a particular product
Ruff	An item of clothing worn around the neck
Patron	Someone who funds the work of an artist or performing group

Geography

Key Term	Definition
Abrasion	Rocks carried along a river wear down the river bed and banks
Alluvium	A sediment deposited by a river when it floods
Attrition	Rocks being carried by the river smash together and break into smaller, smoother and rounder particles
Channel	The main water course
Channel straightening	Removing meanders from a river to make it straighter
Confluence	Where a tributary joins a larger river
Course	The path of the river from its source to mouth
Cross profile	A cross section of a river channel or its valley
Dam	A barrier built across a valley to interrupt river flow
Deposition	Occurs when material being transported by the sea is dropped due to the sea losing energy
Discharge	Quantity of water that passes a given point on a stream or riverbank within a given period of time
Drainage basin	An area of land drained by a river and its tributaries
Embankment	Artificially raised river banks often using concrete walls
Estuary	Tidal mouth of a river where it meets the sea – wide banks of deposited mud are exposed at low tide
Flash flood	A very sudden flood event resulting from a torrential rainstorm
Flood	Where river discharge exceeds river channel capacity and water spills onto the floodplain
Flood relief channel	Artificial channels that are used when a river is close to maximum discharge; they take the pressure off the main channels when floods are likely
Flood risk	The likelihood of a flood event occurring in a certain area
Flood storage areas	Water is deliberately allowed to flood wetlands to reduce the risk of flooding further downstream

Geography

Key Term	Definition
Flood warnings	Providing reliable advance information about possible flooding
Floodplain	Relatively flat area forming the valley floor either side of a river channel that is sometimes flooded
Floodplain zoning	Identifying how a floodplain can be developed for human uses
Gorge	A narrow steep-sided valley – often formed as a waterfall retreats upstream
Gradient	The height and angle of a slope
Hydraulic action	Power of the water eroding the bed and banks of a river
Hydrograph	A graph which shows the discharge of a river, related to rainfall, over a period of time
Interlocking spurs	Outcrops of land along the river course in a valley
Lateral erosion	Erosion of river banks rather than the bed – helps to form the floodplain
Levee	Raised bank found on either side of a river, formed naturally by regular flooding or built up by people to protect the area against flooding
Load	Material transported by a river
Long profile	The gradient of a river, from its source to its mouth
Meander	A wide bend in a river
Mouth	The end of a river, usually where a river joins the sea
Mudflats	Areas of fine sediment deposits which over time can develop in saltmarshes
Ox-bow lake	An arc-shaped lake on a floodplain formed by a cut-off meander
Plunge pool	A deep and turbulent area of water where the river 'plunges' over a waterfall
Pools and riffles	Alternating sequence in the course of a river or stream that carry coarse sediment, where shallow fast-flowing sections are called riffles and deeper slower-moving sections are called pools
Reservoir	A large natural or artificial lake used as a source of water supply

Geography

Key Term	Definition
River restoration	Modifying the course of a river to return it to its natural state
Saltation	Hopping movement of pebbles along a river or sea bed
Saltmarshes	Important natural habitats often found in sheltered river estuaries behind spits where there is very little flow of water
Solution	Dissolved rocks and minerals often derived from limestone or chalk
Source	The start of a river
Suspension	Small particles carried in river flow or sea water, i.e. Sands, silts and clays
Thalweg	The course of the fastest flow (velocity) within a river
Time lag	The time in hours between the highest rainfall and the highest (peak) discharge
Traction	Where material is rolled along a river bed or by waves
Transportation	The movement of eroded material
Tributary	A small stream that joins a larger river
Velocity	Rate of the river flow
Vertical erosion	Downward erosion of the river bed
V-shaped valley	Steep-sided valley
Waterfall	A step in the long profile of a river usually formed when a river crosses over a hard (resistant) band of rock
Watershed	The edge of the river basin
Wetlands	Saturated areas of land, often found on river floodplains

Spanish

Spanish	English
¿En qué trabajas?	What is your job?
Soy… / Es…	I am… / He/She is…
Me gustaría ser/trabajar de...	I would like to be/work as.
abogado	a lawyer
albañil	bricklayer
azafato/a	flight attendant
bombero	a firefighter
camarero/a	waiter / waitress
cocinero/a	cook
contable	accountant
enfermero/a	nurse
fontanero/a	plumber
funcionario/a	a civil servant
médico/a	doctor
periodista	journalist
profesor(a)	teacher
Es un trabajo…	It's a …
con buenas perspectivas	with good prospects
con un buen sueldo	with a good salary
Tengo que… / Suelo…	I have to… / I tend to…

Spanish	English
cuidar a los clientes/pacientes/ pasajeros	look after the customers / patients/passengers
contestar llamadas telefónicas	answer telephone calls
enseñar / vigilar a los niños	teach / supervise the children
hacer entrevistas	do interviews
preparar platos distintos	prepare different dishes
reparar coches	repair cars
servir comida y bebida	serve food and drink
trabajar en un taller / en un hospital /en una tienda /a bordo de un avión	work in a workshop / in a hospital in a shop / aboard a plane
vender ropa de marca	sell designer clothing
¿Qué tipo de persona eres?	What type of person are you?
Creo que soy…	I think I'm…
ambicioso/a	Ambitious
comprensivo/a	understanding
creativo/a	creative
extrovertido/a	outgoing
fuerte	strong
trabajador(a)	hard-working
valiente	brave

Spanish	English
Quiero ser …	I want to be…
Trabajo en equipo	I work in a team
Mis prácticas laborales	My work experience
Hice mis prácticas laborales en…	I did my work experience in…
Pasé quince días trabajando en	I spent a fortnight working in...
El primer/último día yudaba…	On the first / last day
conocí a / llegué…	I met / I arrived…
Cada día / Todos los días…	Each / Every day…
cogía el autobús/el metro	I caught the bus/ underground
empezaba / terminaba a las …	I started / finished at…
hacía una variedad de tareas	I did a variety of tasks
iba en transporte público	I went by public transport
Mi jefe/a era…	My boss was…
Mis compañeros eran…	My colleagues were…
Los clientes eran…	The customers were …
El trabajo era duro.	The job was hard.
Aprendí muchas nuevas habilidades	I learned lots of new skills
No aprendí nada nuevo.	I didn't learn anything new

Performing Arts

Devising

A method of theatre- making in which the script originates from a performing ensemble (team) working collaboratively.

Stimulus

A stimulus is a starting point to generate ideas. It may be a picture, song, poem, short story, object, or even just a word! It is meant to be explored, discussed and used to create an original piece of drama. The final piece of drama does NOT need to resemble any starting stimulus – the stimulus is simply the starting point in order to generate ideas to explore.

The Devising Process

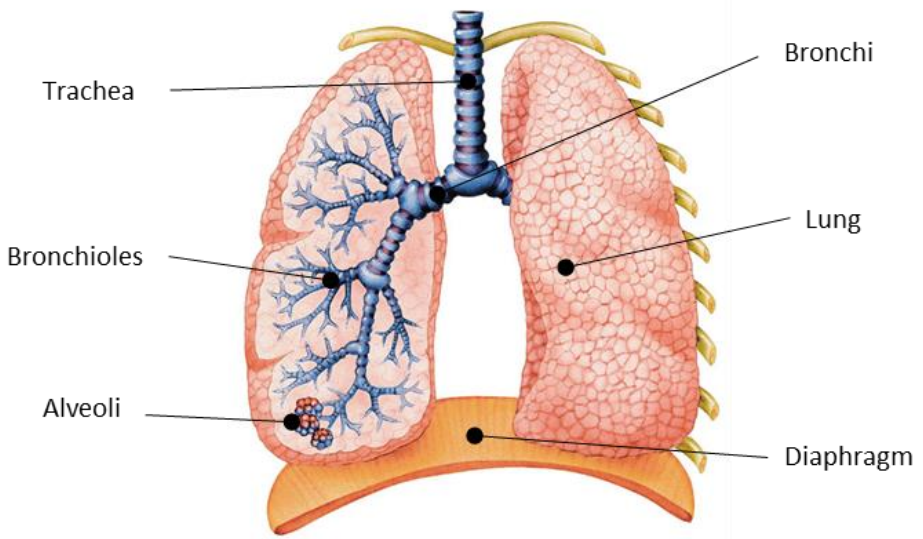
Research- Explore each stimuli, finding out all the fact around it.
Map ideas – Write all your initial ideas on a mind map.
Discuss – Share your ideas with your group and decide on a final idea.
Storyline – Decide on a theme for your story, who is the protagonist?
Structure – How will you structure your piece? Linear, cyclical etc..
Practitioner – What style will chose? What techniques?
Blocking – Begin to piece your ideas together practically.
Rehearse and refine your piece. What changes and development have you made?

Key Term	Definition
Thought tracking	The character steps out od the scene to reveal their inner thoughts to the audience
Physical Theatre	A type of theatre that relies on the use of movement and the body to tell it's stories
Mime	U Use of movement to tell a story
Slow motion	Movement performed at a slow pace
Monologue	A speech given by a single performer on stage
Still image	A non-moving image
Freeze frame	A moment of action or scene that has been paused
Cross cutting	Two scenes taking place on the stage at the same time, each scene stopping to allow the other scene to take place
Narration	Speaking directly to the audience to give them information
Proxemics	The use of space to create meaning (levels, directions, distance to other characters/places/props)
Choral speaking	Speaking as a group
Transitions	The actions from one scene to another
Soundscape	Place, time, mood and atmosphere can be created with recorded or live sound using instruments and or the voices of the performers on stage
Genre	
Comedy Amusing and satirical in tone. Usually a cheerful ending. E.g. The Play that Goes Wrong	
Tragedy The main character often is brought to ruin or suffers sorrow. E.g. DNA	
Naturalism Acting realistically. E.g. The Seagull	
Epic Theatre Brecht – audiences are reminded they are watching a play, designed to educate. E.g. Mother Courage and Her Children	
Physical Theatre Emphasises on Dance and Movement as form of expression. E.g. The Curious Incident of the dog in the night-time	
Melodrama Exaggerated and over the top acting. E.g. Wuthering Heights	

PE – Respiratory System

Key Term	Definition
Respiratory System	Is the network of organs and tissues that help you breathe
Trachea	The airway that leads from the larynx to the bronchi. Also called the windpipe
Bronchi	The large air passages that lead from the trachea to the lungs
Bronchioles	Are the very small tubes that branch out from the bronchi
Lung	One of a pair of organs in the chest that supplies the body with oxygen and removes carbon dioxide from the body.
Alveoli	Tiny air sacs in the lungs where the exchange of oxygen and carbon dioxide takes place
Diaphragm	Is located just below the lungs and heart. It contracts continually as you breathe.
Diffusion	Is the movement of molecules from an area of high to a low concentration
Capillaries	The tiny blood vessels throughout the body that connect arteries and veins
Oxygen	What is moved from your lungs into your blood
Carbon dioxide	What is moved from your blood to the lungs
Tidal Volume	The amount of air inhaled and exhaled per breath. Resting value = 500ml
Vital Capacity	The maximum amount of air exhaled following a maximal breath in.
Frequency	The number of breaths taken per minute. Resting value – 12-20 breaths

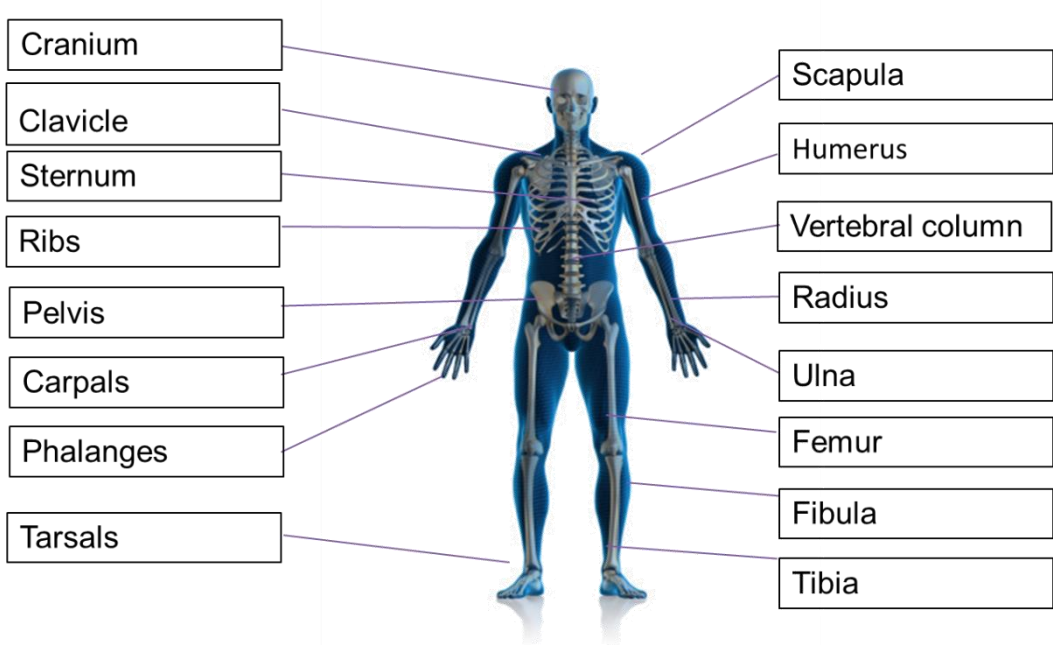
Structure of the respiratory system



Immediate Effects of Exercise	Long Term Effects of Exercise
Heart rate increases Increased stroke volume Increased blood pressure Vascular shunting occurs Increased cardiac output Muscular fatigue	Cardiac hypertrophy & Muscular hypertrophy Increased cardiac output & stroke volume Increased ability to carry oxygen and remove carbon dioxide Increased muscular strength, endurance and power Faster returning of resting heart rate (recovery). Lowered resting heart rate Growth/development of capillaries Enhanced gaseous exchange

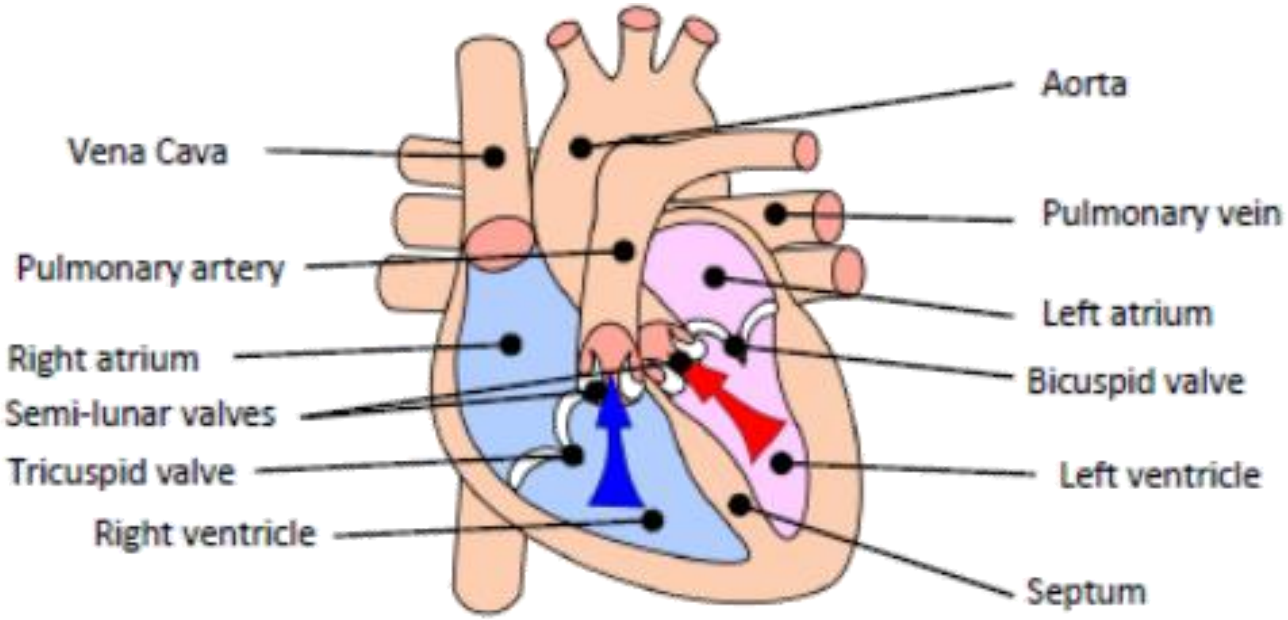
PE – Skeletal System

Function of the skeleton	Classification of joints
Protection of vital organs	Pivot (neck – atlas and axis)
Muscle attachment	Hinge (elbow and knee)
Joints for movement	Ball and socket (hip and shoulder)
Blood cell production (platelets, red and white)	Condyloid (wrist)
Storage of calcium and phosphorus	
Key Term	**Definition**
Flexion	Decreasing the angle at a joint (bending)
Extension	Increasing the angle at a joint (straightening)
Adduction	Limbs moving towards the midline of the body
Abduction	Limbs moving away from the midline of the body
Rotation	A twisting/turning action around a joint
Circumduction	A combination of flexion, extension, adduction & abduction
Dorsi-Flexion (ankle joint)	When the toes are turned up to the body
Planter-Flexion (ankle joint)	When the toes are pointed away from the body



PE - Components of blood

Key Term	Definition
Red blood cells	Carry oxygen from the lungs to the working muscles + Removes CO2.
Haemoglobin	A protein that binds and carries oxygen molecules.
White blood cells	Are part of the immune system and fight disease and infection.
Platelets	Blood platelets are formed in the bone marrow and are essential in the clotting of blood. Platelets are the workhorses of the cardiovascular system.
Plasma	Blood plasma is made up of 90% water. It contains a range of substances that aids the circulation between cells and tissues.
Arteries	Carry blood away from the heart, Oxygenated blood (except pulmonary artery) Thick/elastic walls High pressure Small lumen
Veins	Carry blood back to the heart Deoxygenated blood (except pulmonary vein) Thin walls + larger lumen Lower pressure Valves
Capillaries	In the tissue Site of gaseous exchange Very thin walls

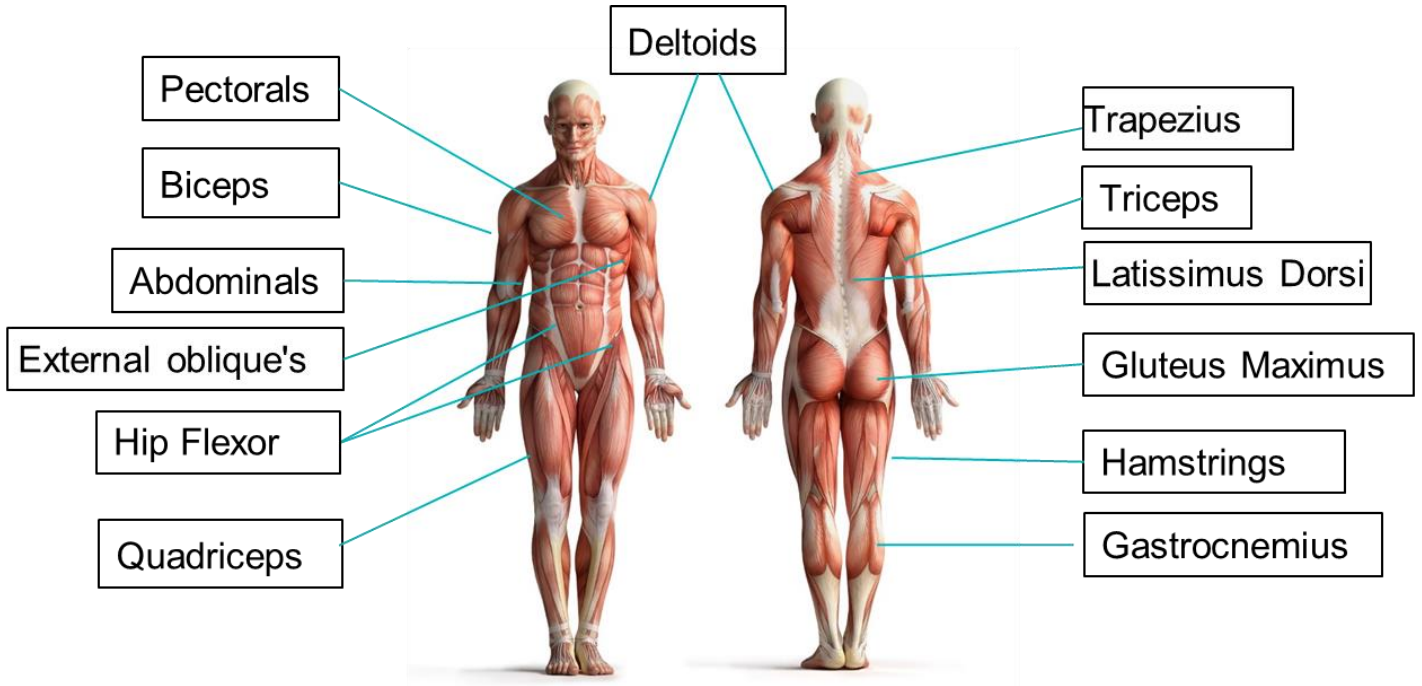


Deoxygenated blood = BLUE (Right side)

Oxygenated = RED (Left side)

PE – Muscular System

Key Term	Definition
Muscular system	Works in conjunction with the skeleton to produce movement of the limbs and body
Antagonistic pairs	Muscles are arranged in antagonistic pairs. As one contracts, its partner relaxes
Agonist	The muscle that contracts to produce movement
Antagonist	The muscle that relaxes to allow the movement to occur



Business

Key Term	Definition
Organisational structures	A system that outlines how certain activities are directed in order to achieve the goals of an organisation.
Layers	The levels of job roles in the business.
Hierarchical	Are known as tall organisations because they have lots of layers of management.
Span of control	The number of employees that are managed by a manager.
Flat structure	Is one with very few levels of management.
Centralised	Means that decisions are made at the 'centre' of the organisation.
Decentralised	Opposite of centralised, empowering managers to make decisions at a local level.
Accountability	Being responsible for something and being held responsible for it & its outcomes.
Jargon	Technical or obscure words or terms used by a particular group
Flexible hours	Employees can be asked to work varying hours by being given a **zero hours contract**.
Zero hours contract	Here, the employee does not know how many hours they will work each week.
Permanent contract	An employee is employed on an on-going basis.
Temporary contract	An employee will be employed for a fixed amount of time.
Freelance contract	A business may ask a **freelancer** to work with them on a particular project.
Freelancer	Someone who is self-employed & contracted by businesses to work for them.
Efficiency	The state or quality of being efficient.

Effective recruitment	
Recruitment	Attracting the right applicants & identifying the most suitable candidates.
Roles	These are different jobs within a business.
Responsibilities	The things that someone is required to do in order to fulfil their role in a business.
Recruitment Documents	There are four main documents used in the recruitment process: 1. the person specification. 2. The Job Description. 3. The application form. 4. The CV.
Person Specification	Outlines the type of person required for a role. Including qualifications, experience & personal attributes.
Job description	Outlines the duties & responsibilities of the person doing the job.
Salary band	A particular salary category.
Essential Requirements	Things a candidate must have.
Desirable Requirements	Things that a candidate may not have, but this may be helpful when fulfilling the role.
Internal Recruitment	When a role is advertised to the business's existing employees.
External Recruitment	When a role is advertised to potential applicants both inside & outside the business.

Business

Training and development	
Formal training	Is structured training, such as taking a course or gaining a qualification.
Informal Training	Less structured, delivered by a colleague & takes place as and when required.
Self learning	Occurs when a person teaches themselves something without being supervised by a teacher or tutor.
Ongoing Training	Training that employees continue to do throughout their time in a role.
Productivity	The measurement of how much work a business is able to complete. Higher productivity means that employees complete more work.
Target setting	Employees will often be set targets to fulfil in a given work period.
Performance Reviews	Meetings that managers have with employees to discuss the employee's performance in their role. These meetings may identify suitable training to use.
Legislation	The laws that a country must comply with.
Motivation	Reasons for behaving in a particular way. High motivation will increase productivity.
Retain	Keep something or someone also known as **retention**. (Keeping good staff)
Retention rate	(Number of employees who continued to be employed / total number of employees) X 100
Retraining	Staff often need training to remember core practices & to update them on new technology.

Motivation	
Employee Motivation	Will offer better customer service & be more productive in better functioning teams. The reputation of the business will improve.
Financial Methods	Focus on giving employees more money, usually by increasing their salaries or by offering them payments for doing extra work.
Remuneration	Refers to the money paid to an employee for working.
Bonuses	An additional amount of money paid to an employee if they achieve a target or high level of performance.
Commission	An extra amount of money paid to an employee, usually if they make a certain number of sales.
Promotion	When an employee is given a more senior role in an organisation.
Fringe benefits	Other benefits offered by a business that financially benefit employees. E.g. a company car, health insurance, gym membership.
Non-financial methods	These are non-monetary methods of motivation & focus on developing an employee's role & responsibilities.
Job rotation	Gives employees the chance to rotate through different jobs on a production line to reduce boredom.
Job enrichment	The process of adding more interesting elements to an employee's role in order to improve their motivation.
Autonomy	Having the independence to make your own decisions.
Job satisfaction	The sense of achievement or fulfilment that an employee gets from their job.

I Media

Key Term	Definition
Visualisation Diagram	A visual representation of what the final product will look like. It will be represented by an image of the product and annotations of the design.
Storyboard	A visual representation that shows the flow of scenes that occur in a timeline and the chronological succession of events.
Mood Board	A collection of sample materials and products created using paper / cards on a notice board or with digital media software.
Mind Map	A diagrammatic representation used to organise thoughts and idea based on a central idea.
Script	A piece of written work that can be for a movie, audio, audio-visual product or screenplay showing the spoken words and actions of characters at specific times.
Test Plan	A document that outlines tests to be carried out on the final product.
Client	The person or company who has asked for the media product to be made.
Client Brief	The project brief which is produced for a design team detailing detailed requirements from the client.
Graphic Designer	A visual communicator who creates concepts by hand or by using specialised graphic design software.
Target Audience	A particular group at which a product such as a film or advertisement is aimed at.

Key Term	Definition
Advertising Product	A product made with the intention of selling a product.
Education Product	A product made with the intention of teaching about a subject.
Entertainment Product	A product made with the intention of entertaining the audience.
Copyright	A form of intellectual property law, that protects original works of authorship including literary, dramatic, musical, and artistic works.
Royalties	Means letting a Company use the design rights for usually an unlimited period of time where the Company produces the product and pays a fee to use it.
Watermark	Is a message (usually a logo, stamp, or signature) superimposed onto an image, with a great deal of transparency.
Stock library	The photographer or author of a stock photo makes it available for licensing, meaning you can pay a fee to get the right to use it in your designs legally.
Trademark Symbols	™ the trademark symbol serves as a warning for infringers and counter-fitters
Trademark Symbols	® The R symbol signifies that the trademark is registered and protected from infringement under the Trademark laws.
Trademark Symbols	© The © symbol stands for copyright and is a reserved right notice concerning any work that can be copyrighted like artwork, photography, videography, books, literary works, etc..

I Media

Key Term	Definition
Visual identity	A collection of images that go towards representing the brand.
Brand	A style you recognise with a product—Colour, name, slogan, font style, logo
Typography	How your text appears. The style, shape, size and colour of your lettering.
Connotations	How a certain word/image makes you feel and what you associate with it.
House style	Consistent style with all company products. All branded with logo, name etc…..
Conventions	Getting the message across to the viewer in as simple way as possible
Bitmap	Defines a display space and the colour for each pixel or "bit" in the display space
Pixels	The very tiny parts that make up the whole image or bitmap
Vector	Rather than a grid of pixels, a vector graphic consists of shapes, curves, lines, and text which together make a picture
Scalability	Scaling is a process of modifying or altering the size of objects.
File Format	The format in which the final product will be played which will affect the file size and the way in which it can be accessed.
JPG	JPEG is a lossy raster format that stands for Joint Photographic Experts Group. It is used for online photos and/or artwork , print photos
TIFF	TIFF is a lossless raster format that stands for Tagged Image File Format. Because of its extremely high quality, the format is primarily used in photography and desktop publishing.
SVG	You want to create computer generated graphs and diagrams for publishing on the web

Key Term	Definition
PNG	PNG is a lossless raster format that stands for Portable Network Graphics. Think of PNGs as the next-generation GIF. This format has built-in transparency, but can also display higher colour depths
GIF	GIF is a lossless raster format that stands for Graphics Interchange Format . Use web animation or small file.
PDF	PDF stands for Portable Document Format and is an image format used to display documents and graphics correctly, no matter the device, application, operating system or web browser
PSD	PSD is a proprietary layered image format that stands for Photoshop Document. These are original design files created in Photoshop that are fully editable with multiple layers and image adjustments
AI	AI is a proprietary vector image format that stands for Adobe Illustrator
File Compression	File compression is when file sizes are made smaller by computers, smaller files are quicker to email and transfer.
Lossless File Compression	Lossless file compression retains data that allows the file to be restored later to its original quality and condition.
Lossy File Compression	Lossy file compression loses some data when file sizes are reduced, so it is difficult to restore the file to the original condition if needed.
Layers	Placed on top of each other for effect when using graphics software.
Re-touching	Photo manipulation to change the look
Creative Commons	A CC license is used when an author wants to give other people the right to share, use, and build upon a work that the author has create

Cooking and Nutrition

Key Term	Definition
Food provenance	The origin of food and ingredients
Organic farms	Farms where animals are well treated and there are strict welfare standards. Crops are grown without using artificial fertilisers, pesticides or herbicides.
Intensive farming	Farms where animals or crops are grown or reared in large quantities. The welfare and growing standards may be basic
Farmed fish	Fish that are raised in large tanks or nets
Hazard	Something that is dangerous and likely to cause damage
Food processing	Any method that is used to turn fresh food into food products
Chilled Food	This refers to any food that requires refrigerating below
Dehydrating Food	When moisture is removed from a food to make a dried product. This prolongs the shelf life of the food.
Food Manufacturing	This is taking an edible raw food product and turning it into a product for human consumption
Creaming	Mixing two ingredients together, normally fat and sugar to make a smooth mixture
Blanching	When vegetables are partially cooked in boiling water for 2-3 minutes. They are then plunged into ice cold water to stop the cooking process.
Reducing	Making a liquid more concentrated by rapidly boiling it in an uncovered pan.
Simmering	Cooking food in a liquid that is just below boiling point where the water is bubbling gently but not boiling
Boiling	Cooking food when the liquid is at boiling point
Stir Frying	Rapidly frying food over high heat while stirring constantly
En papillote	This is when food is placed in a paper bag made from greaseproof or baking paper before being baked in the oven. It is used mostly to cook fish and vegetables.

Art

Key Term	Definition
Art movement	An art movement is a tendency or a style of art with a particularly specified objective and philosophy that is adopted and followed by a group of artists during a specific period. Additionally, It also refers to when a large number of artists that are alive at the same time collectively adopt a certain, uniquely distinguishable form or style of art.
Landscape	Are works of art that feature scenes of nature. This includes mountains, lakes, gardens, rivers, and any scenic view
View point	Is the height from which the viewer and/or painter sees the subject. The viewpoint is crucial as it determines where the horizon line is within the painting
Zooming	Is achieved either optically, using an arrangement of lenses to manipulate the light entering the camera, thus making the subject appear closer
Concept	Is a form of illustration where the main goal is to convey a visual representation of a design, idea, and/or mood for use in films, video games, animation, or comic books
Context	In your drawings and artwork provide visual links that helps us to fully understand what your art is about
Juxtaposed	Means placing two or more things side-by-side, often with the intention of comparing or contrasting the elements.
Theme	A theme in art is the intended purpose or idea in the art work by the artist or the interpreter
Perspective	Is used to represent three-dimensional objects on a two-dimensional surface in a way that looks natural and realistic. Perspective can create an illusion of space and depth on a flat surface
Obscured	Means unclear, unknown, unexplained, dim ,dark ,hidden. Artwork may have unclear or hidden shapes which could obscure the appearance.

Graphic Design

Key Term	Definition
Concept	Is about determining a specific image of how a design will look. It involves the choice of colours and shape
Brand	Refers to a business and marketing concept that helps people identify a particular company, product, or individual
Identity	Visual identity is a preview of your brand. Each part of your design is a clue that tells the viewer what they can expect
Logo	It is a design that is used by an organisation for its letterhead, advertising material, and signs as an emblem by which the organization can easily be recognized, also called logotype
Colour psychology	Is the study of how colours affect people's feelings and emotions
Illustration	Is a drawing (or painting, collage, engraving, photo, etc..) that explains something
Art work	Is an aesthetic physical element or artistic creation
Target audience	Is a distinct group of consumers which can be identified as purchasers of a company's product or service
Packaging design	Involves the design and creation of a product's container and how it looks to consumers who might purchase it
Product	Is the item offered for sale. A product can be a service or an item
Design Brief	Is an outline that focuses primarily on the business objectives, outcomes, and results of project design, rather than the actual design itself

Music

Key Term	Definition
Riff	A short, catchy musical phrase
Syncopated	Rhythms that are played off the beat
Pentatonic scale	A musical scale with five notes per octave, commonly 1, 2, 3, 5 and 6 of the major scale
Ostinato	A repeated pattern of notes
Syllabic	Lyrics sung with one syllable of text per musical note
Toto	American rock band
Ascending	Getting higher in pitch
Descending	Getting lower in pitch
David Paich	Lead and backing vocals, synthesiser, piano. Co-wrote the song
Bobby Kimball	Lead and backing vocals
Steve Lukather	Electric guitar and backing vocals
Steve Porcaro	Synthesisers
David Hungate	Bass guitar
Jess Porcaro	Percussion, co-writer of the song
1981	Year the song was recorded
Verse-Chorus form	The structure used in Africa
B major	The tonality in most of the song
A major	The tonality in the chorus
Homophonic	The texture in the song