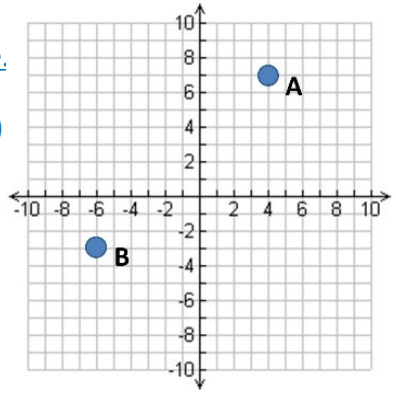
Year 10 Mathematics Knowledge Organiser (Term 3 – Unit 59/60/61)

Coordinates (MW 8)

Written in **pairs**.
The **first** term is the **x-coordinate** (movement **across**).
The **second** term is the **y-coordinate** (movement **up or down**)

Example.
A: (4,7)
B: (-6,-3)



Midpoint of a Line (MW 133)

Method 1: **add the x coordinates and divide by 2, add the y coordinates and divide by 2**
Method 2: Sketch the line and find the values half way between the two x and two y values.

Example.
Find the midpoint between (2,1) and (6,9)

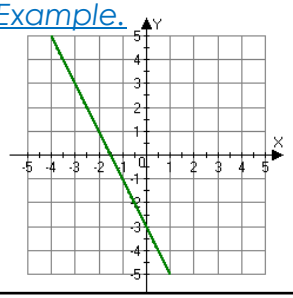
$\frac{2+6}{2} = 4$ **and** $\frac{1+9}{2} = 5$

So, the midpoint is (4,5)

Linear Graph (MW 96)

Straight line graph.
The general equation of a linear graph is $y = mx + c$
where m **is the gradient** and c **is the y-intercept**.
The **equation** of a linear graph can contain an **x-term**, a **y-term** and a **number**.

Example.



Other examples:
$x = y$
$y = 4$
$x = -2$
$y = 2x - 7$
$y + x = 10$
$2y - 4x = 12$

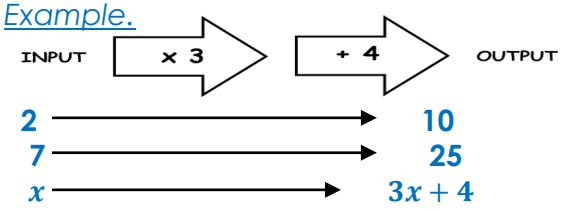
Inverse = Opposite

Example.
The inverse of addition is subtraction.
The inverse of multiplication is division.

Function machines (MW 36)

A **function** is a relationship between 2 numbers.
The numbers that go into a function machine are called the **inputs**.
The numbers that come out are called the **outputs**.

Example.



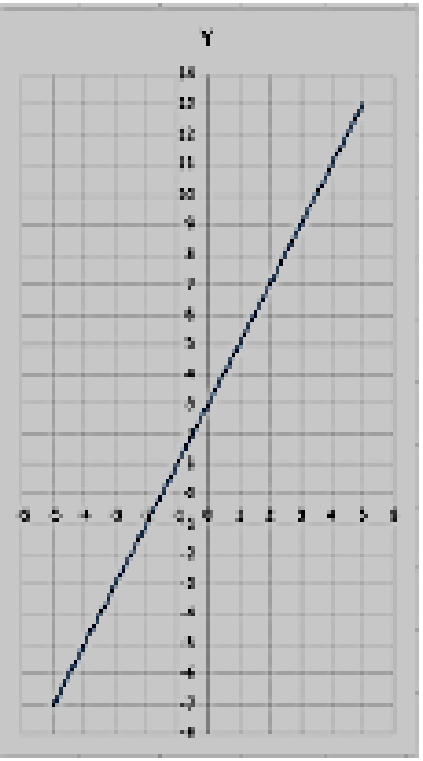
Plotting Linear Graphs

Table of Values
Construct a table of values to calculate coordinates.
Example.

Y=2x+3

x	-3	-2	-1	0	1	2	3
2xX	-6	-4	-2	0	2	4	6
+3	+3	+3	+3	3+	+3	+3	+3
Y	-3	-1	1	3	5	5	7

X	Y
-5	-7
-4	-5
-3	-3
-2	-1
-1	1
0	3
1	5
2	7
3	9
4	11
5	13



Year 10 Mathematics Knowledge Organiser (Term 3 – Unit 62)

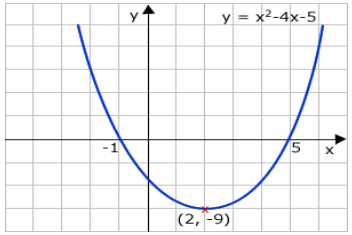
Quadratic Graph (MW 98)

A '**U-shaped**' curve called a **parabola**.

The equation is of the form $y = ax^2 + bx + c$, where a, b and c are numbers, $a \neq 0$.

If $a < 0$, the parabola is **upside down**.

Example.



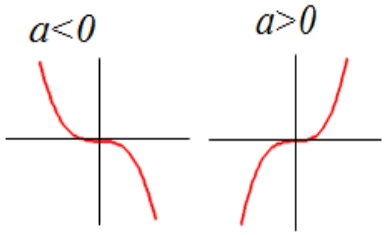
Cubic Graph (MW 161)

The equation is of the form $y = ax^3 + k$, where k **is an number**.

If $a > 0$, the curve is **increasing**.

If $a < 0$, the curve is **decreasing**.

Example.



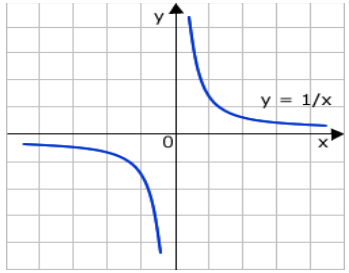
Reciprocal Graph (MW 161)

The equation is of the form $y = \frac{A}{x}$, where A **is a number** and $x \neq 0$.

The graph has **asymptotes** on the **x-axis and y-axis**.

decreasing.

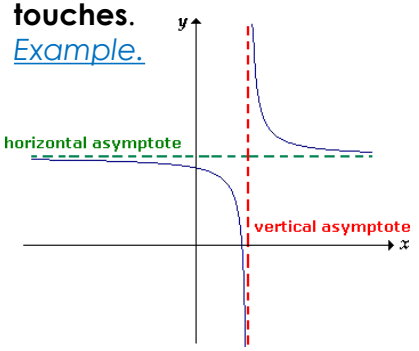
Example.



Asymptote

A **straight line** that a graph **approaches** but **never touches**.

Example.



Exponential Graph

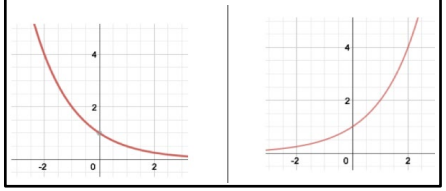
The equation is of the form $y = a^x$, where a is a number called the **base**.

If $a > 1$ the graph **increases**.

If $0 < a < 1$, the graph **decreases**.

The graph has an **asymptote** which is the **x-axis**.

Example.



$y = \sin x$ (MW 195a)

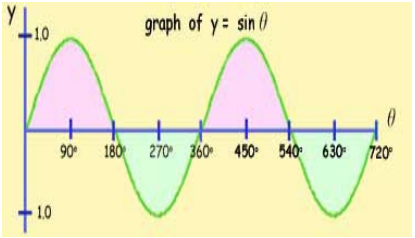
Key Coordinates:

$(0, 0), (90, 1), (180, 0), (270, -1), (360, 0)$

y is never more than 1 or less than -1.

Pattern repeats every 360°.

Example.



$y = \cos x$ (MW 195a)

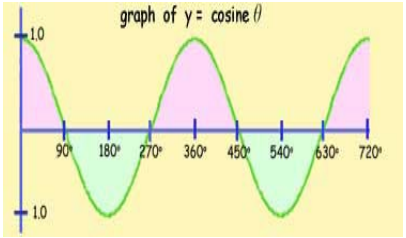
Key Coordinates:

$(0, 1), (90, 0), (180, -1), (270, 0), (360, 1)$

y is never more than 1 or less than -1.

Pattern repeats every 360°.

Example.



$y = \tan x$ (MW 195b)

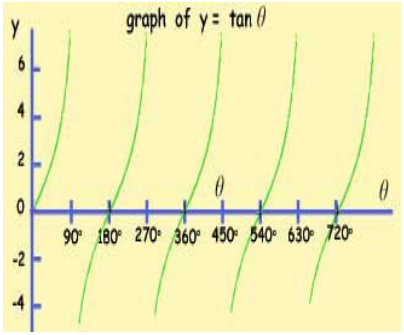
Key Coordinates:

$(0, 0), (45, 1), (135, -1), (180, 0), (225, 1), (315, -1), (360, 0)$

Asymptotes at $x = 90$ and $x = 270$

Pattern repeats every 360°.

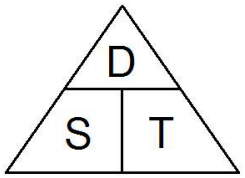
Example.



Year 10 Mathematics Knowledge Organiser (Term 3 – Unit 65)

Speed, Distance, Time (MW – 142)

Speed = Distance ÷ Time
Distance = Speed x Time
Time = Distance ÷ Speed



Remember the correct units.

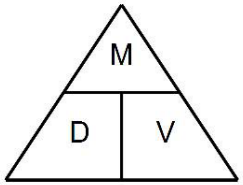
Example

Speed = 4mph
Time = 2 hours
Find the Distance.

$D = S \times T = 4 \times 2$
$= 8\ miles$

Density, Mass, Volume (MW – 142)

Density = Mass ÷ Volume
Mass = Density x Volume
Volume = Mass ÷ Density



Remember the correct units.

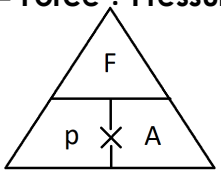
Example

Density = 8kg/m³
Mass = 2000g
Find the Volume.

$V = M \div D = 2 \div 8$
$= 0.25m^3$

Pressure, Force, Area (MW – 142)

Pressure = Force ÷ Area
Force = Pressure x Area
Area = Force ÷ Pressure



Remember the correct units.

Example

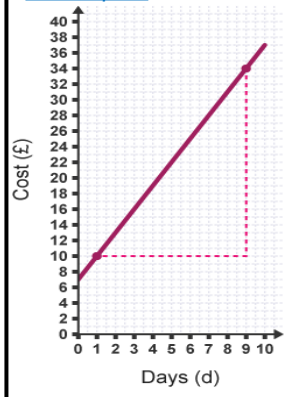
Pressure = 10 Pascals
Area = 6cm²
Find the Force

$F = P \times A = 10 \times 6$
$= 60\ N$

Real Life Graphs

Graphs that are supposed to model some real-life situation.
The actual meaning of the values depends on the labels and units on each axis.
The **gradient** might have a contextual meaning.
The **y-intercept** might have a contextual meaning.
The **area** under the graph might have a contextual meaning.

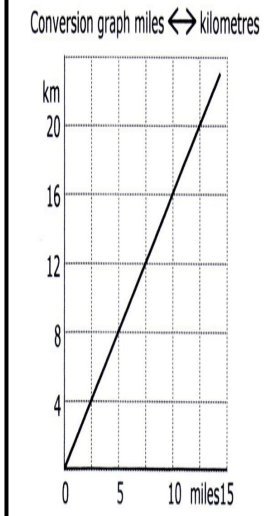
Example



Conversion Graph (MW – 107)

A line graph to **convert one unit to another**.
Can be used to convert units (eg. miles and kilometres) or currencies ($ and £)
Find the value you know on one axis, read up/across to the conversion line and read the equivalent value from the other axis.

Example

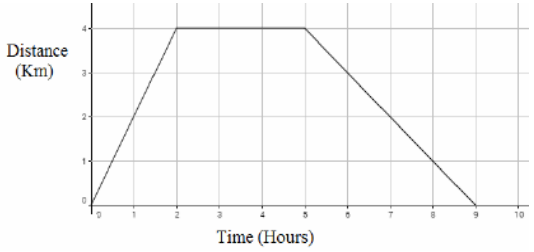


$8\ km = 5\ mile$

Distance-Time Graphs (MW – 143/216a)

You can find the **speed** from the **gradient** of the line (Distance ÷ Time)
The steeper the line, the quicker the speed. A **horizontal** line means the object is not moving (**stationary**).

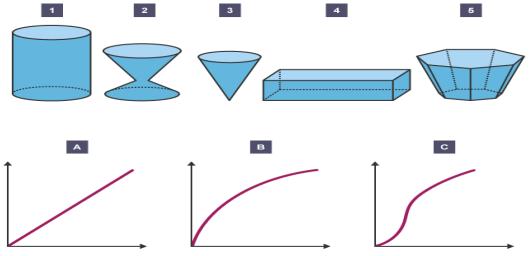
Example



Depth of Water in Containers

Graphs can be used to show how the depth of water changes as different shaped containers are filled with water at a constant rate.

Example



Year 10 Mathematics Knowledge Organiser (Term 3 – Unit 66/67)

Congruent Shapes (MW – 166)

Shapes are congruent if they are **identical** - **same shape** and **same size**.
Shapes can be rotated or reflected but still be congruent

Example

Similar Shapes (MW –144)

Shapes are similar if they are the **same shape but different sizes**.

The proportion of the matching sides must be the same, meaning the ratios of corresponding sides are all equal.

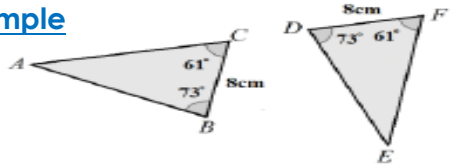
Example

Congruent Triangles (MW – 166)

4 ways of proving that two triangles are congruent:
1. **SSS** (Side, Side, Side)
2. **RHS** (Right angle, Hypotenuse, Side)
3. **SAS** (Side, Angle, Side)
4. **ASA** (Angle, Side, Angle) or **AAS**

ASS does not prove congruency.

Example

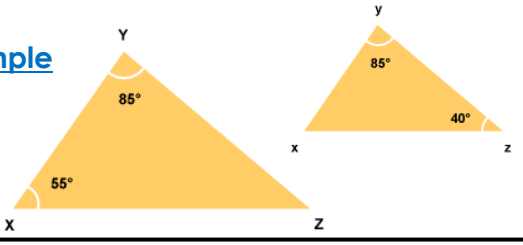


$BC = DF$
$\angle ABC = \angle EDF$
$\angle ACB = \angle EFD$
$\therefore$ The two triangles are congruent by AAS.

Similar Triangles (MW –144)

To show that two triangles are similar, show that:
1. The three sides are in the same proportion
2. Two sides are in the same proportion, and their included angle is the same
3. The three angles are equal

Example

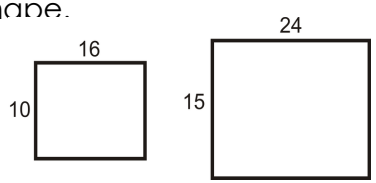


Scale Factor (MW – 148)

The **ratio of corresponding sides** of two similar shapes.

To find a scale factor, **divide a length** on one shape **by the corresponding length** on a similar shape.

Example



Scale Factor = $15 \div 10 = 1.5$

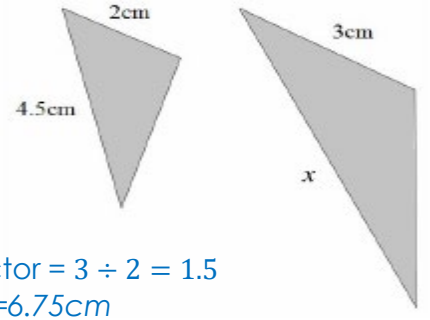
Finding missing lengths in similar shapes

1. Find the **scale factor**.
2. **Multiply or divide** the corresponding side to find a missing length.

If you are finding a missing length on the larger shape you will need to multiply by the scale factor.

If you are finding a missing length on the smaller shape you will need to divide by the scale factor.

Example



Scale Factor = $3 \div 2 = 1.5$
$x = 4.5 \times 1.5 = 6.75cm$

Biology Topic 4: Bioenergetics

1. Photosynthesis

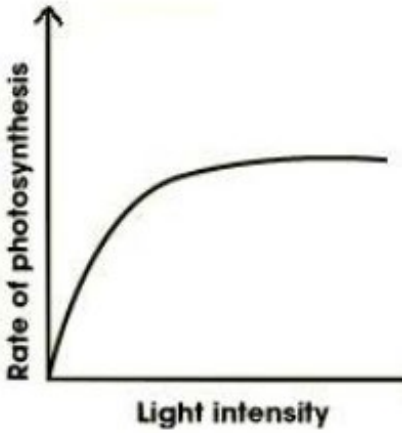
$$6CO_2 + 6H_2O \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} C_6H_{12}O_6 + 6O_2$$

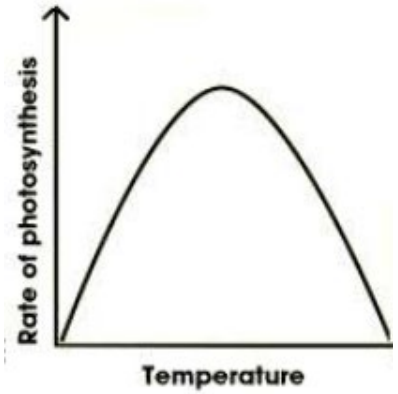
$$\text{Carbon Dioxide} + \text{Water} \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} \text{Glucose} + \text{Oxygen}$$

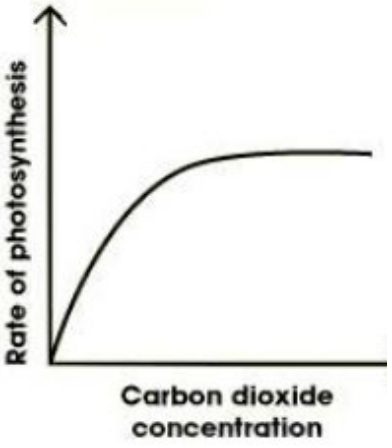
Photosynthesis	An endothermic reaction where sunlight is absorbed and used to convert carbon dioxide and water into glucose and oxygen
Uses of glucose	• Respiration • Converted into starch • Produce fat or oil • Produce cellulose cell walls • Produce amino acids

2. Rate of photosynthesis

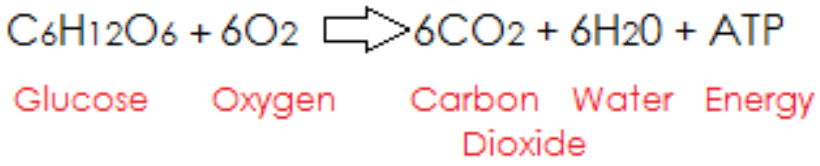
Factor	Affect on photosynthesis	Reason
Light	Increases	More energy for the reaction
Carbon dioxide	Increases	More reactants (provided there is no limiting reactant)
Amount of chlorophyll	Increases	More energy for the reaction
Temperature	Increases then decreases	Initially more energy but then enzyme denatures
Limiting factor	The factor that can limit the rate of a reaction	







3. Aerobic respiration	
Respiration	An exothermic reaction which continuously happens in living cells
Purpose	Transfer energy for: • Chemical reactions • Movement • Warmth
Aerobic	With oxygen



Anaerobic	Without oxygen
Anaerobic respiration in muscle cells	glucose → lactic acid
Anaerobic respiration in yeast cells (fermentation)	glucose → ethanol + carbon dioxide
Lactic acid	A chemical that when built up in muscles causes fatigue
Oxygen debt HT ONLY	The amount of oxygen the body needs after exercise to remove the lactic acid

4. Response to exercise	
Change	Reason
Heart pumps faster	Supply more oxygenated blood to the muscles
Breathing rate increases	
Deeper breaths	

5. Metabolism	
Metabolism	The sum of all the reactions in a cell or the body
Includes:	• Conversion of glucose to starch, glycogen and cellulose • Formation of lipids from glycerol and 3 fatty acids • Use of glucose and nitrates to make proteins (PLANTS) • Respiration • Breakdown of protein to from urea.

AQA Bioenergetics Knowledge Organiser

Photosynthesis

Photosynthesis is a chemical reaction which takes place in plants. It converts **carbon dioxide** and **water** into **glucose** and **oxygen**. It uses **light** energy to power the chemical reaction, which is absorbed by the green pigment **chlorophyll**. This means that photosynthesis is an example of an **endothermic** reaction. The whole reaction takes place inside the **chloroplasts** which are small organelles found in plant cells.

Plants acquire the carbon dioxide via diffusion through the **stomata** of their leaves. The water is absorbed from the soil through the **roots** and transported to the cells carrying out photosynthesis, via the **xylem**.

The glucose made in photosynthesis is used for respiration, stored as starch, fat or oils, used to produce cellulose or used to produce amino acids for protein synthesis.

The Rate of Photosynthesis and Limiting Factors

A **limiting factor** is something which stops the photosynthesis reaction from occurring at a faster rate. **Temperature**, **light intensity** and **carbon dioxide** level are all limiting factors.

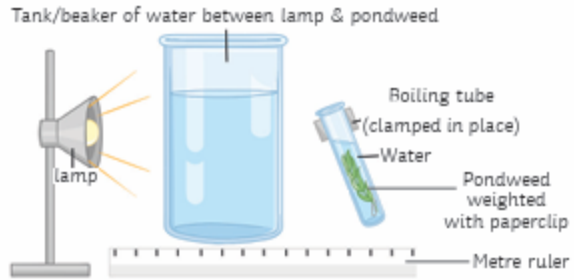
Increasing the temperature of the surroundings will increase the rate of reaction, but only up to around 45°C. At around this temperature, the enzymes which catalyse the reaction become denatured.

Increasing the light intensity will increase the rate of reaction because there is more energy to carry out more reactions.

Increasing the carbon dioxide concentration will also increase the rate of reaction because there are more reactants available.

The Effect of Light Intensity on the Rate of Photosynthesis (RPI)

The amount of light a plant receives affects the rate of photosynthesis. If a plant receives lots of light, lots of photosynthesis will occur. If there is very little or no light, photosynthesis will stop.



Method

1. Measure 20cm^3 of sodium hydrogen carbonate solution and pour into a boiling tube.
2. Collect a 10cm piece of pondweed and gently attach a paper clip to one end.
3. Clamp the boiling tube, ensuring you will be able to shine light onto the pondweed.
4. Place a metre rule next to the clamp stand.
5. Place the lamp 10cm away from the pondweed.
6. Wait two minutes, until the pondweed has started to produce bubbles.
7. Using the stopwatch, count the number of bubbles produced in a minute.
8. Repeat stages 5 to 7, moving the lamp 10cm further away from the pondweed each time until you have five different distances.
9. Now repeat the experiment twice more to ensure you have three readings for each distance.

The **independent** variable was the light intensity.

The **dependent** variable was the amount of bubbles produced. Counting the bubbles is a common method, but you could use a gas syringe instead to more accurately measure the volume of oxygen produced.

The **control** variables were same amount of time and same amount of pondweed. A bench lamp is used to control the light intensity and the water in the test tube containing the pondweed is monitored with a thermometer to monitor and control the temperature.

Interaction of Limiting Factors (HT only)

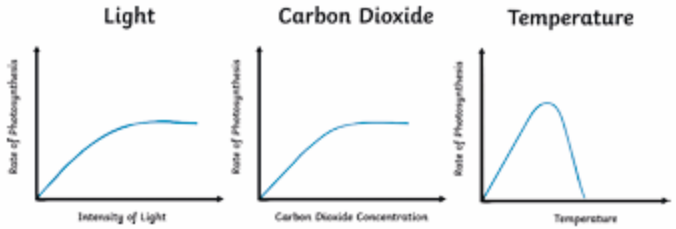
The limiting factor for the reaction will depend on the environmental conditions.

For example:

At night, light intensity is the limiting factor.

In winter, temperature is the limiting factor.

In other conditions, carbon dioxide is usually the limiting factor.



From the graph, you can see that increasing one of the factors will also increase the rate of reaction, but only for so long before it plateaus. This is because another factor will have then become the limiting factor. E.g. you could increase the supply of carbon dioxide, but if there is not enough chlorophyll to absorb the sunlight, then the sunlight will become the limiting factor instead.

Greenhouse Economics (HT only)

To grow plants in the most suitable conditions, a greenhouse can be used.

A greenhouse traps the sun's radiation as heat inside the greenhouse, so that temperature is not a limiting factor for the rate of photosynthesis.

Artificial lighting can be installed in the greenhouse to provide constant light energy and prevent light intensity being a limiting factor.

A paraffin heater can be used in the greenhouse to not only maintain a suitable temperature, but the by-product of the combustion off the paraffin is carbon dioxide.

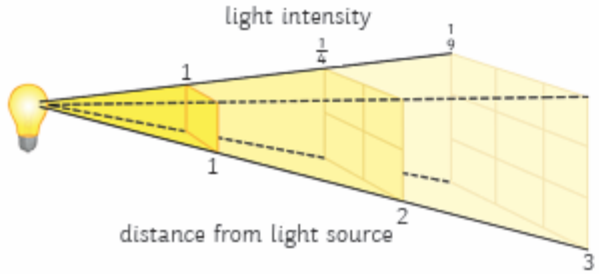
Enclosing the crops in a greenhouse and regulating all the conditions in this way can be expensive; however, it is often outweighed because the harvest of the crop is much healthier, faster-grown crops. Furthermore, the enclosed conditions mean that disease and pests can be easily controlled and prevented.

AQA Bioenergetics Knowledge Organiser

Inverse Square Law and Light Intensity

The **inverse square law** is used to describe the light intensity at different distances from the source.

The inverse square law states that: **the intensity of light is inversely proportional to the square distance from the source.**



Light intensity is calculated by the following equation:

$$\text{light intensity} \propto \frac{1}{\text{distance}^2}$$

- The symbol, ∝, means 'is proportional to'.
- Distance is measured in metres, m.

In other words, if an object is moved twice as far away from the light source, the light intensity received is reduced to just one quarter.

Worked example:

If the light source is 10cm from a plant, calculate the light intensity reaching the plant.

1 ÷ (distance^2)
1 ÷ (0.10 × 0.10)
1 ÷ 0.01
= 100 arbitrary units

If the light source is moved 25cm from the plant, calculate the light intensity reaching the plant.

1 ÷ (distance^2)
1 ÷ (0.25 × 0.25)
1 ÷ 0.0625
= 16 arbitrary units

Respiration

Respiration is the chemical reaction which occurs inside the **mitochondria** of all living cells to release energy for living functions and processes, e.g. movement, warmth and building larger molecules for growth and repair. The reaction is **exothermic**, meaning that energy is released to the surroundings.

Respiration can be either **aerobic** (using oxygen) or **anaerobic** (without using oxygen).

glucose + oxygen → carbon dioxide + water + energy

$$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + ATP$$

In anaerobic respiration, the glucose is not completely oxidised. This means that there is less energy released than in aerobic respiration.

glucose → lactic acid + energy

$$C_6H_{12}O_6 \rightarrow 2C_3H_6O_3 + ATP$$

In plants and yeast, anaerobic respiration makes some different products. The reaction is also called fermentation and is used in bread-making and beer-brewing.

glucose → ethanol + carbon dioxide + energy

$$C_6H_{12}O_6 \rightarrow C_2H_5OH + CO_2 + ATP$$

Effect of Exercise

When a person exercises, their body (specifically their **muscles**) need much more energy. To release more energy, the amount of respiration reactions occurring has to increase.

The **heart** pumps faster and the **breathing** rate and breath volume all increase to supply more **oxygen** to the muscles via the bloodstream.

If the muscles are not receiving enough oxygen to keep up the demand needed by the respiration reactions, then **anaerobic** respiration begins to occur. This incomplete oxidation of the glucose produces **lactic acid**, which can build up in the muscles and results in an **oxygen debt**.

After long periods of exercise, the muscles can become fatigued and stop contracting. You might experience a pain commonly called a **stitch**.

Metabolism

Metabolism is the combination of all the reactions in a cell or in the body.

Energy released during respiration is used during metabolic processes to synthesise new molecules:

- Glucose is converted to starch, glycogen and cellulose.
- Glycerol and three fatty acids are joined to form a lipid molecule.
- Glucose and nitrate ions are joined to form amino acids.
- Amino acids are joined to form proteins.
- Excess proteins are broken down and released as urea during excretion.

Respiration itself is also a processes which is included in metabolism.

Oxygen Debt (HT only)

During vigorous exercise, the body can begin to carry out **anaerobic respiration** and produces **lactic acid**.

Lactic acid is transported via the bloodstream to the **liver**. The liver converts the lactic acid back into **glucose**. However, **oxygen** is needed to carry out this reaction.

The **oxygen debt** is the amount of the oxygen required by the body to convert the built-up lactic acid back into glucose and remove it from the respiring cells.

Chemistry Topic 4: Chemical changes

1.Keywords	
Metal oxide	A compound formed when a metal ionically bonds to oxygen
Reactivity series	The order of elements in terms of their reactivity
Acid	A substance that releases H^+ ions and has a pH below 7
Base	A substance that neutralises an Acid and has a pH above 7
Alkali	A type of soluble base. A metal hydroxide. Releases OH^- ions
Neutralisation	When an acid reacts with a base to produce a salt and water
Carbonates	Ionic compounds containing Carbon and oxygen
Salt	Ionic compound formed when acid and base react
Soluble	A substance that dissolves
Insoluble	A substance that does not dissolve
Indicator	A substance that changes colour when pH changes
Electrolysis	Splitting up an ionic substance using electricity
Molten	Turned to a liquid
Solution	Dissolved in water

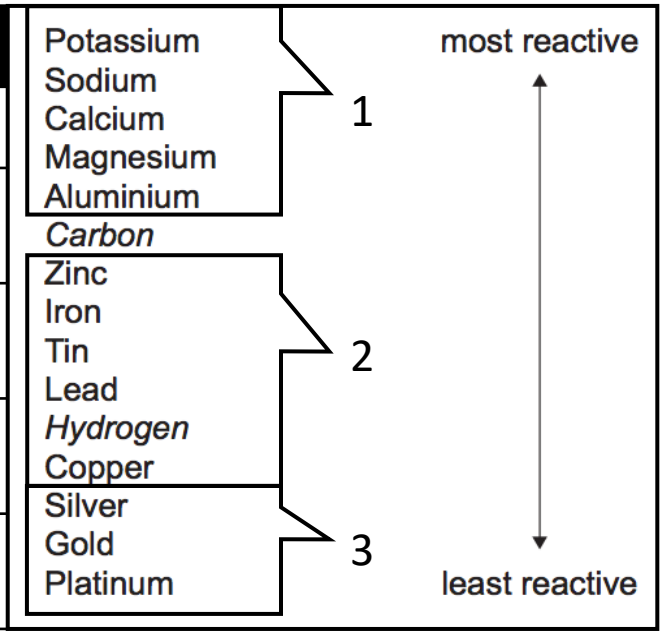
2. REDOX

Change	**In terms of oxygen**	**In terms of hydrogen**	**In terms of electrons (HT ONLY)**
Oxidation	Gaining oxygen	Losing hydrogen	Loss of electrons (OIL)
Reduction	Losing oxygen	Gaining hydrogen	Gain of electrons (RIG)

3. The reactivity series

	Category	Extracted by
1	Highly reactive metals	Electrolysis
2	Base metals	Smelting: heating with carbon
3	Native metals	Found as nuggets of pure metal

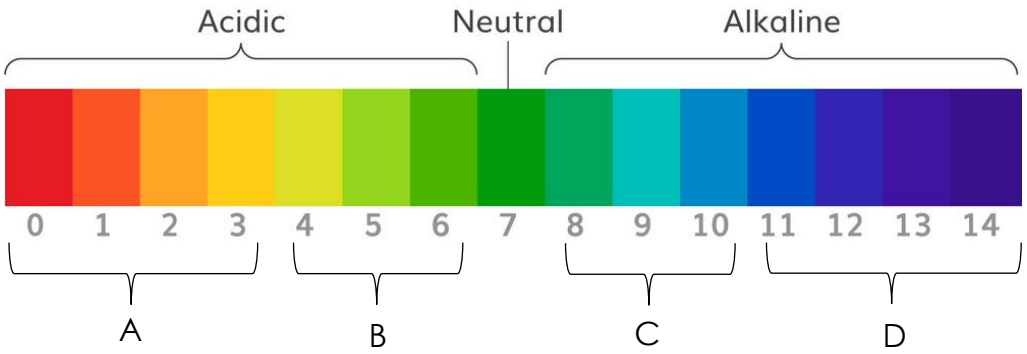
NOTE: Hydrogen is not a metal and used to extract some other metals not on this list



4. Naming salts

Acid used	Second part of salt's name
Hydrochloric acid	chloride
Sulfuric acid	sulfate
Nitric acid	nitrate

5. pH scale

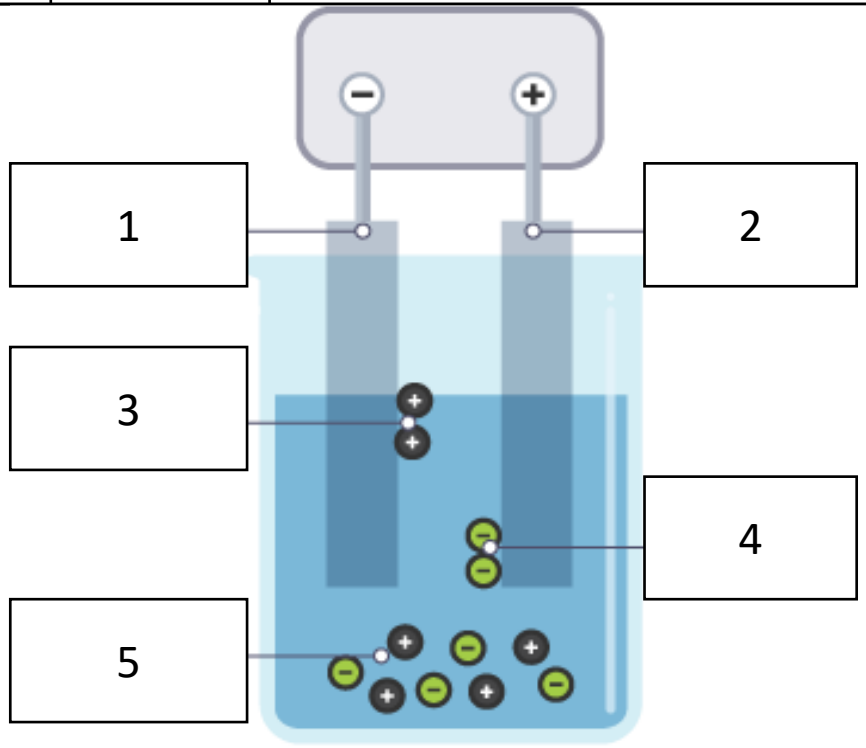


	Name	Level of ionisation in water
A	Strong acid	Fully
B	Weak acid	Partially
C	Weak base	Partially
D	Strong base	Fully

6. Equation for all neutralisations

$$H^+_{(aq)} + OH^-_{(aq)} \rightarrow H_2O_{(l)}$$

7. Electrolysis		
1	Cathode	The negative electrode
2	Anode	The positive electrode
3	Positive ion	Move to cathode
4	Negative ion	Move to anode
5	Electrolyte	The ions that are being electrolysed



Don't **PANIC** - **P**ositive is **A**node, **N**egative **I**s **C**athode.

8. Electrolysis of aqueous solutions	
Place in reactivity series	**Product of electrolysis**
Metal more reactive than hydrogen	Hydrogen is produced at the cathode
If the negative ion is not a halide ion (group 7)	Oxygen is produced at the anode

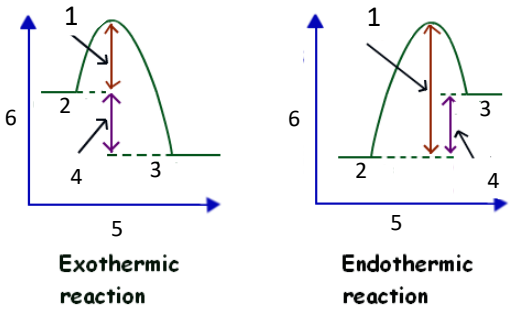
Chemistry Topic 5: Energy changes

1. Keywords

Conservation of energy	Energy can not be created or destroyed just transferred from one for to another
Exothermic reaction	Reaction which releases heat to the surroundings. Causing an increase in temperature
Endothermic reaction	Reaction which absorbs heat from the surroundings. Causing a decrease in temperature

2. Reaction profiles

1	Activation energy
2	Reactants
3	Products
4	Energy released
5	Reaction progress
6	Potential energy



3. Energy changes of reactions (HT ONLY)

Reaction type	**Temperature change**	**Amount of energy absorbed to break bonds**	**Amount of energy released when making new bonds**
Exothermic	Increases	Less	More
Endothermic	Decreases	More	Less

AQA GCSE Chemistry (Separate Science) Unit 5 Energy Changes Knowledge Organiser

Exothermic and Endothermic Reactions

When a chemical reaction takes place, **energy** is involved. Energy is transferred when chemical **bonds are broken** and when new **bonds are made.**

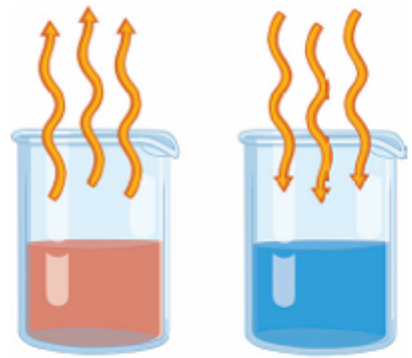
Exothermic reactions are those which involve the transfer of energy **from the reacting chemicals to** the surroundings. During a practical investigation, an exothermic reaction would show an **increase in temperature** as the reaction takes place.

Examples of exothermic reactions include **combustion, respiration and neutralisation** reactions. Hand-warmers and self-heating cans are examples of everyday exothermic reactions.

Endothermic reactions are those which involve the transfer of energy **from the surroundings to** the reacting chemicals. During a practical investigation, an endothermic reaction would show a **decrease in temperature** as the reaction takes place.

Examples of endothermic reactions include the **thermal decomposition** of calcium carbonate.

Eating **sherbet** is an everyday example of an endothermic reaction. When the sherbet dissolves in the saliva in your mouth, it produces a cooling effect. Another example is **instant ice packs** that are used to treat sporting injuries.



Exothermic

Endothermic

Activation Energy – the minimum amount of energy required for a chemical reaction to take place.

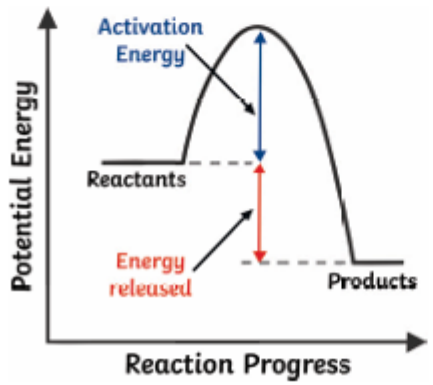
Catalysts – increase the rate of a reaction. Catalysts provide an alternative pathway for a chemical reaction to take place by **lowering** the activation energy.

Reaction Profiles – Exothermic

Energy level diagrams show us what is happening in a particular chemical reaction. The diagram shows us the **difference in energy** between the reactants and the products.

In an exothermic reaction, the **reactants** are at a **higher** energy level than the products.

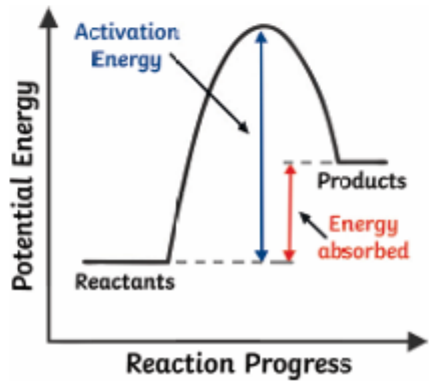
In an **exothermic** reaction, the difference in energy is **released** to the surroundings and so the **temperature** of the surroundings **increases**.



Reaction Profiles – Endothermic

In an **endothermic** reaction, the **reactants** are at a **lower** energy level than the products.

In an **endothermic** reaction, the difference in energy is **absorbed** from the surroundings and so the **temperature** of the surroundings **decreases**.



Bond Making and Bond Breaking

In an **endothermic** reaction, energy is needed to break chemical bonds. The **energy change (ΔH)** in an endothermic reaction is **positive.**

You may also find, in some textbooks, **ΔH** referred to as the **enthalpy change.**

In an **exothermic** reaction, energy is needed to form chemical bonds. The **energy change (ΔH)** in an exothermic reaction is **negative.**

Bond energies are measured in **kJ/mol.**

Calculations Using Bond Energies (Higher Tier Only)

Bond energies are used to calculate the change in energy of a chemical reaction.

Calculate the change in energy for the reaction: $2H_2O_2 \longrightarrow 2H_2O + O_2$

The first step is to write the symbol equation for the reaction. Once you have done this, work out the bonds that are breaking and the ones that are being made.

H-O-O-H ⟶ 2H-O-H + O=O

Bond	Bond Energy kJ/mol
H-O	464
O-O	146
O=O	498

On the **left-hand side** of the equation, the **bonds are breaking.**

There are two **O–H** bonds and one **O–O** bond.

So 464 + 146 + 464 = 1074

There are two moles of H_2O_2 therefore the answer needs to be multiplied by two.

So 1074 × 2 = 2148

On the **right-hand** side of the equation, the **bonds are made.**

There are two **H–O** bonds

So 464 + 464 = 928

Two moles of H_2O are made therefore the answer needs to be multiplied by two.

So 928 × 2 = 1856

There is also one **O=O** bond with a bond energy of 498

So 1856 + 498 = 2354

ΔH = sum (bonds broken) – sum (bonds made)

ΔH = 2148 – 2354 = -206 kJ/mol

The reaction is exothermic as ΔH is negative.

Required Practical

Aim

To investigate the variables that affect temperature changes in reacting solutions, e.g. acid plus metals, acid plus carbonates, neutralisations and displacement of metals.

Equipment

- polystyrene cup
- measuring cylinder
- thermometer
- 250cm^3 glass beaker
- measuring cylinder
- top pan balance

Method

Reaction between a metal and an acid.

1. Gather the equipment.
2. Place the polystyrene cup inside the beaker. This will prevent the cup from falling over.
3. Using a measuring cylinder, measure out 30cm^3 of the acid. Different acids such as hydrochloric or sulfuric acid may be used. Pour this into the polystyrene cup.
4. Record the temperature of the acid using a thermometer.
5. Using a top pan balance, measure out an appropriate amount of the solid (for example, 10g) or use one strip of a metal such as magnesium.
6. Add the solid to the acid and record the temperature. You may choose to record the temperature of the acid and metal every minute for 10 minutes.

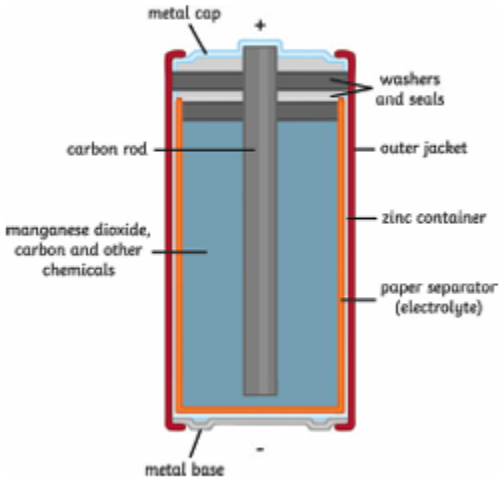
Chemical Cells

A chemical cell converts **chemical energy** into **electrical energy.** More than one cell connected in series is called a battery.

There are two types of chemical cell, **rechargeable** and **non-rechargeable.**

Non-rechargeable cells will produce a **voltage** until the chemicals inside are used up. Once this occurs, the cell is no longer useful and can then be recycled.

Rechargeable cells and batteries can be recharged multiple times. An electrical current is passed backwards through the cell. This works by **reversing** the chemical reactions and the cell or battery can then be used again to produce more electricity. Mobile phones contain rechargeable batteries.

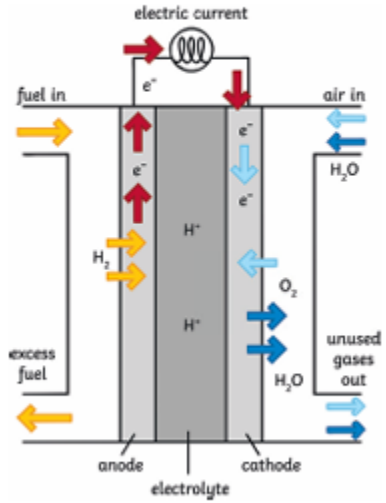


Fuel Cells

Fuels cells work differently to chemical cells in that they need to be supplied with a fuel and oxygen. The constant supply of these two ingredients will allow a fuel cell to produce a voltage continuously.

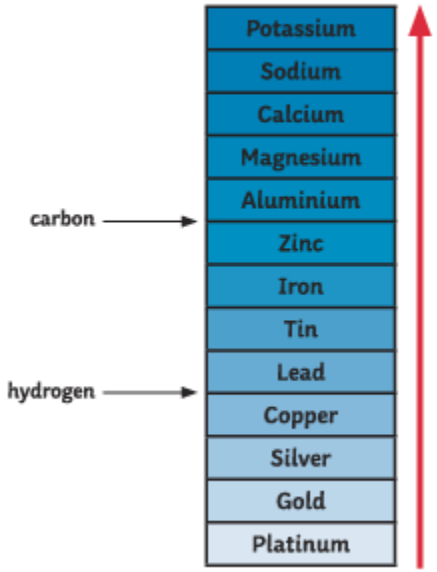
Inside the fuel cell, hydrogen is **oxidised** electrochemically; the fuel is **not combusted.** This allows the reaction to take place at a lower temperature.

Hydrogen-oxygen fuel cells are an alternative to rechargeable batteries and cells as the only product that is produced is water.



Voltage

The voltage of a cell is affected by the combination of metals used inside it. The bigger the difference in the **reactivity** of the two metals, the bigger the **voltage** produced. For example, if the metals used inside the cell are magnesium and zinc, then the voltage produced will be **small** as the two metals are **close together** in the **reactivity series.** By comparison, if magnesium and copper are used, then the voltage produced will be **larger** as the metals are **further apart** in the **reactivity series.**



Ionic Equations

hydrogen + oxygen ⟶ water

$2H_2 + O_2 \longrightarrow 2H_2O$

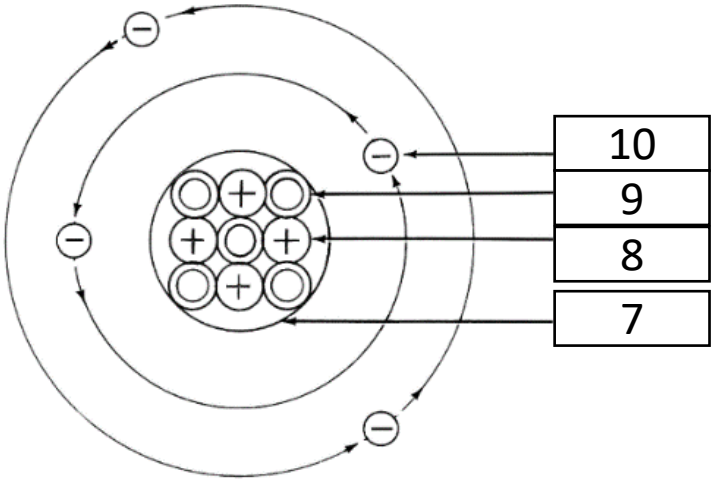
At the **cathode:** $2H_2 + 4OH^- \longrightarrow 4H_2O + 4e^-$

At the **anode:** $O_2 + 2H_2O + 4e^- \longrightarrow 4OH^-$

In the fuel cell, **oxygen** is being **reduced** (reduction is the gaining of electrons) whilst **hydrogen** is being **oxidised** (oxidation is the loss of electrons). Oxidation and reduction happen simultaneously – this is called a **redox reaction.**

Physics topic 4: Atomic structure

1. Keywords	
1. Atom	The smallest possible piece of an element. Has a radius of 0.1nm (or $1x10^{-10}$m).
2. Element	A substance in which all the atoms have the same atomic number.
3. Isotope	Atoms with the same number of protons but different numbers of neutrons.
4. Molecule	Two or more atoms bonded together
5. Compound	Two or more <u>different</u> atoms bonded together
6. Mixture	At least two different elements or compounds together. Can be separated easily.
7. Nucleus	The centre of an atom. Contains protons and neutrons
8. Proton	A positively charged particle found in the nucleus
9. Neutron	A neutral particle found in the nucleus. Has no charge
10. Electron	A negatively charged particle found in energy levels (shells) around the nucleus



2. Properties of sub-atomic particles			
Particle	Relative mass	Relative charge	Location
Proton	1	+1	Nucleus
Neutron	1	0	Nucleus
Electron	0	-1	Shells

Key

relative atomic mass
atomic symbol
name
atomic (proton) number

1
H
hydrogen
1

3. Using the periodic table		
Number of..	Is the…	Found by..
Protons	Atomic (proton) number	Smaller number on periodic table
Electrons	Atomic (proton) number	Smaller number on periodic table
Neutrons	Difference between the atomic mass and atomic number	Big number – small number

4. History of the atom			
Discovery	By	Model	Diagram
Solid particle called atom	John Dalton	Particle: solid spheres	1
The electron	JJ Thompson	Plum pudding: positive 'cake' with negative 'plums'	2
Nucleus	Rutherford	Nuclear: Positive nucleus surrounded by electrons	3
Neutron	James Chadwick	Nuclear: Now with protons and neutrons in nucleus	3
Energy levels (shells)	Niels Bohr	Planetary: Electrons now 'orbit' in different shells	4

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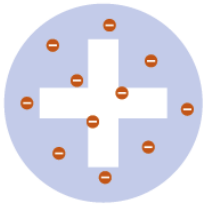
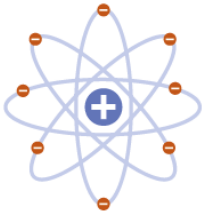
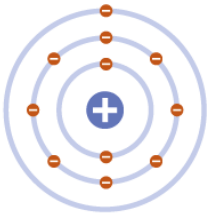
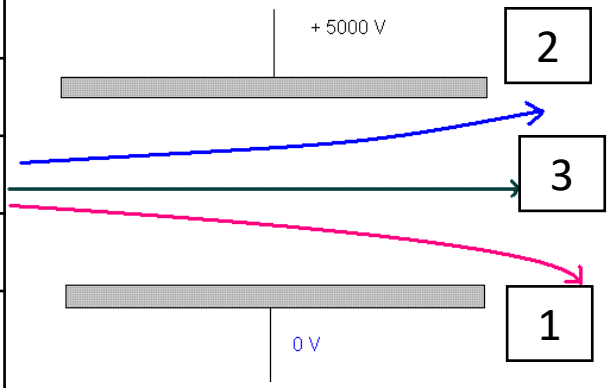
2. 

3. 

4. 

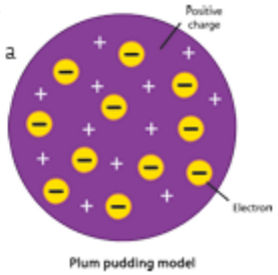
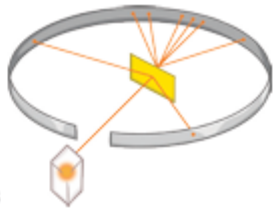
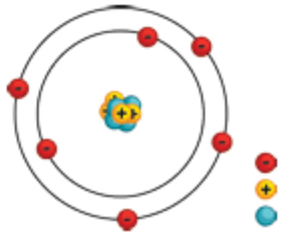
5. Radioactive decay keywords	
Unstable	The ability for a nucleus to decay
Radioactive decay	The RANDOM process of radiation being released by a nucleus. A different element in formed
Nuclear radiation	The energy and particles released when an unstable nucleus decays
Activity	How quickly a radioactive sample decays
Becquerel	The unit of activity
Geiger-Muller tube	A device to measure the count rate of a radioactive source
Count rate	The number of radioactive decays per second
Ionising power	How well it knocks off electrons and damages cells
Half life	The time it takes half of a group of radioactive nuclei to decay
Radioactive contamination	Unwanted hazardous materials containing radioactive atoms
Peer review	When the findings of one expert are double checked by another expert to make sure they are correct



6. Ionising radiation							
	Name	Symbol	Made of	Charge	Range in air	Penetration	Ionising power
1	Alpha	α	Helium nucleus $^{4}_{2}He$	**+2**	5 cm	Blocked by paper and skin	High
2	Beta	β	Fast moving electron $^{0}_{-1}e$	**-1**	15 cm	Blocked by thick aluminium	Medium
3	Gamma	γ	Electromagnetic wave	N/A	Very long	Blocked by thick lead	low

Atomic Structure Knowledge Organiser – Foundation and Higher Separate Science

Developing the Model of the Atom

Scientist	Time	Contribution
John Dalton	Start of 19th century	Atoms were first described as solid spheres.
JJ Thomson	1897	Thomson suggested the plum pudding model - the atom is a ball of charge with electrons scattered within it.  Plum pudding model
Ernest Rutherford	1909	Alpha Scattering experiment - Rutherford discovered that the mass is concentrated at the centre and the nucleus is charged. Most of the mass is in the nucleus. Most atoms are empty space. 
Niels Bohr	Around 1911	Bohr theorised that the electrons were in shells orbiting the nucleus. 
James Chadwick	Around 1940	Chadwick discovered neutrons in the nucleus.

Isotopes

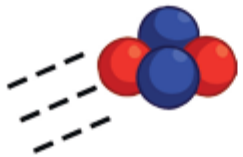
An isotope is an element with the same number of protons but a different number of neutrons. They have the same atomic number, but different mass numbers.

Isotope	Protons	Electrons	Neutrons
$^{1}_{1}H$	1	1	0
$^{2}_{1}H$	1	1	1
$^{3}_{1}H$	1	1	2

Some isotopes are unstable and, as a result, decay and give out radiation. Ionising radiation is radiation that can knock electrons off atoms. Just how ionising this radiation is, depends on how readily it can do that.

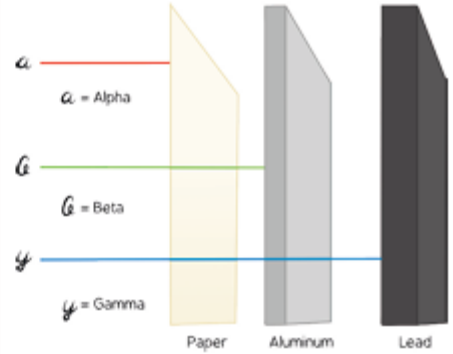
Alpha

Alpha radiation is an alpha particle emitted from the nucleus of a radioactive nuclei. It is made from two protons and two neutrons. They can't travel too far in the air and are the least penetrating – stopped by skin and paper. However, they are highly ionising because of their size.



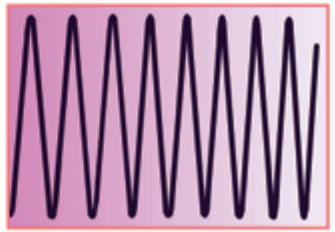
Beta

Deta radiation is a fast moving electron that can be stopped by a piece of aluminium. Deta radiation is emitted by an atom when a neutron splits into a proton and an electron.



Gamma

A gamma wave is a wave of radiation and is the most penetrating – stopped by thick lead and concrete.



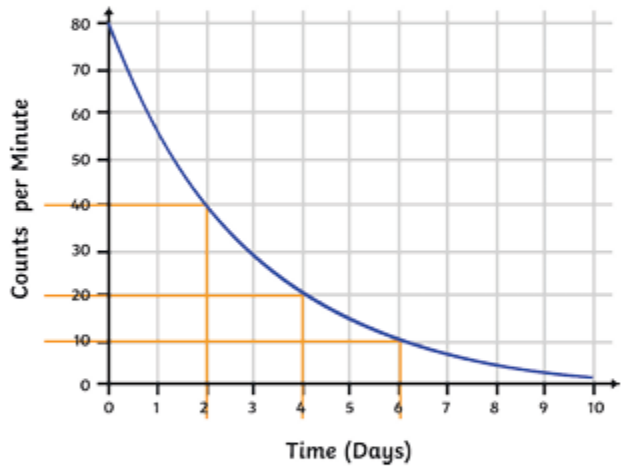
Half-life

The half-life is the time taken for the number of radioactive nuclei in an isotope to halve.

Radioactivity is a random process – you will not know which nuclei will decay. Radioactive decay is measured in becquerels Bq. 1 Bq is one decay per second.

Radioactive substances give out radiation from their nucleus.

A graph of half-life can be used to calculate the half-life of a material and will always have this shape:



Judging from the graph, the radioactive material has a half-life of two days.

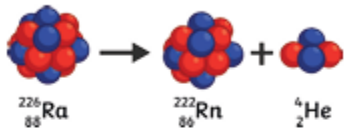
Irradiation

Irradiation occurs when materials are near a radioactive source. The source is sometimes placed inside a lead-lined box to avoid this.

People who work with radioactive sources will sometimes stand behind a lead barrier, be in a different room or use a remote-controlled arm when handling radioactive substances.

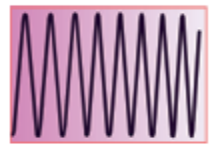
Alpha Decay Equations

An alpha particle is made of two protons and two neutrons. The atomic number goes down by two and its mass number decreases by four.



Gamma rays

There is no change to the nucleus when a radioactive source emits gamma radiation. It is the nucleus getting rid of excess energy.



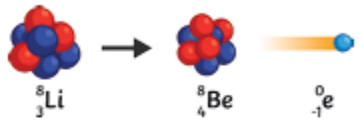
Contamination

When unwanted radioactive atoms get onto an object, it is possible for the radioactive particles to get inside the body.

Protective clothing should be worn when handling radioactive material.

Beta Decay Equations

A neutron turns into a proton and releases a an electron. The mass of the nucleus does not change but the number of protons increases.



Alpha radiation is more dangerous inside the body. It is highly ionising and able to cause a lot of damage. Outside the body it is less dangerous because it cannot penetrate the skin.

Beta radiation is less dangerous inside the body as some of the radiation is able to escape. Outside the body it is more dangerous as it can penetrate the skin.

Gamma radiation is the least dangerous inside the body as most will pass out and it is the least ionising. Gamma is more dangerous outside the body as it can penetrate the skin.

Background Radiation

This comes from natural sources like rocks, food and air. It also comes from man-made sources such as nuclear weapons, nuclear waste or nuclear accidents. The dose of radiation people receive varies dependent on how close they are to the source. Too much exposure to radiation can cause radiation poisoning. Radiation dosage is measured in **sieverts (Sv)**.

1000 millisieverts (mSv) = 1 sievert (Sv)

Uses of Nuclear Radiation

Although radiation can be dangerous, it also has its uses. The risks are always considered when using radiation. Gamma sources can be used as a medical tracer in the human body; isotopes can be injected or swallowed. As the isotope goes around the body, it can be monitored and medical issues can be spotted. Gamma radiation is emitted out of the body and does not cause the cells to become ionised. The isotope used will have a short half-life so it does not stay inside the body for too long. Tracers can be used to diagnose potentially life-threatening conditions which otherwise would not be spotted. The risk of using the radioactive tracer is much less than the risk of the condition they may diagnose.

Different Half-Lives of Radioactive Isotopes

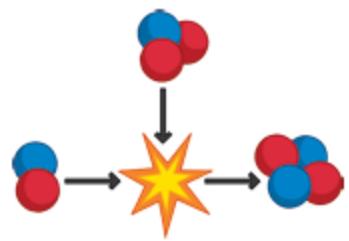
All radioactive isotopes have different half-lives. Some are very short and others are much longer. The uses of these will depend on the half-life. For example, you would use an isotope with a short half-life as a medical tracer so it is not in the body for too long.

Radiotherapy

High doses of radiation can be used to treat cancer. Gamma rays are focused directly onto the cancer cell, killing the cancer cell but not killing too many healthy cells. The damage to the healthy cells that may be close to the cancer can cause the patient to feel ill. However, killing the cancer cell makes it worth it.

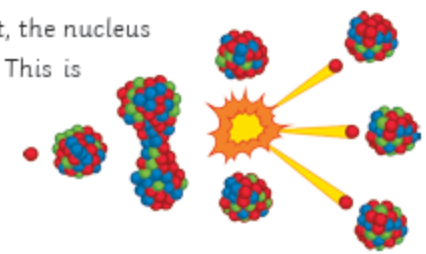
Fusion

Nuclear fusion is the joining together of smaller radioactive nuclei to make a larger atom. Fusion occurs in the sun. This whole process releases a lot of energy, much more than fission. However, a very high temperature and pressure is needed for fusion to occur, so it is not used in the production of energy yet.



Fission

Nuclear fission is the splitting of large radioactive nuclei into smaller ones. A neutron is absorbed by a large unstable radioactive nucleus. Next, the nucleus splits into smaller nuclei. As this happens, more neutrons and energy are released. The neutrons released go on to cause more reactions. This is called a chain reaction.



Fission is carried out in a nuclear reactor in order to generate energy. It is controlled by control rods which, when they are lowered down, slow down the reaction process. When they are raised, the reaction speeds up again. If this process is not controlled, then a nuclear weapon has been produced.

Animal Farm KNOWLEDGE ORGANISER

Context – *Animal Farm* was written by George Orwell in 1945.

George Orwell – George Orwell was the writing name of Eric Blair (1903-1950). He was outspoken in his support of democratic socialism, and spoke out frequently against totalitarianism and social injustice. He wrote a wide range of fiction, poetry, literary criticism and polemical journalism, although without doubt his two most famous works are *Animal Farm* (1945) and *Nineteen Eighty-Four* (1949).

The Russian Revolution – The revolution was the movement that removed the reigning Tsarist autocracy from power and led to the rise of the Soviet Union. The Bolsheviks, led by Vladimir Lenin, were able to overthrow the provisional government and establish their own federal government, creating the world's first socialist republic. Eventually they became reconstituted as the Communist Party.

Nicholas II– Tsar Nicholas II was the last emperor of Russia. Tsar Nicholas was deemed to be a poor ruler – the country lost key battles against Japan and Germany during his reign, costing large military casualties and financial losses. There were also gross inequalities: Nicholas lived in luxury while thousands of unemployed peasants struggled to survive. Tsar Nicholas was eventually overthrown by the Bolsheviks and was executed in July 1917.

Jospeh Stalin –Following the death of Lenin in 1924, Stalin rose to power through discreetly canvassing, manipulating and intimidating others, sidelining other potential leaders such as Victor Trotsky. Under Stalin, the Soviet Union became more autocratic and totalitarian: he oversaw mass repressions, hundreds of thousands of executions and millions of non-combatant deaths. He has hence become known as one of the most significant and vilified figures of the 20th Century.

Karl Marx and Communism– Karl Marx was a German philosopher from the 19th Century, who rejected capitalism. He instead believed in the introduction of a system in which wealth was communal and labour was shared. He believed this would produce a fairer, more stable way of life. Whilst he lived a long time before the Russian Revolution (and in a different country) his theories formed the foundations for what became Communism.

Life in the Communist Soviet Union – The working class in the Soviet Union were supposed to be the country's ruling class under the doctrines from which their socialism was derived, and yet they grew increasingly repressed throughout the progression of the USSR's existence. It is generally accepted that the standard of living decreased, working conditions deteriorated, and personal freedoms were significantly violated.

Main Characters – Consider what Orwell intended through his characterisation of each of the below…

Napoleon – Napoleon is the pig who emerges as the leader of Animal Farm after the rebellion. Napoleon's character is based on Joseph Stalin – the leader of the communist Soviet Union. Napoleon is cunning, treacherous, lazy and selfish. He uses Squealer (propaganda) and the dogs (military force) to exert power over others. He has no real talents, rather he is a corrupt opportunist.	**Snowball** – Snowball is one of the other leading pigs, who challenges Napoleon for leadership of the farm after the rebellion. He represents Leon Trotsky. He is intelligent and passionate, yet he does not resort to the same levels of cunning and manipulation as Napoleon. Despite largely winning the support of the animals on the farm, Snowball is driven from the farm by Napoleon's forces.
Napoleon Quote: "To the prosperity of The Manor Farm!" (10.32)	**Snowball Quote:** "liberty is worth more than ribbons" (2.7)
Boxer– Boxer is a cart-horse, who demonstrates incredible strength, work ethic, and loyalty. He represents those in the working classes who were hugely overworked. Boxer completes the most work on the farm, and is admired by others for his physical accomplishments and mental grit. His downfall is his slow wit, which ensures that he is unable to think for himself and is easily manipulated.	**Squealer –** Squealer represents the Soviet propaganda machine. He is a pig who is an exceptionally gifted and persuasive speaker, and is utilised to spread positivity about Napoleon, and negativity about Napoleon's competition. He uses false statistics to suggest that the farm thrives under Napoleon, and twists the truth to ensure that the pigs retain political and social control.
Boxer Quote: "Napoleon is always right" (5.22)	**Squealer Quote:** "It is for YOUR sake that we … eat those apples." (3.14)
Old Major – Old Major is a prize-winning boar whose vision of a place in which the animals work for themselves serves as the inspiration for the rebellion. He is based on both Karl Marx and Vladimir Lenin, who inspired communism. Old Major is well-respected, articulate, and persuasive. He is a clear leader who the other animals listen to. When he dies, Napoleon and Snowball are left to struggle for control over the animals.	**Benjamin** – Benjamin is a long-lived donkey who refuses to feel enthused by the rebellion. Some say he represents the aged people of Russia, who remained cynical of the revolution. Benjamin is seen by the other animals as a pessimist, however his prediction that life will remain unpleasant regardless of who is in charge proves correct. He is the only animal who appears able to understand the atrocities that are taking place, yet he refuses to openly oppose the pigs.
Old Major Quote: "my message to you, comrades: Rebellion!" (1.11)	**Old Major Quote:** "None of you has ever seen a dead donkey"(5.22)

Themes – A theme is an idea or message that runs throughout a text.

The Corruption of Socialist Ideals – *Animal Farm* is famous for being a stinging critique of the development of Soviet communism. Although Orwell strongly believed in the socialist ideals upon which the revolution was built, he abhorred the ways in which these values had been repeatedly manipulated by those who rose to power. The gradual disintegration of the seven commandments visually depicts this.

Class – *Animal Farm* demonstrates through its allegory the means by which human beings seek to maintain and reestablish class structures. The novella shows how the oppressed who are able to stand united in the face of adversity often generate their own class divisions over time after the enemy is eliminated. This is evident in the slow rise of the pigs to fill the void left by Mr Jones.

Naivety – *Animal Farm* is not only told from the viewpoint of those in power, but also from the viewpoint of those who are oppressed. Orwell makes clear that these types of situations are formed not only because of the strategies of the oppressors, but also the naiveté of the people who do not have the education or the position to know better. For example, Boxer believes everything that he is told.

Religion – An idea of heaven (Sugarcandy Mountain) is promised to the animals by Moses (the raven) at some points throughout *Animal Farm*. Moses is derived from the name of the bible character who brought the word of God to the people. The thought of an evergreen, beautiful afterlife awaiting them drives the animals on to work harder, and so the pigs use Moses to their benefit.

Scene-by-Scene Summary – Alongside key quotations from each scene.

Chapter I	A drunk Mr Jones stumbles to bed, forgetting to lock up his farm buildings. The animals thus convene in the big barn to hear Old Major's speech. He blames their short and miserable lives on man, and incites rebellion. He teaches them a song: Beasts of England.	*Weak or strong, clever or simple, we are all brothers. No animal must ever kill any other animal. All animals are equal.* 
Chapter II	Old Major dies in his sleep, and the other animals prepare for rebellion. The pigs (the cleverest animals) prepare the others, teaching them animalism, which they don't all fully understand. The Rebellion occurs, and Jones is driven from the farm. The farm is renamed 'Animal Farm' and seven commandments are made.	*"Never mind the milk, comrades!" cried Napoleon, placing himself in front of the buckets. "That will be attended to. The harvest is more important.* 
Chapter III	The animals labour in the fields throughout the summer. Boxer works hardest. There is a flag-raising ceremony each Sunday – Snowball and Napoleon often clash. Snowball spends time trying to educate the animals. Napoleon takes a group of puppies to 'educate' in a loft. When it is noted the pigs have been eating the apples and milk, Squealer persuades the animals that it is best.	*Milk and apples (and this has been proved by Science, comrades) contain substances absolutely necessary to the well-being of a pig. We pigs are brain-workers.* 
Chapter IV	The news of Animal Farm has spread to neighbouring farms (through the birds), where animals have begun singing Beasts of England. Jones and other farmers thus launch an attack, however they are easily beaten by the animals. Boxer and Snowball fight heroically and are awarded medals as a result. Only a single sheep is lost, who is given a hero's burial. Snowball tells Boxer not to feel guilt for a human's death.	*"Who will believe that I did not do this on purpose?" "No sentimentality, comrade!" "War is war. The only good human being is a dead one."* 
Chapter V	Mollie is tempted away from the farm by a red-faced man who feeds her. Snowball and Napoleon grow increasingly hostile towards one another. As Snowball announces plans for a new windmill, Napoleon unleashes his dogs, which attack Snowball and chase him off the farm. The animals are anxious about this, but Squealer's passionate defence and the growl of the dogs is enough to assure them that 'Napoleon is always right.'	*"One of them all but closed his jaws on Snowball's tail, but Snowball whisked it free just in time. Then he put on an extra spurt and, with a few inches to spare, slipped through a hole in the hedge and was seen no more."* 
Chapter VI	The animals work at a rapid pace to build the windmill, and their rations are cut. It is announced that the farm is now trading with humans, to the shock of the animals. It begins that the pigs have begun amending the commandments to suit their own interests. A storm destroys the windmill, yet Napoleon blames the destruction on the 'traitor Snowball.'	*"Comrades," he said quietly, "do you know who is responsible for this? Do you know the enemy who has come in the night and overthrown our windmill? SNOWBALL!"* 
Chapter VII	Snowball is blamed for more and more failures, which the humans attribute to planning errors. Hens eggs are now sold, which makes the hens rebel. Napoleon holds a meeting in which several animals are murdered by the dogs for their apparent treasons against the farm. It is revealed 'Beasts of England' may no longer be sung.	*One Sunday morning Squealer announced that the hens, who had just come in to lay again, must surrender their eggs. Napoleon had accepted… a contract for four hundred eggs a week."* 
Chapter VIII	More of the commandments appear to change, but the animals are persuaded that this is not the case. Napoleon has now taken the title of 'Leader' and has multiple other honours. Trading with humans intensifies. A further battle with humans takes place, with the windmill destroyed, several animals killed, and Boxer injured. The pigs begin drinking alcohol.	*"He called the animals together and told them that he had a terrible piece of news to impart. Comrade Napoleon was dying!"* 
Chapter IX	Animal Farm is named a republic and Napoleon unanimously named the president. Moses the raven returns and speaks of Sugarcandy Mountain. Boxer grows frailer and one day collapses. The pigs announce that he will be taken to hospital, but Benjamin reads on the van that he is in fact being taken to a slaughterhouse. Squealer announces that he died at the hospital, and that the van had only just been bought by the hospital.	*"Boxer!" cried Clover in a terrible voice. "Boxer! Get out! Get out quickly! They're taking you to your death!"* 
Chapter X	Years pass by. Many animals die and few can remember the rebellion. Only the pigs seem richer, yet all animals remain proud of being on Animal Farm. The pigs begin walking on two legs. Humans come over for a meeting and commend how hard the pigs make the animals work, for so little rations. The name Animal Farm is returned to 'Manor Farm.' The animals can no longer differentiate between people and pigs.	*"Somehow it seemed as though the farm had grown richer without making the animals themselves any richer…" "All animals are equal, but some animals are more equal than others."* 

The Power of Persuasion		Features of Allegory
Rhetorical Questions	Old Major uses this type of question to make the animals think deeply: *"Now, comrades, what is the nature of this life of ours?"*	**Writer's Values** – The writer normally holds strong political or moral views about a topic, e.g. Orwell didn't like how the Soviet Union had realised communism. 
List of Three	Old Major does this to build an argument: *our lives are miserable, laborious, and short.*	**Surface Level Story** – There must be a literal story that works on a surface level, e.g. The story of the animals taking over a farm and then some of the animals disputing power.
Dishonesty	Squealer uses lies and deception to convince the animals: *Many of us actually dislike milk and apples. I dislike them myself!*	**Symbolic Level Story** – There must also be a deeper, more symbolic meaning to the story, e.g. The Russian Revolution and subsequent duel for authority. 
Repetition	Squealer uses repetition to emphasise points: *Jones would come back! Yes, Jones would come back!*	**Polarising Relationships** – There needs to be oppositional views in the story in order for the reader to reflect on morals e.g. the views of Benjamin vs. the other animals during the revolution.

Knowledge Organiser: Language Paper 1: 19th Century Fiction Reading and Imaginative Writing

Module Overview: You will read a variety of unseen 19th Century fiction texts and will practise comprehension, analysis, evaluation and comparison.

AO1: Identification	**AO2: Analysis**	**AO4: Evaluation**	**AO5/6: Writing and SPaG**
Identify and select key information	Explaining how language / structural devices are used.	Exploring how and why a text is effective.	Use of ideas, language and structure. Accurate and effective SPaG.

Assessment Overview: 1 hour and 45 minutes

Revising Questions 1-4: Unseen 19th century text			**Q5/Q6: Imaginative Writing: Choice of two questions, you will answer one**	
Q1/2: (3) AO1	**Q3: (6 marks)** AO2	**Q4: (15 marks)** AO4	A05 **(24 marks)**	AO6 **(16 marks)**
Find and copy key quotes from the text. 5 minutes	Identify key quotes Analyse language devices Analyse structural choice Analyse word choices 20 minutes	Embed short, concise quotes Link back to key word in question Explain what writer was trying to do and how they've done it Refer to writers' choices 30 minutes	Communicate clearly, effectively and imaginatively, selecting and adapting tone, style and register for different forms, purposes and audiences. Organise information and ideas, using structural and grammatical features to support coherence and cohesion of texts.	Candidates must use a range of vocabulary and sentence structures for clarity, purpose and effect, with accurate spelling and punctuation.

Key Terms:	**Key Vocabulary**	**Story Structure**
Perspective: How the characters view and process what's happening within the story. **Semantic Field:** a group of words that belong together through a similar theme/topic. **Mood:** atmosphere or emotions **Motif:** unifying element can be a repeated image, theme, symbol, character, subject, or detail. **Voice:** Expresses the narrator or author's emotions, attitude, tone and point of view through artful **Tone:** how a piece of writing makes a reader feel towards a subject **Atmosphere:** the mood of a story.	**Plot:** the series of events that make up a story **Setting:** where a story or event takes place. Authors can describe a setting to include geographic location, time, weather, and environment. **Persona**: the person who is understood to be speaking **Genre**: share a certain style, form or content. Protagonist: the main character of a story. **Character**: Are the people, animals, or creatures in a story. Characters can think, feel, or act. **Isolated:** the act of keeping apart from others. **Gothic:** Writing designed to incite fear or to explore the supernatural. **Realism:** Writing to explore the realities of everyday life.	**Exposition:** Sets up the story providing any contextual background the reader needs, but most importantly it contains the inciting moment. This incident sets the story in motion. An incident forces the protagonist to react. It requires resolution, producing narrative tension. **Rising Action:** this is the challenges that the protagonist faces as they attempt to resolve the inciting incident **Climax:** This is the turning point of the story. It is the point of the highest tension. **Falling Actions**: The falling action is that part of the story in which you're moving away from the climax and heading to the conclusion. **Denouement:** This is the resolution of the story where conflicts are resolved and loose ends tied up.

<table>
<tr><th colspan="2">Structure Devices</th><th>Word Classes</th></tr>
<tr>
<td>Order of ideas: Thinking about what the writer started/finished with; why they saved something until last or shared it early on.
Paragraph length: Is it particularly long/short?
Sentence length: As above.
Simple sentence: A sentence with only one subject and one verb: The cat sat on the chair.
Compound sentence: Two main clauses joined with a connective that both make sense independently: The cat sat on the chair and the man sat on the floor.
Complex sentence: A sentence with a main clause and a subordinate clause: The cat, who was spoilt, sat on the chair whilst the man sat on the floor.</td>
<td>Imperative sentence: A command or instruction
Interrogative sentence: A legitimate question
Declarative sentence: A simple statement
Exclamatory sentence: An exclamation to show anger/shock/excitement
Punctuation: Consider how these devices have been used
Juxtaposition: Two opposite ideas used close by one another
Repetition: Using the same words, phrase or ideas more than once
Main Clause: The main part of a sentence; makes sense on its own.
Subordinate Clause: A clause which does not make sense on its own.</td>
<td>Noun: Name of person, place, thing
Adjective: Describes noun
Determiner: Gives information about the noun: the/a/every/some
Abstract Noun: An idea/concept love/anger
Concrete Noun: Something you can touch/hold
Verb: Doing word
Adverb: Describes verb
Modal Verb: Gives information about the verb: should/could/might
Imperative Verb: A command
Pronoun: In place of noun I/he/it/they
Preposition: Tells you where something is on/over/under
Conjunction: A connective and/or/but/although
Superlative: The most extreme version tallest/smallest</td>
</tr>
<tr><th colspan="3">Figurative Language Devices</th></tr>
<tr><td colspan="3">Alliteration: Repeated letter/sound
Triple emphasis: List of three words / sentence structures to create imagery
Imagery: Description which creates a clear picture
Hyperbole: Exaggeration of an image
Oxymoron: Two opposite words used side-by-side to describe one thing
Metaphor: A comparison without ‘like’ or ‘as’ – saying something is something else
Simile: A comparison with ‘like’ or ‘as’
Semantic Field: A range of vocabulary which all shares a similar theme.
Personification: Giving something inanimate human qualities
Onomatopoeia: A word to reflect a sound pop/bang/crash
Idiom: Non-literal phrase we recognise: raining cats and dogs
Euphemism: Polite way of saying something: the man had passed away
Litotes: Play down something negative: My dog is not the friendliest</td></tr>
</table>

Year 10/11 Knowledge Organiser

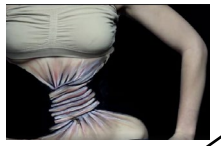
MESSAGES

- A significant political, social, or moral point that is being conveyed by a film, speech, artwork, etc.
- A form of communication.

Themes

-Society: Protests, Racism, Culture, Inequality, Mental Health, Peer Pressure, Religion, Feminism.

-Political: Propaganda, Movements: "Black Lives Matter" "Me Too", Poverty, Government, Unrest.



-Appearance: Beauty, Social Media platforms, Body Image, Unrealistic, Filters.

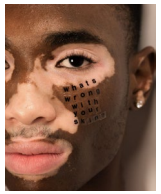
-Stereotypes: Judgement, Language, Education, Standards, Bias.

-Environmental: Animal Cruelty, Global Warming, Pollution, Extinction Rebellion.

Artists

-Kirsty Latoya: A digital artist who creates work based on mental health.

-Dominic Beleyer: Artist known for 'Nobody' series where he writes on top of portraits.



-Peter Devito: Photographer who uses his camera to advocate for issues such as body positivity and LGBTQ+ rights.

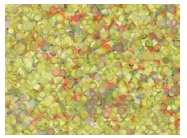
-Teesha Moore: Colourful mixed media artist who combines words with portraits.

-Barbara Kruger: Feminist artist known for collaged messages on top of photography.

-Chris Jordan: Environmental artist who creates work from recycled materials such as bottle caps.

-Christopher Wool: Conceptual artist who creates paintings and prints of confrontational words/phrases.

-Banksy: Notable graffiti artist who creates politically motivated pieces.



Year 11 Knowledge Organiser

Concealment

Definition:

Hiding something, or preventing it from being known.

Themes:

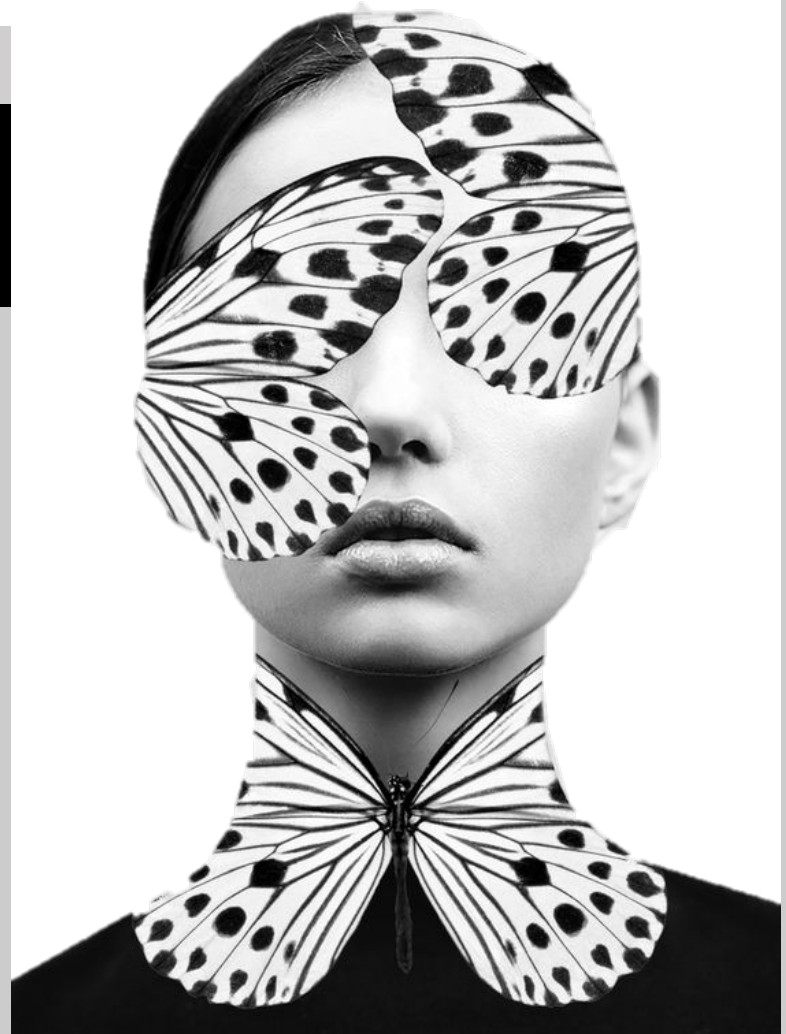
-Covering: Camouflage, Wrapping, Protecting.

-Obliteration: Erasure, Disappearance, Forgotten.

-Hiding: Mystery, Refuge, Out of sight.

-Mask: Veil, Shroud, COVID19, Costume.

-Disguise: Anonymity, Change, Obscure, Secrecy.



Artists:

-John Yuyi: Yuyi is known for her series of work where she created temporary tattoos of social media symbols, covering human faces with them.

-Andy Butler: Butler draws portraits which are based on the concept of fragmentation.

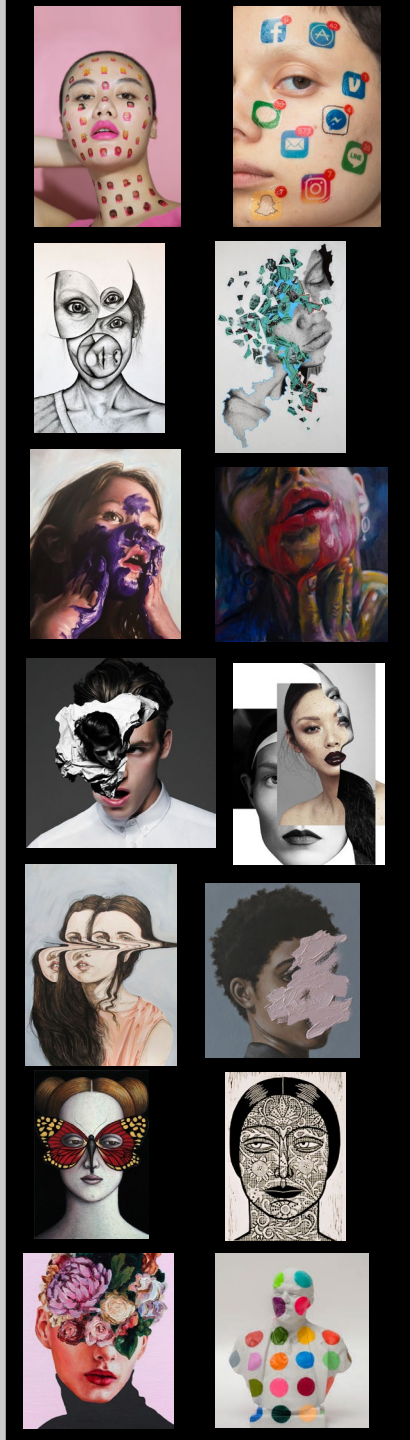
-Emma Leone Palmer: Palmer is a painter who explores the complexity of the human mind; she is known for her 'Paint Play' series.

-Pablo Thecuadro: Thecuadro is a collage artist who explores the difference between who we really are, and who we want to be.

-Henrietta Harris: Harris shows a complex understanding of the human condition through her paintings, distorting faces in her portraits.

-Deborah Klein: Klein's work depicts female subjects who each wear a mask of a butterfly or moth.

-Oleksandr Balbyshev: Through his paintings, Balbyshev aims to conceal elements of the human figure to depict different realities.

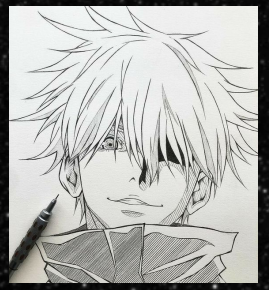


FANTASY

Themes –

- Medieval
- Anime/Manga
- Surrealism
- Space
- Creatures
- Dreams
- Imaginary worlds
- Gothic animation
- Apocalypse
- Magic/Supernatural
- Myths and fairies
- Comics




- The activity of imagining impossible things.
- Fantasy is something imaginary, often set in strange places with unusual characters and the use of magic.
- It could be a pleasant but unlikely situation that you enjoy thinking about, such as a dream.

Artists

- Jim Kay: Illustrator known for Harry Potter drawings.

- Todd Lockwood: Specialises in science fiction illustration.

- James Chadderton: Local artist who depicts an apocalyptic Manchester.

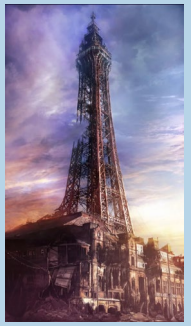
- Animation studios such as **Pixar** and **LAIKA:** Created films such as Coraline and Monsters Inc.

- Film directors such as **Tim Burton:** Known for gothic fantasy and horror films.

- Salvador Dali and **Rene Magritte:** Surrealist artists who question reality.

- Frank Frazetta: Well-known fantasy artist who created lots of comic books.

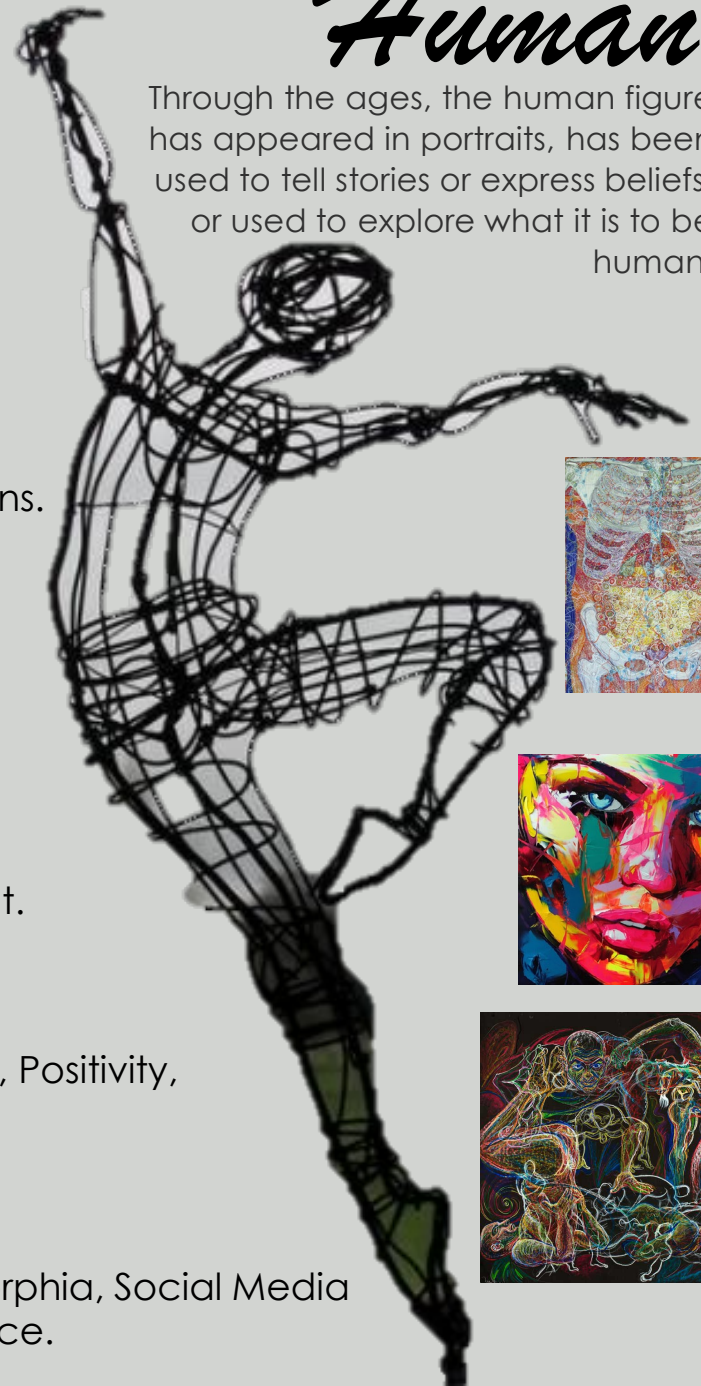
- Kylie InGold: Known for paintings of fairies.

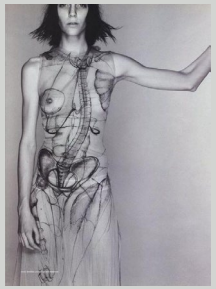



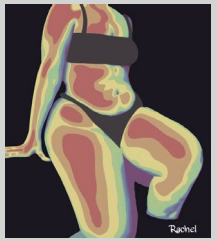

Year 11 Knowledge Organiser

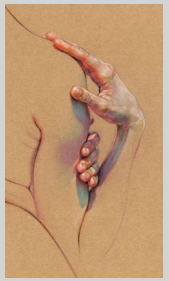
Human Figure

Through the ages, the human figure has appeared in portraits, has been used to tell stories or express beliefs, or used to explore what it is to be human.









Themes:

Anatomy: Skeleton, Muscles, Figurative, Perspective.

Flesh: Skin Tones, Curves, Imperfections.

Portraiture: Self-portraits, Identity, Emotions.

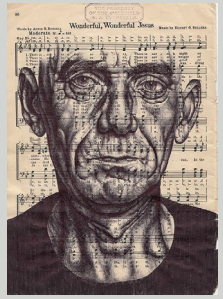
Pattern: Repetition, movement, abstract.

Beauty: Inner, Outer, Positivity, Natural, Debate.

Body Image: Dysmorphia, Social Media pressure, Appearance.

- **Hadar Sobol:** A textile artist who creates feminist works of the human body.

- **Jenny Saville:** A painter who is best known for her large-scale oil paintings of fleshy, obese female figures.



- **Monica Aissa Martinez:** Painter who creates richly detailed images of the human anatomy.

- **Mark Powell:** Powell creates intricate portraits using biro pens on collaged material such as envelopes.

- **Francoise Nielly:** A portrait painter who uses a knife to paint with.

- **Helena Almeida:** Photographer and painter who uses her body as her art.

- **Fred Hatt:** Hatt produces colourful portraits with feelings of movement, rhythm and feeling.

- **Rosanna Jones:** Mixed-media artist known for her 'Skin' project, which focuses on insecurities of the body.

Year 10 HT5 Drama Knowledge Organiser

Summary of topic

They must understand the GCSE requirements of the devising plays unit and understand what constitutes successful devised work

Aims of the topic

To use given stimuli to create and develop a devised piece of theatre

Devising Plays Knowledge Organiser

Y10 GCSE

Devising Rules

- Every actor should have a monologue that is at least 90 seconds long and everyone should have an equal part.
- Divide the work up evenly – script writing (everyone write/plan their own scene), sourcing costume, planning technical theatre (staging, music, lights)
- Help each other out – but only when your own work is done. Even though this is a group project, you still get marked individually.
- Find an idea that every person is happy with and don't rule anything out.
- Try to get it on its feet early – the best ideas come from when you try to act something out, not sit there discussing it.

'It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of Light, it was the season of Darkness, it was the spring of hope, it was the winter of despair.'
Charles Dickens, A Tale of Two Cities
2. 'Best Day of my Life' – American Authors
3. *'We realise the importance of our voices only when we are silenced'* – Malala Yousafzai
4. https://images.app.goo.gl/Kxp2XA2HGPooKVPH7

Assessment & Rehearsal Tips

- **You will be offered 4 pieces of stimuli given to us by the exam board. 1 song, 1 quote, 1 phrase and 1 picture.**
- **In your given groups, you will generate ideas for each stimuli**
- **You will then decide on a stimuli and an idea. Then you will decide on a practitioner to use for your idea**
- **In your groups you will create a piece of drama around your idea, linked to the stimuli and using practitioner techniques**
- **Try everything – even if something doesn't work, you may discover something useful.**

Skills & Definitions

Ensemble – Collaborated group performance.
Characterisation – The creating, development and performance of a created character.
Improvisation – Spontaneous acting and suggestions that further develop a performance.
Devised – Original created performance material, often using a stimulus.
Stimuli – The starting point set by exam board e.g. picture, quote, word or song. You chose one.
Practitioner – Brecht or Artaud and how they influenced the performance.
Brecht – Famous for Political and Epic Theatre. (See practitioner knowledge organiser). Made the audience think and bring real change.
Artaud – Famous for Theatre of Cruelty (See practitioner knowledge organiser). Made the audience feel uncomfortable.
Genre – Physical theatre is NOT a practitioner, it is a STYLE of drama focused upon storytelling using movement.
Techniques – The key skills which are relevant to the practitioner or genre (see practitioner knowledge organiser).
Final performance – The end performance of the piece.
Rehearsal – The process of creating and developing your piece of theatre
Monologue – A one person speech in character. Often around 2 minutes in length.

Level 1/2 Hospitality and Catering: Unit 1: Contributing factors to the success of hospitality and catering provision (AC1.4)

Contributing factors
The hospitality and catering sector is very competitive, and many businesses fail in the first year of operation. There are many factors that must be managed carefully for hospitality and catering businesses to make a profit and continue to operate in the long term.

Basic costs

Labour: These costs include employee wages, National Insurance contributions and pension contributions.

Material: These costs include decoration, furnishings, kitchen and dining equipment, ingredients, printing and health and safety equipment.

Overheads: These costs include rent, rates, gas and electricity, insurance, licensing, training and maintenance.

Economy

The value of the pound (**£**) can affect the hospitality and catering sector. If the economy is good, people will be willing to spend more. If the economy is weak (recession), people may decide that eating out or going on holiday is a luxury and will spend less.

VAT (Value Added Tax) is added to the final cost of goods and services offered in the hospitality and catering sector. The money from VAT goes to the government to pay for services everyone uses for example the NHS.

Environmental impact

Running a hospitality or catering provision uses a lot of resources. Businesses are encouraged to **reduce, reuse**, and **recycle**. Energy efficient equipment such as low energy light bulbs can save a business money. Using local and seasonal ingredients reduces the amount of CO_2 released into the atmosphere during transport. All waste should be separated and recycled or composted when possible.

Profit

Gross Profit: The difference between how much a menu item costs to make and how much it sells for. Ingredient costs should not be more than 30% of the gross profit. If the ingredient cost for a chocolate brownie dessert is £1.50 and the menu price is £4.50, the gross profit is £3.00.

Gross Profit % = (3.00 ÷ 4.50) x 100 = 66.6%

Net Profit = What is left from the gross profit once all costs (as listed above) are covered.

New technology

New technologies have benefitted the sector in positive ways. These include:

- **cashless systems** such as contactless cards and mobile payment apps
- **digital systems** such as online booking/ordering and key cards
- **office software** such as stock ordering systems.

Media

The hospitality and catering sector is very competitive, so most businesses try to make good use of the media to advertise. Most businesses will have their own **website**, which customers can use to view menus and make bookings.

- **Print Media:** Ads in magazines and newspapers, flyers and money-off vouchers.
- **Broadcast media:** Television, radio and online ads.
- **Social media:** Customer feedback and reviews.

Consumers are increasingly using smartphones to book, order, pay and review.

Level 1/2 Hospitality and Catering: Unit 1-1.1.1 - Standards and ratings

Standards and ratings: You will need to be able to know the importance of standards and ratings within the hospitality and catering industry, they are hotel and guest house standards, and restaurant standards.

Hotel and guest house standards

Hotels and guest houses standards are awarded and given star ratings. You should know what criteria is needed to be met for an establishment to receive each star rating.

Star rating 1 = Basic and acceptable accommodation and facilities. Simple rooms with no room service offered.

Star rating 2 = Average accommodation and facilities, a small establishment, and would not offer room service or have a restaurant.

Star rating 3 = Good accommodation and facilities. One restaurant in the establishment, room service available between certain hours, and Wi-Fi in selected areas are provided. The establishment could have a pool and gym.

Star rating 4 = Very good accommodation and facilities. Large hotel & reception area of a very good standard. Certain hours of room service, with a swimming pool and valet parking offered.

Star rating 5 = Excellent standard of accommodation, facilities, and cuisine. Offer valet parking, 24 hr room service, spa, swimming pool, gym, and concierge service.

Restaurant standards

Restaurant standards have three main possible awards or ratings that you should know. They are listed below:

AA Rosette award

Ratings between one and five rosettes could be awarded based on the following:

- different types and variety of foods offered
- quality of the ingredients used
- where the ingredients are sourced
- how the food is cooked, presented and tastes
- skill level and techniques used as well as the creativity of the chef.

https://www.stirkhouse.co.uk/about-us/awards/attachment/award-rosette

Michelin star

A rating between one and three Michelin stars could be awarded based on the following:

- quality of ingredients used
- cooking and presentation techniques
- taste of the dishes
- standard of the cuisine
- value for money.

https://guide.michelin.com/us/en/california/to-the-stars-and-beyond

Good food guide

A rating between one and 10 could be awarded based on the following:

- cooking skills
- quality of ingredients
- techninques and cooking skills shown.

Level 1/2 Hospitality and Catering Knowledge Organiser: Unit 1: 1.1.1 -
Types of Hospitality and catering provisions

Hospitality and catering providers
You must understand, be able to name, and explain the two different provisions in hospitality and catering.
Commercial: the business aims to **make profit** from the hospitality and catering provision that they provide.
Non-commercial: the service provider **doesn't aim** to make a profit from the service they provide.

Commercial (residential)

Commercial (residential): meaning the hospitality and catering provision aims to create a profit from the service they provide, but also offers accommodation.

For example:
- hotels, motels & hostels
- B&B, guest houses and Airbnb
- holiday parks, lodges, pods, and cabins
- campsites and caravan parks.

Non-commercial (residential)

Non-commercial (residential): the hospitality and catering provision offers accommodation but does not aim to make a profit from the service they provide.

For example:
- hospitals, hospices, and care homes
- armed forces
- prisons
- boarding schools, colleges, and university residences.

Commercial (non-residential)

Commercial (non-residential): catering establishments that aim to make a profit from their service, but no accommodation is provided.

For example:
- restaurants and bistros
- cafes, tea rooms and coffee shops
- takeaways
- fast food outlets
- public houses and bars
- airlines, cruise ships, long distance trains
- pop up restaurants
- food and drink provided by stadiums, concert halls and tourist attractions
- mobile food vans and street food trucks
- vending machines.

Non-commercial (non-residential)

Non-commercial (non-residential): catering establishments with no accommodation provided and don't aim to make a profit from their service.

For example:
- schools, colleges, and universities
- meals on wheels
- canteen in working establishments (subsidised)
- charity run food providers.

Level 1/2 Hospitality and Catering: Unit 1-1.1.1 -
Types of service in commercial and non-commercial provisions

Types of service in commercial and non-commercial provision
You need to be able to understand and know the different types of service within commercial and non-commercial provision. They are split into two main categories of food service and residential service.

Food service

The different types of food services in the catering sector are listed below. You should know the meaning of each one and be able to provide examples. For instance;

Table service
- Plate: the food is put on plates in the kitchen and served by waiting staff. Good portion control and food presentation consistent.
- Silver: a waiter will transfer food from a serving dish to the customer's plate using a silver spoon and fork at their table.
- Banquet: a range of foods suitable for large catered events such as weddings, parties, or award ceremonies.
- Family style: the food is placed on serving bowls on the customer's table for customers to share between them.
- Gueridon: is served from a trolley to the customer's table, the food is then cooked and/or finished and presented in front of the customer. Creates an atmosphere of sophistication and entertainment.

Counter service
- Cafeteria: all types of food and drink are shown on a long counter for customers to move along with a tray for them to choose what they want to eat.
- Fast food: the food and drink is displayed on a menu behind the counter, often with pictures. Quick, simple, and usually served with disposable packaging.
- Buffet: a range of foods served on a big serving table where customers walk up to collect their plate and help themselves to food and drink. The food can be hot or cold, and some items could be served by waiting staff.

Personal service
- Tray or trolley: the meals are served on trays from a trolley and customers sometimes order items in advance.
- Home delivery: the customer's order is made over the phone or online, and is then delivered by the business to their address.
- Takeaway: food that's cooked by the business onsite and then eaten elsewhere.

Residential service

Listed below are the different types of residential types of service in the hospitality and catering sector. You should know the different types of service offered in various hospitality provisions.

Rooms:
- single/ double/ king/ family
- suite (en-suite bath/ shower room, shared facilities).

Refreshments:
- breakfast/ lunch/ evening meal
- 24-hour room service/ restaurant available.

Leisure facilities:
- spa
- gym
- swimming pool.

Conference and function facilities:
- large rooms
- overhead projector and computer
- pens and paper provided
- refreshments available.

Level 1/2 Hospitality and Catering – Unit 1-1.1.2:
Personal attributes, qualifications and experience

You need to be able to know and understand the different personal attributes, qualifications and experience that an employer would look for to fulfil different job roles in the hospitality and catering industry.

Personal attributes

The list below names the different personal attributes that employees could need to fulfil different jobs in the industry:

- Team player
- Organised
- Flexible
- Good communicator
- Friendly
- Calm under pressure
- Willingness to learn and develop
- Pleasant
- Hygienic
- Punctual
- Hardworking
- Reliable
- Approachable
- Good listener
- Leadership qualities
- Sense of humour
- Ability to be proactive
- Good attention to detail
- High standard of personal appearance.

Qualifications

Apprenticeships and experience in the role or sector are two ways to fulfil certain job roles. Named below are some of the qualifications that could be required to fulfil certain jobs within the hospitality and catering sector.

Hospitality sector

- Level 1 Certificate in Business and Administration (office administration).
- Level 2 Certificate in Front of House Reception (hospitality and catering).
- Level 2 Diploma in Reception Operation and Services (hospitality and catering).
- GCSE English / Maths / Hospitality and Catering / Business / IT.

Catering sector

- Diploma in Catering.
- NVQ Food preparation and cooking.
- Bachelor's degree/catering management.
- City & Guilds diplomas in professional cookery.
- BTEC HND in professional cookery.
- A foundation degree in culinary arts.
- Health and safety and food hygiene certificates/food hygiene.
- Level 1/2 hospitality and catering.
- GCSE Food and Nutrition.
- Level 3 Food Science and Nutrition.
- First aid.

Level 1/2 Hospitality and Catering: Unit 1-1.1.2 -
Types of employment roles and responsibilities within the industry

Types of employment roles and responsibilities within the industry
There are four main areas within the industry that you should know the roles and responsibilities within. They are listed below:

Front of house

- Front of house manager: oversees all staff at the restaurant, provides training, hiring of staff, and ensures good customer service.
- Head waiter: oversees the waiting staff of the restaurant in high-end eating establishments.
- Waiting staff: greets customers, shows them their table, takes food and drink orders from customers, and serves them their order. Makes sure customers' needs are met, and that the food order is made correctly.
- Concierge: advises and helps customers with trips and tourist attractions. Books taxis for customers and parks customer cars.
- Receptionist: takes bookings, deals with questions and complaints from customers, checks-in customers, takes payment, and provides room keys.
- Maître d'hôte: oversees the service of food and drinks to customers. They greet customers, check bookings, reservations, and supervise waiting staff.

Kitchen brigade

- Executive chef: in charge or the whole kitchen, developing menus and overlooking the rest of the staff.
- Sous-Chef: the deputy in the kitchen and is in charge when the executive chef isn't available.
- Chef de partie: in charge of a specific area in the kitchen.
- Commis chef: learning different skills in all areas of the kitchen. Helps every chef in the kitchen.
- Pastry chef: prepares all desserts, pastry dishes and bakes.
- Kitchen assistant: helps with the peeling, chopping, washing, cutting of ingredients, and helps washing dishes and stored correctly.
- Apprentice: an individual in training in the kitchen and helps a chef prepare and cook dishes.
- Kitchen porter/ plongeur: washes the dishes and other cleaning duties.

Housekeeping

- Chambermaid: cleans guests' rooms when they leave, and restocks products that have been used, they also provide new bedding and towels.
- Cleaner: cleans hallways and the public areas of the establishment.
- Maintenance: repairs and maintains the establishment's machines and equipment, such as heating and air conditioning. These responsibilities could also include painting, flooring repair or electrical repair.
- Caretaker: carries out the day to day maintenance of the establishment.

Management

- Food and beverage: responsible for the provision of food and drink in the establishment which will include breakfast, lunch, dinner, and conferences.
- Housekeeping: ensuring laundering of bed linen & towels, ordering of cleaning products and overseeing housekeeping staff duties.
- Marketing: promotes events and offers to increase custom at the establishment, and is responsible for the revenue of the business.

Level 1/2 Hospitality and Catering: Unit 1-1.1.3 -
Working conditions in the hospitality and catering industry

Types of employment contracts and working hours

You need to know the following types of employment contacts and working hours.

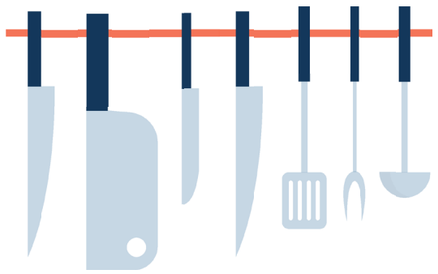
- **Casual:** this type of contact could be provided through an agency and used to cover employees that are absent from work due to illness. There is no sick pay or holiday entitlement with this type of employment.

- **Full time (permanent):** working hours including start and finishing times are fixed and stated in this type of contract. A contact of this nature allows the employee to have sick pay and holiday entitlement.

- **Part-time (permanent):** working hours mean that the employee works on certain days of the week. Work times are stated in the contract, including the starting and finishing times that are fixed in this type of contract. The employee has sick pay and holiday entitlement in this type of contact.

- **Seasonal:** this type of contract is used when a business needs more staff due to busy times throughout the year, such as the Christmas period. The contract will state for the employee to work for a specific time frame only. Also, the contract would not expect further or regular work after the contact is complete.

- **Zero hours contract:** this type of contact is chosen between the employer and the employee. This means that the employee can sign an agreement to be available for work when the employer needs staff. No number of days or hours is stated in the contract and the employer doesn't require to ask the employee to work, and neither does the employee have to accept the work offered. No sick pay or holiday entitlement is offered for this type of contract.



Pay and benefits in the industry

The following pay and benefits are what you should be aware of in the industry.

- **A salary:** this type of pay is a fixed amount of money paid by the employer monthly, but is often shown as an annual sum on the contract.
- **Holiday entitlement:** employees are entitled to 28 days paid a year. Part-time contracts are entitled less depending to their contract hours.
- **Pension:** on retirement age, an employee qualifies for a pension contribution by the employer and the government.
- **Sickness pay:** money paid to the employee with certain contracts when they are unable to go to work due to illness.
- **Rates of pay:** national minimum wage should lawfully be offered to all employees over 18 years of age. This rate is per hour and is reviewed each year by the government.
- **Tips:** money given to an employee as a 'thank you' reward for good service from the customer.
- **Bonus and rewards:** given from an employer to the employee as a way of rewarding all the hard work shown from the employee throughout the year, and helping make the business a success. Also known as remuneration.

Working hours

The working hours directive in the UK states that employees on average cannot work more than 48 hours which is worked out over a period of 17 weeks. Employees can choose not to follow this and work more hours if they want to.

People under the age of 18 cannot work more than eight hours a day and 40 hours a week.

Employees that work six hours or more a day must have a break of 20 minutes, and have the right to have at least one day off every week.

Level 1/2 Hospitality and Catering – Unit 1-1.1.4:
Positive and negative uses of media

You need to be able to know and understand the different types of media, as well as the positive and negative impacts they can have on the hospitality and catering industry.

Different types of media

The list below names the different types of media that can be used to promote the hospitality and catering industry.

- **Printed media:** Different types of printed media can include:
  - ◊ magazines
  - ◊ newspapers
  - ◊ billboards
  - ◊ business cards
  - ◊ posters.

- **Broadcast:** Different types of broadcasting media include:
  - ◊ television
  - ◊ radio.

- **Internet:** Ways of promoting through the internet include:
  - ◊ social media, e.g. Facebook, Instagram, Twitter, etc.
  - ◊ Websites, e.g. TripAdvisor
  - ◊ ads on podcasts
  - ◊ blogs
  - ◊ email.

- **Competitive:** This could include being competitive with other establishments to attract and retain customers through competitions, deals, special offers and themed events.

Positive and negative uses of media

Named below are some of the positives and negative impacts the media can have on the hospitality and catering sector.

Positive impacts:

- Social media is free and isn't an extra cost for the business.
- Able to contact a larger and wider audience quickly.
- Attracts new customers.
- Builds business awareness.
- Customers can feel more of a personal connection with the business.
- Creates and builds customer loyalty.
- Media can target specific groups easily.

Negative impacts:

- Advertising in media is expensive, e.g. printed media and broadcasting.
- Having a bad or negative review/comment on social media can rapidly decrease the reputation of a business, e.g. through a comment retweet or share.
- Rapid spread of negative reviews, comments and/or feedback can be detrimental to the success of a business, leading the business potentially having to close.
- Having a bad reputation would decrease customer loyalty and less likely to attract new customers.

Level 1/2 Hospitality and Catering: Unit 1: 1.2.2 Customer requirements in hospitality and catering

Customer needs

Customers can be divided into three groups:

- Business customers
- Leisure customers
- Local residents

Customer needs may include catering, equipment and/or accommodation.

Customer needs: Local residents

Local residents may use the facilities hospitality and catering provisions offer without using overnight accommodation. Examples include restaurants, bars, spas, and golf courses.

Hospitality and catering businesses will want to ensure that noise and parking issues are addressed if the provision is in a residential area.

Customer needs: Customer rights and inclusion

By law, hospitality and catering provision must provide for customer rights, inclusion and disabilities. No business can discriminate against a person because of:

- Age
- Disability
- Sexual orientation
- Ethnicity
- Gender
- Race and culture
- Pregnancy and maternity

Customer needs: Business customers

These customers use hospitality and catering provisions for work purposes. Examples include conferences, meetings, and training.

Catering:

- tea, coffee and food facilities for meetings
- early breakfast
- 24-hour room service.

Conference facilities:

- whiteboards, projectors, screens, flip charts, pens and notepaper, free Wi-Fi
- parking.

Accommodation:

- a quiet floor to work
- express check-in and check-out
- iron and ironing board or trouser press
- access to leisure facilities
- discount/loyalty points.

Customer needs: Leisure customers

These customers use hospitality and catering provisions for holidays, sight-seeing, travelling or when attending sporting and theatrical events.

The needs of leisure customers vary depending on their reason for travel. Some customers will want basic accommodation with value for money and some customers will look for a luxury experience.

Catering:

- drinks facilities in room
- snack/mini bar
- breakfast: included or at extra cost
- room service
- restaurant
- bar
- special dietary needs and children's menu options.

Accommodation:

- different room sizes
- disability access
- en-suite facilities
- free Wi-Fi
- concierge service
- cots
- extra pillows and bedding
- toiletries.

Level 1/2 Hospitality and Catering: Unit 1: 1.2.3 Hospitality and catering provision to meet specific requirements

Successful hospitality and catering provisions change to meet their customers' needs and expectations. Customer needs can change depending on their lifestyle, dietary requirements and income. Customers have an expectation that a hospitality and catering provision will keep up with current trends. An example is mobile apps which can be used for everything from booking a room to ordering and paying for food.

Customer requirements/needs

Understanding customer needs and requirements helps hospitality and catering provisions to attract more customers and make more profit.

Lifestyle: Successful hospitality and catering provisions analyse the needs of their customers based on their lifestyles, budgets, eating patterns, and interests such as sports and hobbies.

Nutritional needs: Successful hospitality and catering provisions will offer a range of dishes to suit the nutritional needs of their customers. Many menus will include nutritional information available to help their customers make informed choices.

Dietary needs: Most menus will offer a range of dishes to suit special dietary needs such as coeliac disease. Most menus will include vegetarian and vegan options as well as children's menus.

Time available: Some customers will want fast food, and some will prefer a leisurely meal.

Customer expectations

Customers will visit a range of hospitality and catering provisions, from fast food to fine dining, with expectations of an enjoyable experience.

Service: Customers will expect polite efficient service regardless of the type of provision they are visiting.

Value for money: Customers will expect meals that are nutritious, filling and sold at the right price for the type of provision they are visiting.

Trends: Customers will expect hospitality and catering provisions to keep up with trends such as mobile ordering apps.

Awareness of competition from other providers: Customers will expect hospitality and catering provisions to adapt their menus to attract new customers.

Media influence/interest: Customers will expect hospitality and catering provisions to match reviews.

Environmental concerns: Customers will expect eco-friendly hospitality and catering provisions.

Seasonality: Customers will expect dishes made with seasonal, local ingredients.

Customer demographics

Successful hospitality and catering provisions conduct marketing research by asking questions to find out the requirements, needs and expectations of potential customers. The information is used by the provision to create a USP (unique selling point).

Age: Do potential customers want fast food or a luxury experience? Do they need child-friendly facilities?

Location: Is your provision located in a residential area? On a high street? In a business area?

Accessibility: Is there parking? Is it accessible to people with mobility issues?

Money available: Do potential customers have a large amount of disposable income? Are they on a tight budget?

Access to establishments/provisions: Are they competing with similar provisions? Is there limited competition in the area?

Level 1/2 Hospitality and Catering – Unit 1-1.3.1:
Safety documents in hospitality and catering

Different documentation is required to be completed for potential health and safety risks and hazards to be avoided within the hospitality and catering industry. Accident forms and risk assessments are explained below, stating their importance and how to complete each document.

Accident forms

If an accident happens, it is vital that an accident form is completed correctly to develop control measures for potential risks and to avoid them from happening again. It should be reviewed and used to manage any health and safety risk. It is law to complete an accident form for accidents in the workplace. Below is an example of an accident form and how it should be completed.

Accident form	
Name of person in accident:	Date:
Description of accident & injury:	Description should include as many details as possible about what happened and how, e.g. slipped/fallen on oil spillage and broken arm as a result.
What was the hazard?	Named hazards could be spillage/liquid on floor or broken handrail, etc.
How could this accident have been prevented?	Suggested prevention could include: • correct storage • ensuring all staff had health and safety training • relevant health and safety posters visible in the workplace • correct usage of wet floor signs and clear spillages immediately.
Further action:	Points could include: • investigating the accident further • completing/updating risk assessment • reviewing storage of products • first aid that has been given to be logged • correct PPE to be worn, e.g. anti-slip footwear.
Signed:	

Risk assessment

A risk assessment should be completed and reviewed frequently for the document to be kept up to date. New risks should have control measures to reduce the risk of happening or not happen at all. Within the document hazards need to be identified, likelihood of the risk happening is stated and the control measure of how to avoid or reduce the risk is noted. Below are definitions of the main key words and an example of a risk assessment document.

Hazard: An object or something that can physically harm someone or cause harm to someone's health.
Level of risk: The likelihood of the hazard happening and being harmed or causing injury. Level of risks named could be low, medium or high.
Control measure: Steps or action taken to avoid or reduce the hazard from happening and causing injury.

Risk assessment			
Assessment carried out by:		Date of assessment:	Date of next review:
What are the hazards?	Level of risk	Control measure	Who needs to carry out action?
Examples could include, slips, trips, falls, burns from oven, electric shocks, etc.	**Low / medium / high** If it is a low risk, then the hazard is less likely to cause injury or harm compared to a high risk.	Examples could include providing training and PPE for employees, having appropriate safety posters and signs, e.g. wet floor signs.	Named employer and/or employees to reduce the hazard from happening.

Remember: Employers are responsible for the health and safety training needs of all staff.

Level 1/2 Hospitality and Catering: Unit 1-1.3.1 -
Health and safety in hospitality and catering provisions

Control of Substances Hazardous to Health Regulations (COSHH) 2022

What employers need to do by law	What paid employees need to do
Control substances that are dangerous to health.	Attend all training sessions regarding COSHH.
Provide correct storage for those substances and appropriate training for staff.	Follow instructions carefully when using the substances.
Some examples of substances that are dangerous to health include cleaning products, gases, powders & dust, fumes, vapours of cleaning products and biological agents.	Know the different types of symbols used to know different types of substances and how they can harm users and others when used incorrectly.

Health and Satefy at Work Act 1974 (HASAWA)

What employers need to do by law	What paid employees need to do
Protect the health, wellbeing and safety of employees, customers and others.	Take reasonable care of their own health and safety and the health and safety of others.
Review and assess the risks that could cause injuries.	Follow instructions from the employer and inform them of any faulty equipment.
Provide training for workers to deal with the risks.	Attend health and safety training sessions.
Inform staff of the risks in the workplace.	Not to misuse equipment.

Personal Protective Equipment at Work Regulations (PPER) 1992

What employers need to do by law	What paid employees need to do
Provide PPE e.g. masks, hats, glasses and protective clothes.	Attend training and wear PPE such as chef's jacket, protective footwear and gloves when using cleaning chemicals.
Provide signs to remind employees to wear PPE.	
Provide quality PPE and ensure that it is stored correctly.	

Report of Injuries, Diseases and Dangerous Occurences Regulations (RIDDOR) 2013

What employers need to do by law	What paid employees need to do
Inform the Health and Safety Executive (HSE) of any accidents, dangerous events, injuries or diseases that happen in the workplace.	Report any concerns of health and safety matters to the employer immediately. If nothing is resolved, then inform the HSE.
Keep a record of any injuries, dangerous events or diseases that happen in the workplace.	Record any injury in the accident report book.

Manual Handling Operations Regulations 1992

What employers need to do by law	What paid employees need to do
Provide training for staff.	Ask for help if needed.
Assess and review any lifting and carrying activities that cannot be avoided.	Squat with feet either side of the item. Keep back straight as you start to lift. Keep the item close to your body whilst walking. Make sure you can see where you're going.
Store heavy equipment on the floor or on low shelves.	
Provide lifting and carrying equipment where possible.	

Risks to health and security including the level of risk (low, medium, high) in relation to employers, employees, suppliers and customers

Review and assess level of risks in the workplace e.g. slips, trips, falls, burns etc by completing a risk assessment to avoid from happening.

Level 1/2 Hospitality and Catering: Unit 1-1.3.2 -
Food safety

Hazard Analysis and Critical Control Points (HACCP)

Every food business lawfully needs to ensure the health and safety of customers whilst visiting their establishment. To ensure this, they need to take reasonable measures to avoid risks to health. HACCP is a food safety management system which is used in businesses to ensure dangers and risks are noted and how to avoid them.

All food businesses are required to:

- assess and review food safety risks
- identify critical control points to reduce or remove the risk from happening
- ensure that procedures are followed by all members of staff
- keep records as evidence to show that the procedures in place are working.

Food Hazards

A food hazard is something that makes food unfit or unsafe to eat that could cause harm or illness to the consumer. There are three main types of food safety hazards:

- **Chemical** – from substances or chemical contamination e.g. cleaning products.
- **Physical** – objects in food e.g. metal or plastic.
- **Microbiological** – harmful bacteria e.g. bacterial food poisoning such as Salmonella.

HACCP table

Here is an example of a HACCP table – it states some risks to food safety and some control points.

Hazard	Analysis	Critical Control Point
Receipt of food	Food items damaged when delivered / perishable food items are at room temperature / frozen food that is thawed on delivery.	Check that the temperature of high-risk foods are between 0°C and 5°C and frozen are between -18°C and -22°C. Refuse any items that are not up to standard.
Food storage (dried/chilled/frozen)	Food poisoning / cross contamination / named food hazards / stored incorrectly or incorrect temperature / out of date foods.	Keep high-risk foods on correct shelf in fridge. Stock rotation – FIFO. Log temperatures regularly.
Food preparation	Growth of food poisoning in food preparation area / cross contamination of ready to eat and high-risk foods / using out of date food.	Use colour coded chopping boards. Wash hands to prevent cross-contamination. Check dates of food regularly. Mark dates on containers.
Cooking foods	Contamination of physical / microbiological and chemical such as hair, bleach, blood etc. High risk foods may not be cooked properly.	Good personal hygiene and wearing no jewellery. Use a food probe to check core temperature is 75°C. Surface area & equipment cleaned properly.
Serving food	Hot foods not being held at correct temperature / foods being held too long and risk of food poisoning. Physical / cross-contamination from servers.	Keep food hot at 63°C for no more than 2 hours. Make sure staff serve with colour coded tongs or different spoons to handle food. Cold food served at 5°C or below. Food covered when needed.

Level 1/2 Hospitality and Catering – Unit 1-1.4.1:
Hospitality and catering and the law

There are several food legislations and laws that you need to be aware of, which are food labelling laws, food safety legislation and food hygiene.

Food labelling laws

By law, the following must be shown on food packaging and labels:

- name of the food
- list of ingredients
- allergen information noted clearly and in bold on the packaging or label
  - ◊ The 14 possible allergens include: celery, cereals containing gluten (e.g. wheat, oats and barley), crustaceans (e.g. lobster, prawns and crab), eggs, fish, lupin, milk, molluscs (e.g. oysters and mussels), mustard, peanuts, sesame, soybeans, tree nuts (e.g. almonds, hazelnuts, walnuts, Brazil nuts, cashews, pecans, pistachios and macadamia nuts) and sulphur dioxide and sulphites (information from www.food.gov.uk).
- storage instructions
- name and address of manufacturer
- nutrition information
- cooking instructions
- weight of ingredients
- use by dates and/or best before dates.

The label must not be misleading and must be clear and easy to understand.

Food safety legislation

Under the Food Safety Act 1990, any businesses that prepare, cook and sell food must meet the following criteria:

- make sure the food is safe to eat
- the food packaging or label must not be misleading in any way, e.g. if the packaging states the product is suitable for vegetarians it must not contain any meat
- the food product is what the consumer expects it to be.

Food hygiene

The Food Hygiene Regulations 2006 ensures that food at any time of production, apart from primary production (e.g. catching fish, milking animals, etc.), is handled and sold in a hygienic way.

These regulations also aim to do the following:

1. identify potential food safety hazards
2. enables to identify where exactly in the process that things could go wrong
   – these are called **critical control points**
3. put controls in place to prevent food safety risks from happening
4. ensure that the control measures that exists are always followed and are reviewed frequently.

Level 1/2 Hospitality and Catering: Unit 1:
Food related causes of ill health (AC4.1)

Food related causes of ill health

Ill health could be caused by any of the following:

- **bacteria**
- **allergies**
- **intolerances**
- **chemicals** such as:
  - detergent and bleach
  - pesticides and fertilisers.

Intolerances

Some people feel unwell when they eat certain foods. Common foods that cause intolerance include:

- milk (lactose)
- cereals (gluten)
- artificial sweeteners (Aspartame)
- flavour enhancers (MSG).

Food poisoning bacteria

The main causes of food poisoning bacteria are:

- **Bacillus cereus:** found in reheated rice and other starchy foods.
- **Campylobacter:** found in raw and undercooked poultry and meat and unpasteurised milk.
- **Clostridium perfringens:** found in human and animal intestines and raw poultry and meat.
- **E-coli:** found in raw meat, especially mince.
- **Listeria:** found in polluted water and unwashed fruit and vegetables.
- **Salmonella:** found in raw meat, poultry and eggs.
- **Staphylococcus aureus:** found in human nose and mouth.

Food and the law

Food can cause ill-health if it is stored, prepared and/or cooked incorrectly or if a person unknowingly eats a food that they are allergic or intolerant to. All hospitality and catering provision need to follow laws that ensure food is safe to eat. They are:

- **Food Labelling Regulations (2006):** A label must show all ingredients including allergens, how to store and prepare the food, where it came from, the weight of the food and a use-by or best-before date.
- **Food Safety (General Food Hygiene Regulations) 1995:** This law makes sure that anyone who handles food - from field to plate – does so in a safe and hygienic way. The **HACCP** system is used throughout the hospitality and catering sector.
- **Food Safety Act 1990:** This law makes sure that the food people it is safe to eat, contains ingredients fit for human consumption and is labelled truthfully.

Food allergies

An allergy is a reaction to something found in food. In the case of a severe allergy, the reaction can lead to death.

Common allergens include:

Cereals	Eggs	Seeds
Soya	Fish and shellfish	Strawberries
Peanuts	Wheat	Milk and dairy
Celery	Tree nuts	Mustard

Level 1/2 Hospitality and Catering:
Unit 1: Symptoms and signs of food-induced of ill-health (AC.4.2)

Symptoms and signs of food-induced ill-health:

An “upset tummy” is a familiar symptom for someone who thinks they might have food poisoning; this is known as a non-visible symptom. There are many other signs and symptoms that could show that a person might be suffering from ill-health due to the food they have eaten. Some of the symptoms can be seen (visible symptoms) such as a rash. It is important to be able to recognise visible and non-visible symptoms to help someone suffering from food-induced ill-health.

Visible symptoms

Visible symptoms of food poisoning, chemical poisoning, allergic reaction and food intolerance include:

- **Diarrhoea:** a common symptom of most types of food poisoning bacteria and can also be a symptom of lactose intolerance.
- **Vomiting:** a common symptom of most types of food poisoning bacteria, but may could also be caused by taking in chemicals accidently added to food.
- **Pale or sweating/chills:** a high temperature is a common symptom of E-coli and Salmonella.
- **Bloating:** a symptom of lactose intolerance.
- **Weight loss:** a symptom of gluten intolerance (coeliac disease).

Allergic/anaphylactic reaction

- **Visible symptoms:** red skin, a raised rash, vomiting, swelling of lips and eyes and difficulty breathing.
- **Non-visible symptoms:** swelling of tongue and throat, nausea (feeling sick) and abdominal pain.
- **Anaphylaxis:** a severe reaction to eating an allergen that can lead to death. An injection of adrenaline (for example, an EpiPen) is the treatment for an anaphylactic reaction.

Non-visible symptoms

Non-visible symptoms of food poisoning, chemical poisoning, allergic reaction and food intolerance include:

- **Nausea (feeling sick):** the most common symptom for all types of food-induced ill-health.
- **Stomach-ache/cramps:** abdominal pain is common symptom of lactose intolerance as well as a sign of an allergic reaction. Cramps may happen at the same time as diarrhoea.
- **Wind/flatulence:** a common symptom of lactose intolerance.
- **Constipation:** a symptom of Listeria food poisoning.
- **Painful joints:** a symptom of E-coli food poisoning.
- **Headache:** a symptom linked to Campylobacter, E-coli and Listeria.
- **Weakness:** non-stop vomiting, and diarrhoea can leave a person feeling weak. Gluten intolerance (coeliac disease) can leave a person feeling tired because their bodies can’t absorb the correct amount of nutrients.

Level 1/2 Hospitality and Catering:
Unit 1-1.4.3: Preventative control measures of food-induced of ill-health

Preventing cross-contamination

Food poisoning bacteria can easily be transferred to high-risk foods. This is called cross-contamination. It can be controlled by:

- washing hands before and after handling raw meat and other high-risk foods.
- using colour-coded chopping boards and knives when preparing high-risk foods.
- washing hands after going to the toilet, sneezing, or blowing your nose and handling rubbish.

Preventing physical contamination

Physical contamination is when something which is not designed for eating ends up in your food. Physical contaminants include hair, seeds, pips, bone, plastic packaging, plasters, broken glass, flies and other insects, tin foil and baking paper, soil, and fingernails.

Physical contamination can be controlled by:

- food workers following personal hygiene rules
- keeping food preparation and serving areas clean
- checking deliveries for broken packaging
- thoroughly washing fruits and vegetables before preparation
- using tongs or gloves for handling food.

Temperature control

Delivery	Storage	Preparation	Service
The temperature of high-risk foods must be checked before a delivery is accepted. The food should be refused if the temperatures are above the safe range. Refrigerated foods = **0-5°C** Frozen foods = **-22°C to -18°C**	High-risk foods must be covered and stored at the correct temperature. Temperatures must be checked daily. Refrigerator = **0-5°C** Freezer = **-22°C to -18°C** Unwashed fruit and vegetables must be stored away from other foods.	High risk-foods need to be carefully prepared to avoid cross-contamination. A food probe can be used to make sure that high-risk foods have reached a safe core (inside) temperature, which needs to be held for a minimum of two minutes. Core temperature = **70°C**	Food needs to be kept at the correct temperature during serving to make sure it is safe to eat. Hot food needs to stay hot and cold food needs to stay chilled. Hot holding = **63°C minimum** Cold holding = **0-5°C**

Level 1/2 Hospitality and Catering:
Unit 1-1.4.4: The Environmental Health Officer

Role of the Environmental Health Officer (EHO)

The role of the Environmental Health Officer (EHO) is to protect the health and safety of the public. They are appointed by local authorities throughout the UK. In the hospitality and catering industry, they are responsible for enforcing the laws linked to food safety. They inspect all businesses where food is prepared and served to members of the public, advise on safer ways of working and can act as enforcers if food safety laws are broken.

EHO inspections

The EHO can carry out an inspection of any hospitality and catering premise at any time during business hours – they do not need to make an appointment. During an inspection, the EHO will check to make sure that:

- the premises are clean
- equipment is safe to use
- pest control measures are in place
- waste is disposed properly
- all food handlers have had food hygiene and safety training
- all food is stored and cooked correctly
- all food has best-before and use-by dates
- there is a HACCP plan to control food hazards and risks.

The EHO is allowed to:

- take photographs of the premises
- take food samples for analysis
- check all record books, including fridge and freezer temperatures, cleaning schedules and staff training
- offer advice on improving food hygiene and safety in the business.

EHO and the law

If the EHO discovers problems with the food safety and hygiene in the premise, they are allowed by law to:

- remove any food that may be hazardous so it can't be sold
- tell the owners to improve hygiene and safety within a set time and then come back and re-inspect
- close the premises if there is a risk to health of the public
- give evidence in a court of law if the owners are prosecuted for breaking food hygiene and safety laws.

Complaints by the public

The EHO will immediately investigate any complaints of suspected food poisoning linked to a particular premise.

Hygiene ratings

When an inspection has been carried out, the EHO will give the business a food hygiene rating. The ratings are published on the Food Standards Agency website as well as on stickers displayed at the business. A rating of 5, or very good, represents the highest standard of food hygiene.

Level 1/2 Hospitality and Catering:
Unit 2-2.2.1: Factors affecting menu planning

Factors affecting menu planning

You need to be aware of the following factors when planning menus:

- **cost** (ingredients as well as business costs)
- **portion control** (value for money without waste)
- **balanced diets/current national advice**
- **time of day** (breakfast, lunch, and dinner menus as well as small plates and snacks)
- **clients/customers** (a menu with prices that will suit the people who visit your establishment).

Equipment available

You need to know and understand the type of equipment needed to produce a menu. The choice of dishes will be influenced by the equipment available to the chef.

This includes kitchen equipment such as:

- hobs, ovens, and microwaves
- fridge, freezer and/or blast chiller
- specialist equipment, for example a *sous vide* or pizza oven
- hand-held equipment, for example electric whisks or hand-blenders
- other electric equipment, for example food processors.

Skills of the chef

The skills of the chef must be suited to the type of provision and the menu offered.

A Michelin starred restaurant will require a chef who has complex skills in preparation, cooking and presentation of dishes.

A café will require a chef who has a range of medium and complex skills to produce a suitable menu.

A large restaurant will normally have a full kitchen brigade while a smaller establishment may only have a single chef with one or two assistants.

Time available

The type of provision will influence the amount of time a customer may be willing to wait for their dish to be prepared. Can the chef prepare, cook, and present more than one dish at the same time? Can some items be made in advance?

Time of year

The time of year can affect menu choices. Light and cold dishes such as salads are better suited to the summer months. Hearty dishes such as stews are more suited to the winter. Special dishes linked to holidays such as Christmas and Valentine's Day may also be included. The availability of **seasonal** produce can also affect menu choices as certain commodities, for example strawberries, are less expensive when in season.

Environmental issues

The chef will need to think about environmental issues when planning a menu. Can the chef **reduce** the amount of ingredients bought as well as reducing food waste? Can the chef **reuse** ingredients to create new dishes for example stale bread made into bread-and-butter pudding? Can the kitchen **recycle** waste wherever possible? Running the kitchen sustainably will save money.

Organoleptic properties

Organoleptic properties are the sensory features of a dish (**appearance**, **aroma**, **flavour**, and **texture**).

The chef will need to think about how the dish will look and taste. Is there a range of colours? Do the flavours go well together? Are there a variety of textures?

Level 1/2 Hospitality and Catering:
Unit 2-2.3.1: Practical skills and techniques

Skills and techniques

You need to be able to identify the different types of skills you need to produce your selected dishes. Some dishes will require the use of more complex skills. You will need to demonstrate a range of skills when producing your chosen dishes.

Preparation and cooking skills are categorised as follows: **basic**, **medium**, and **complex**.

Presentation

You should know and understand the importance of using the following appropriate presentation techniques during the production of dishes:

- creativity
- garnish and decoration
- portion control
- accompaniments.

Basic preparation skills and techniques

Blending, beating, chopping, grating, hydrating, juicing, marinading, mashing, melting, peeling, proving, sieving, tenderising, trimming, and zesting.

Medium preparation skills and techniques

Baton, *chiffonade*, creaming, dehydrating, deseeding, dicing, folding, kneading, measuring, mixing, puréeing, rub-in, rolling, skinning, slicing, spatchcocking, toasting (nuts/seeds) and weighing.

Complex preparation skills and techniques

Brunoise, crimping, de-boning, filleting, *julienne*, laminating (pastry), melting using *bain-marie*, mincing, piping, and segmenting, shaping, unmoulding and whisking (aeration).

Basic cooking skills and techniques

Basting, boiling, chilling, cooling, dehydrating, freezing, grilling, skimming, and toasting.

Medium cooking skills and techniques

Baking, blanching, braising, deglazing, frying, griddling, pickling, reduction, roasting, sautéing, steaming, stir-frying, and using a *sous vide* (water bath).

Complex cooking skills and techniques

Baking blind, caramelising, deep fat frying, emulsifying, poaching, and tempering.

Year 11 MUSIC GCSE HT1 Knowledge Organiser

Listening

Pop

Rock & Roll of the 1950s and 1960s

Rock Anthems of the 1970s and 1980s

Pop ballads of the 1970s, 1980s and 1990s

Solo artists from 1990 to the present day

World

India & Punjab
Israel and Palestine
Africa
Caribbean & South America

OCR GCSE music

- Composing 30%
- Listening 40%
- Performing 30%

Exam –

There will be questions on all these areas but only some of the selected pieces you have studied.

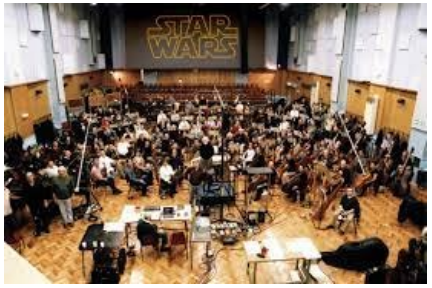
Some standard listening questions like “what instrument is playing the melody?” and others where it will ask you to fill in the missing notes.

Music from films and computer games

Music composed especially for films but also classical music used in films

Need to get good at describing music elements and how they’re blended

Film



Music from the Baroque, Classical and Romantic eras

Lots of orchestral music

Concerto

Year 10 3D Design Knowledge Organiser

Longdendale High School

Methods & Techniques

Sculpture

Ceramics

CAD/CAM

Cardboard

Wire

Pewter

Key Terms

Sculpture, Statue, Form, Space, Shape, Colour, Tone, Texture, Line, Three Dimensional, Figurative, Context, Size, Width, Height, Depth, Geometric, Organic

Useful Websites

https://www.tate.org.uk/art/student-resource/exam-help/human-figure

Coming to Life: The evolution of human form in sculpture — Google Arts & Culture

Antony Gormley (1950 - present)

British sculptor

Antony Gormley is widely acclaimed for his sculptures, installations and public artworks that investigate the relationship of the human body to space.

Jacob Epstein (1880-1959)

American-British Sculptor

Jacob Epstein was a widely acclaimed sculptor who was fascinated by the ancient and 'primitive' representation of the human form in sculpture.

Human Figure

In this project you will explore the theme of 'Human Figure'.

Lubaina Himid (1954 - present)

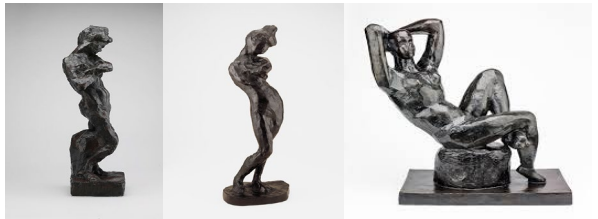
British Artist And Sculptor

Lubaina Himid is widely known for her depictions of the human form in both sculpture and art with the social and political context surrounding themes of cultural history and reclaiming identities.

Henri Matisse(1950 - present)

French Artist And Sculptor

The human figure was central to Matisse's work both in sculpture and painting. Matisse often wrote about his inability to accurately represent the human form but rather the identity of the model.



Contextual Understanding

For thousands of years the human figure has appeared in art. Early cave paintings show figures of hunters simply depicted using a few strokes.

In ancient Greece human figures were the main subject on decorated vases.

Through the ages the human figure has appeared in portraits, has been used to tell stories or express beliefs, or used to explore what it is to be human.

As well as using the human figure as a way of exploring the human form or human psychology, the human figure is often used by artists to tell a story or to make a point – exploring political or social ideas, or memories.

Year 10 3D Design Knowledge Organiser

Longdendale High School

Methods & Techniques

Sculpture

Ceramics

CAD/CAM

Cardboard

Wire

Found Materials

Key Terms

Vibrant, Dull, Monochromatic, Chrome, Colour, Saturation, Primary, Secondary, Tertiary, Bright, Hue, Value, Complementary, Contrasting

Useful Websites

https://www.tate.org.uk/art/colour-coursework-guide

https://www.moma.org/calendar/exhibitions/972

Jeff Koons (1955 - present)

American sculptor

Jeff Koons is recognized for his work dealing with popular culture and his sculptures depicting everyday objects, including balloon animals produced in colourful and mirrored surfaces.

Ugo Rondinone (1964 -present)

Swiss sculptor

Ugo Rondinone emerged in the 1990s becoming one of the leading contemporary artists of our times focusing on the use of colour and scale.

Colour

In this project you will explore the theme of 'Colour'.

Tatty Devine (present)

British Jeweller

Tatty Devine jewellery was born from Rosie and Harriet's frustration at the lack of interesting and accessible jewellery available. As Harriet recalls "there was nothing exciting out there so we just made our own!"

John Pollex (present)

British Ceramicist

John Pollex has carved his own niche into the world of studio pottery. Hi is known for his spontaneous and mesmerising display of colour his work.

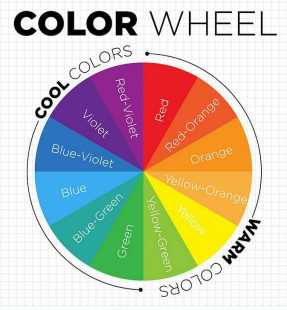
Contextual Understanding

Mostly in art, colour is descriptive – it shows us the colour of the thing you're trying to represent.

If you see a red vase, you paint it red! And you mix your colours to try to suggest all the different types of 'red' there are.

But colours also have lots of different cultural connections and resonances.

Think about 'singing the blues'? How about red hot anger? Or green with envy? But these connections aren't fixed – they are different across cultures and change over time: we don't recognise all the colour associations in Shakespeare's plays



Year 10 3D Design Knowledge Organiser

Longdendale HIGH SCHOOL

Methods & Techniques

Sculpture

Ceramics

CAD/CAM

Cardboard

Wire

Found Materials

Key Terms

cultural, ethnic identity, racial, religious, tribal, line, tone, shape, form, texture, colour, sculpture, ceramics, found materials, CAD/CAM, research, contextual

Useful Websites

https://www.moma.org/collection/terms/investigating-identity

Identity Art & Identity Politics Movement Overview | TheArtStory

Philip Treacy (1967 - present)

British Milliner

Philip Treacy is an Irish milliner, or hat designer, who has been mostly based in London for his career, and who was described by Vogue magazine as "perhaps the greatest living milliner".

Alexander McQueen (1969-2010)

British Fashion Designer

McQueen was known for his avant-garde designs, attention to detail, and theatrical runway shows have cemented his status as one of the most influential designers of our time.

Identity

In this project you will explore the theme of 'Identity'.

Alison Shanks(present)

Italian sculptor

"My work has focused upon how we are manipulated and are losing our humanity and becoming dehumanised through an over saturation of mass media and technology."

Antoni Gaudí (1852 – 1926)

Spanish Artitect

Antoni Gaudí was a Catalan architect. He was among the most influential modern artists in Spain, whose sensational architecture represented Barcelona's interpretation of Art Nouveau.

Contextual Understanding

Identity is the way we perceive and express ourselves.

Factors and conditions that an individual is born with—such as ethnic heritage, gender, or one's body—often play a role in defining one's identity.

However, many aspects of a person's identity change throughout his or her life. People's experiences can alter how they see themselves or are perceived by others.

Many artists use their work to express, explore, and question ideas about identity.

GCSE HISTORY: WEIMAR REPUBLIC AND GERMANY – KT1 The Weimar Republic

Problems of Weimar

Challenges from Left and Right.
- Faced many challenges from both side of political spectrum.
- Spartacist (Left) and Kapp Putsch (Right)

World War One
- 2 million troops were killed.
- More than 750,000 died from food shortages.
- Government in massive debt.

Treaty of Versailles
- Reparations – 6.6 Billion
- Limited army to 100,000.
- Loss 11 Colonies
- War Guilt Clause – blame for the war.

Weaknesses of the Constitution.
- New constitution was radically different.
- Lack of strong government = lots of coalition.
- Article 48.

Stresemann's Recovery

Economic Recovery
Strengthened confidence in Weimar for everyday people.
Rentenmark – New Currency introduced after Hyperinflation. Became the Reichsmark.
Dawes Plan – Plan designed so Germany could pay reparations. Instalments were reduced.

Foreign Policy
League of Nations – Germany allowed to join in 1926. An organisation similar to the UN .
Locarno Pact - 1925 - Agreement on new borders with France. This de-escalated tension.

ABDICATIONS	When a monarch leaves the throne.
REPUBLIC	A country without a King or Queen.
ARTICLE 48	The President could use this to ignore the Reichstag and rule as he saw fit.
KAISER	German word for King.
DOLCHSTOSS	Means stabbed in the back. The idea that Germany loss because of another group i.e. the Jews.
DIKTAT	Means Dictated peace or forced agreement to peace.
REPARATIONS	Germany was to be made to pay for the damage suffered by the allies.
PROPORTIONAL REPRESENTATION	A voting system that gives out seats in parliament to parties according to the percentage of votes they received.
ARMISTICE	An agreement to end war.
WEIMAR	The new government could not meet in Berlin as it was so dangerous, so they met here instead.
CONSTITUTION	This is an agreement about how the country would be ruled.
REICHSTAG	German parliament
FREIKORPS	Ex military soldiers who wanted to overthrow the Republic
HYPERINFLATION	When money loses its value
COALITION	A government of two or more political parties.
CHANCELLOR	The head of government in Germany
STATE OF EMERGENCY	A situation of urgent need for help and relief faced by the government. They then can use Article 48 to enforce new laws.

THE GOLDEN AGE
A time when culture flourished. People had more money!

TIMELINE OF THE WEIMAR REPUBLIC

- World War One ended. 1918
- Spartacist Uprising. 1919
- Treaty of Versailles. 1919
- Kapp Putsch. 1920
- French occupation of Ruhr. 1923
- Hyperinflation. 1923
- Stresemann becomes Chancellor. 1924
- The Golden Age. 1924-29

THEMES: Life and Death

Key terms

Afterlife	Life after death; belief that existence continues after physical death.
Environmental sustainability	Ensuring that demands placed on natural resources can be met without reducing capability to allow all living things to live well now and in future.
Euthanasia	The act of killing or permitting the death of someone who is suffering from a serious illness.
Evolution	Process by which different living creatures are believed to have developed from less complex forms.
Abortion	When a pregnancy is ended and so does not result in birth of a child.
Quality of life	The extent to which life is meaningful and pleasant.
Soul	The spiritual aspect of a being; that connects someone to God. Often regarded as non-physical.

Crucial Commands:

Describe:Say in detail what something or someone is like, and the impact it has. E.g. Describe the meaning of the word Omnibenevolent.

Explain: Say why something or someone is important, and the impact it has. E.g. Explain why Jesus' death is important to Christians.

Discuss: Write about at least two points of view and explain why these points of view are valuable or not. E.g. "The most important Christian belief is Jesus' resurrection" (15 marks)

The subject of life and death is both broad and controversial. Where do we come from? What is the purpose of life? Sometimes religious and non-religious answers conflict with each other.

Things to remember:

- Not all Christians or all Muslims will necessarily believe or teach the same things! There are different denominations that will agree/ disagree on many topics
- The relationship between science and religion is complex. Not all believers reject science and not all scientists reject belief.
- Atheists and Humanists are NOT the same thing!

Do NOT forget to always think about and discuss how each part of what we learn **IMPACTS** individuals, groups or societies!

Stewardship vs Dominion

Christian scripture says that God gave human beings dominion over all living creatures. Over the centuries, Christians have interpreted 'dominion' in different ways.

a) Some have argued it means God gave the gift of using the world's resources however they like. (Domination, superiority).
b) Others believe humans share some of God's qualities (reason, morality, responsibility), therefore humans should be stewards and care for the planet and manage its resources – land & animals.

Abortion

Abortion in the UK is legal up to 28 weeks; after this it is still allowed if the foetus has a severe abnormality or grave risk to mother.

- There is an argument for **Pro-life vs Pro-choice.** This depends on when you view life begins. Some say it is from conception, others argue it begins later. The development of life is gradual in the womb and there are no sudden events that can be easily called the beginning of life.

The soul

Many Christians believe a human being is made of two parts: a physical body and a spiritual soul. After death the soul leaves the body to be reunited with God in Heaven. However, this is not consistent with the bible. Other Christians believe the body and soul is inseparable. This means that for there to be life after death, the soul must be housed in a body again.

'So will it be with the resurrection of the dead. The body that is sewn is perishable, it is raised imperishable; it is sewn in dishonour, it is raised in glory; it is sewn in weakness, it is raised in power. If there is a natural body, there is also a spiritual body.' 1 Corinthians 15:42-44

Euthanasia

Different kinds of euthanasia include:

- Voluntary euthanasia – when a person expresses a wish to die and asks for help to do so.
- Involuntary euthanasia – when a person cannot express a wish to die so the decision is made for them (e.g. if someone is in a coma).
- Active euthanasia – where the death of a person is caused through direct action (e.g. taking medication to end their life faster).
- Passive euthanasia – Where treatment is removed so death is faster (e.g. removing a feeding tube or respirator). **This is legal in the UK.**

Year 10 BTEC Dance- Knowledge Organiser

Component 2 - Developing Skills and Techniques in the Performing Arts

Application of skills and techniques during rehearsal

Students will apply skills and techniques during the rehearsal and development process to support their development.

Such as:

- o physical
- o musicality
- o interpretative
- o stylistic
- o interaction with the group
- o interaction in performance
- o refining ideas
- o communicating design ideas e.g. presentation.

Examine professional practitioners' performance work

Analyse repertoire from three performance styles in dance and musical theatre

- consider the roles and responsibilities, creative intention, key influences and purpose
- make comparisons between stylistic qualities, using examples to back up your knowledge
- consider how practitioners contribute to the performance process and how their roles and responsibilities differ depending on the performance, style and outcome.

Historical Context

Street dance, also more formally described as vernacular dance, originated in New York in the 1970s. Evolving on the streets of Manhattan and the Bronx, it was developed as an improvised, social dance form, reacting against traditional, high-art dance styles

Dance styles

Locking

Locking combines short, sharp movements with "lock… pauses, all synchronized to funk music. Locking was created by a man named Don Campbell.

Popping

Popping is a dance style that is based on rapid contractions and release of the muscles so it appears that they are, "popping" in synch with the beat of the music. Under the umbrella of Popping are the dance styles like Tutting, Strobing, Ticking, Dime-stopping, Waving, Roboting, and Electric Boogaloo. Popping is a funk style of dance originating in California in the African American community during the 1960s. Popping is still very popular today and it is done to variety of music genres.

Waacking

Waacking is a dance style that was created in the nightclubs of Los Angeles in the 1970s. Waacking consist of movements of the arms and hands done typically to disco music.

Year 10 HT3 Knowledge Organiser for BTEC Sport— Component 1

Exercise Intensity

Aerobic endurance = It is the ability of the cardio-respiratory system to efficiently supply nutrients and oxygen to working muscles during sustained physical activity.

Muscular strength = The maximum force a muscle or muscle group can produce. (Measured in N or KG)

Muscular endurance = It is the ability of a muscle or group of muscles to keep contracting over a period of time against light to moderate load.

Flexibility = Having an adequate range of motion in all joints of the body. It is the ability to move a joint through its complete range of movement.

Speed = The ability to perform a movement or cover a distance in a short period of time = distance/time taken.

Body composition = This is the relative ratio of fat mass to fat free mass (vital organs, muscle, bone) in the body

Components of Fitness — Skill

Balance = The ability to maintain your centre of mass over a base of support. A performer may need static or dynamic balance.

Agility = The ability of a sports performer to quickly and precisely move or change direction without losing their balance.

Coordination = The smooth flow of movement needed to perform a task efficiently and accurately. It often involves being able to use 2 or more body parts together.

Reaction Time = The time taken for a sports performer to respond to a stimuli and the start their response.

Power = The work done in a unit of time. It is the ability to apply a combination of strength and speed. Power = Force (kg) x Distance (m)/time (min or s)

Keywords

Cardio-Respiratory = The heart and blood vessels working with the lung and the airways to carry oxygen to the muscle.

Contracting = This is when the muscles shortens to create a movement Accelerative

Speed = Gradually increasing your speed Pure Speed = Your maximum speed.

Endurance = The ability to prolong the amount of time near maximum speed Static

Balance = Balancing without moving Dynamic Balance = Balancing when moving

Stimuli = Something which causes a response or movement

Year 10 HT3 Knowledge Organiser for BTEC Sport—
Unit 1 Fitness for Sport and exercise

Exercise Intensity

Measuring Heart Rate

1. Sit Down
2. Locate your radial with your index and middle finger
3. Don't use your thumb—it has its own pulse
4. Count the beats from 30 seconds and times it by 2 to find your BPM

Training Zones

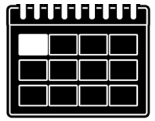
Speed Zone = 95% to 100% of MHR
Anaerobic Training Zone = 85% to 95% of MHR
Aerobic Training Zone = 60% to 85% of MHR

The Borg Scale - Rate of Perceived Exertion (RPE)

The Borg scale is used to predict or estimate the Heart Rate of an individual.
Practice by the individual is needed to make their predictions as accurate as possible
The individual rates themselves from 7 to 20 on the scale.
They then times this by 10 to get an estimated HR
RPE x 10 = HR (BPM)

Basic Principles of Training

We apply principles of training to our training programmes so that we make it affective and make sure it aids progression.



The Basic Principles of Training

Frequency = How often we train Increasing the number of days
Intensity = How hard we train Increasing the number or reps
Time = How long we train Increasing the time we train
Type = How we train selecting the correct training method

The FITT principle is part of the Additional Principle of PROGREESIVE OVERLOAD.

This is the gradual increase of a training load, when done correctly it will progressively increase Frequency, Intensity, Time and Type to develop fitness gains

Key terms

Heart Rate (HR) = The amount your heart beats in 1 minute (BPM)
Maximum Heart Rate (MHR) = The maximum your heart will beat in 1 minute, 220 - Age = MHR
RPE = Rate of Perceived Exertion (How hard we think we have worked)

Year 10 Subject Term Knowledge Organiser: Business Studies

Paper 2: Human Resources

= means connective

Ways of Working:

- **Full time** – 35 hours + per week
- **Part time** – motivational as employee may get more time with their children/but might not be able to offer it to all employees who want it/Can have more employees when it is busy-saves wage bill as aren't paying staff when they aren't needed
- **Flexible working** – motivational (less mistakes/less likely to leave)– helps their work life balance/but might not be able to offer it to all employees who want it
- **Permanent contract** – employed on an ongoing basis

+ Feel secure in their job so more motivated
+ Less likely to leave as they are loyal they have a secure job
- Need to be enough work for the employee to do on a permanent basis therefore higher wage costs unnecessarily.

- **Temporary contract**

+ Only have staff when you need them in busier times e.g. Christmas – saves wage bill as not paying unnecessary costs when it is busy
- May not be motivated as they don't have job security
- Aren't loyal so can leave at any time – could let customers down

Freelance worker – an expert that is self employed that works on a specific project for a specific time
+ They are experts – quality of the work should be high
+ More motivated as they rely on their reputation to keep getting jobs
- Expensive as they charge a lot of money for their services
- Not loyal to your business and could be working with competitors

- **The impact of technology on the way of working**
- Remote Working
- Video conferencing – so don't have to travel for meetings

Disadvantages of using technology when working

- The technology could crash/break – can look unprofessional to customers
- Can't watch employees as closely

Remote Working

Benefits to the employees

+ Employee are more motivated as they don't have to travel to work o have to spend less on transport– have more disposable income – can go on more holidays that they might enjoy
+ More productive as there aren't any distractions – get work done more quickly so customers are happier.

Benefits to the employer

+Can save money as don't have to pay for large office building
+More motivated employees as they are saving petrol money– less likely to leave

Different Roles and Responsibilities

Directors – at the top of the organisation – paid the most. Make sure decisions are taken that benefit the WHOLE business.
Senior Managers – highest at manager level – ensure all other managers are working well together. They set the AIMS and OBJECTIVES
Supervisors and Team Leaders – in charge of the staff. They organise their shifts and pay attention to how well they are doing their job.
Operational and Support Staff – they carry out the task that keep the business running e.g. manufacturing the products or serving customers

Documents in the recruitment process

- **Person Specification** – about the PERSON. Includes any desirable or essential qualifications needed, work experience and personal skills required of the candidate.
- **Job Description** - Describes the job itself, includes the duties and responsibilities of the person doing the job.
- **Application Form**
- **CV**

Application Form:

+Easier to compare applicants as they are all filling in the same information- quicker – more time to spend on other areas of the business
- Can discourage people from applying as more time consuming to fill out the application form – less people apply – may not fill the job with as good a person – not as good new ideas and may not get a competitive advantage.

Year 11 Subject Term Knowledge Organiser: Business Studies

Unit 2.5 Making human resource decisions: Organisational Structure

= means connective

Organisational Structure:
Defines how staff members work with one another, how decisions are made and how employees are managed.

Span of Control:
The number of people an employee manages. In a hierarchical structure this is low.
In a flat structure each manager has a large Span of Control.
In a tall /hierarchical structure this is narrow.

Chain of Command :
This is the path along which instructions are passed, from the person at the very top downwards. In a hierarchical Structure there is a long chain of command, in a flat a short one

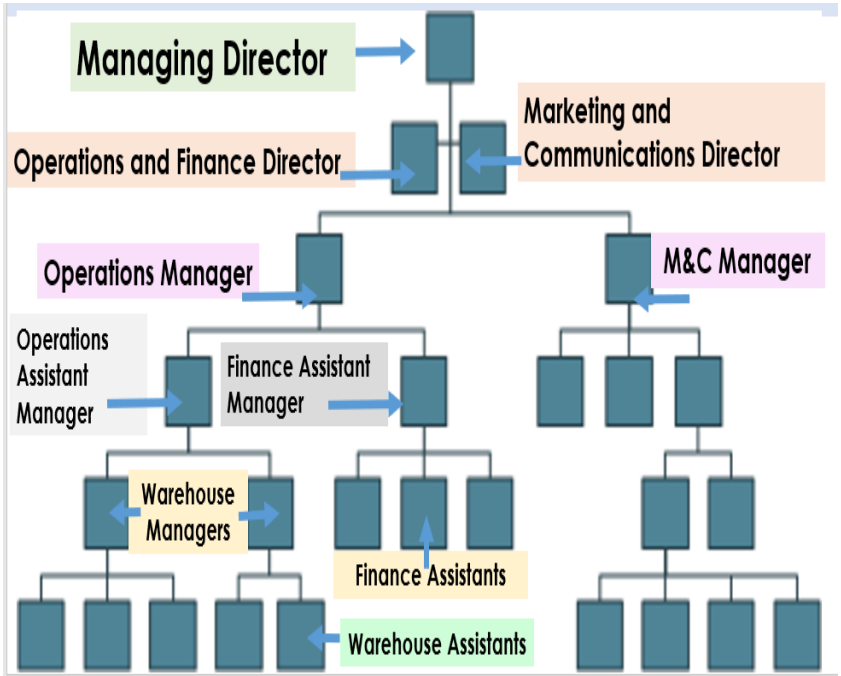
Centralised organisations make their decisions at head office

+ Decisions can be made taking the needs of the whole organisation into consideration =the decisions should be better in generating sales profit for the whole organisation and not just one store = more profit = more money to spend making the business better

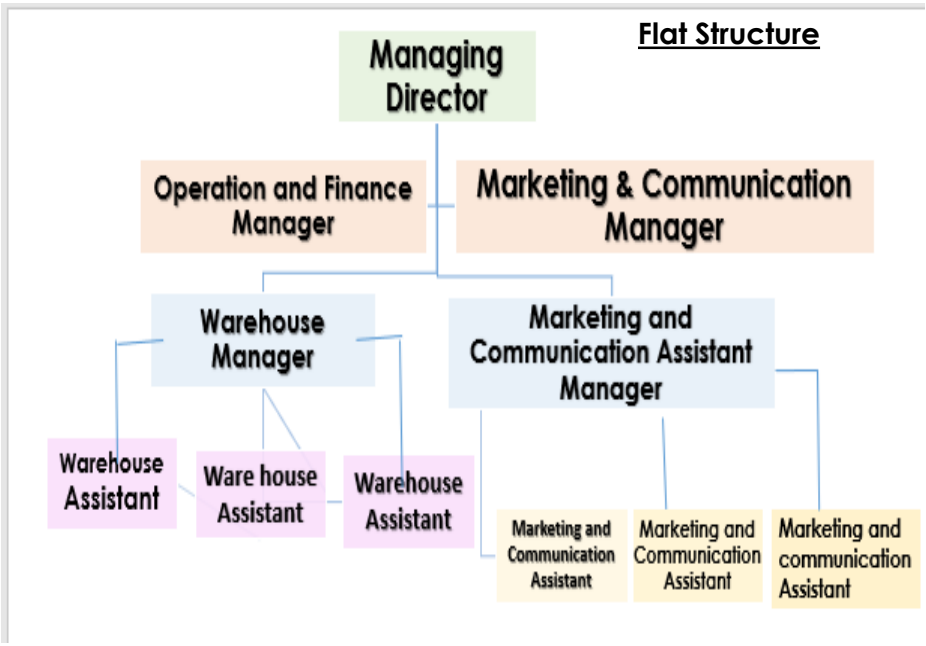
- Can be demotivating to store/branch managers = might leave = expensive to recruit a new manager = Higher Costs = less Profit.

A business can be organised in **3 Ways:**
Product division e.g. Ipad division or Iphone division
Regional division e.g. Liverpool area or Manchester area
Functional area e.g. Marketing department, Finance department, HR department

Hierarchical Structure (tall Structure)



Flat Structure



Year 11 Subject Term Knowledge Organiser: Business Studies

Unit 2.5 Making human resource decisions: Organisational Structure

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Hierarchical/Tall Structure :

+ More opportunities for promotion = employees are more likely to work hard to get the promotion

+ Employees can be closely watched and monitored = less change of mistakes

-High Management costs = more expensive

-Employees can feel they aren't trusted to make decisions = demotivating

- Decision Making and communication is slow

Flat Structure :

+ Lower managers salary = cost are lower

+ Employees are more motivated as they are trusted to make decisions

+ Decision Making and communication is quicker

-Less chance of promotion as there are less management jobs

-Employees can feel overwhelmed if they are given too much work to do

Exam Hint:
If there is a 9 mark question on centralised or decentralised, the final line is
"The success of this depend on the quality of the manager making the decision regardless of where they are based."

Exam Hint:
If there is a 9 mark question on having or decentralised, the final line is
"The success of this depend on the quality of the manager making the decision regardless of where they are based."

Decentralised organisations allow the individual shop/store or branch manager to make the decisions

+ Store manager may know their customers wants and needs more than those at head office so the decisions can be made to best meet the needs of the different customers up and down the country therefore more chance of keeping customers happy = high levels of satisfaction = higher levels of customer loyalty = more sales and profit

- Store managers may not have the skills required to make such big decisions = incorrect decisions are made = unhappy customers = bad reputation = less sales and profit = less money to spend on making the business better.

Delayering: Removing layers of the organisational structure, usually the assistant manager

+ Saves Money as no longer paying as much money out in salaries

+ Employees can be motivated as they are no given extra responsibility that was once completed by managers above them

-Employees can feel overwhelmed if they are given too much work to do as there are now less people

- When people are made redundant it can lead to a bad working environment in the organisation especially if it is someone's friend that has lost their jobs

Year 10 Subject Term Knowledge Organiser: Business Studies

Paper 2: Human Resources

= means connective

CV
+ Can encourage more people to apply as more time consuming to just send a CV– more people apply – more potential to fill the job with someone with good ideas to give a competitive advantage.
- More difficult to compare applicants as they are not all filling in the same information- more time consuming – less time to spend on other areas of the business

- **Internal Recruitment –**the role is only advertised inside the business to the existing employees

+ Cheaper as not having to advertise externally e.g. on recruitment websites
+ Could offer jobs as promotion for existing employees – more motivated to work hard if they have a chance of promotion
- No new ideas – less likely to bring changes to get a competitive advantage
- Business will have to recruit anyway to replace the employee that has taken the new job so will have to use external recruitment anyway

- **External Recruitment –**the role is only advertised outside the business to people that don't already work there

+ can bring new ideas no one has thought of before – more likely to get a competitive advantage
+ Higher number of applicants
- Expensive as have to pay to advertise the job
- Can be demotivating to employees that wanted to be promoted – more likely to leave to get promotion elsewhere

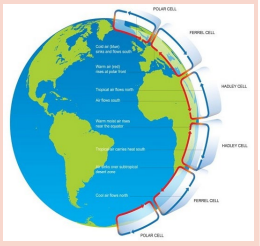
Why interview as part of the recruitment process
To meet the person to check that they can answer questions about the job they will be asked to do and they have not lied on their CV/Application Form
However interviews are expensive

Global Hazards

Global pattern of air circulation

Atmospheric circulation is the large-scale movement of air by which heat is distributed on the surface of the Earth.

Hadley cell	Largest cell which extends from the Equator to between 30° to 40° north & south.
Ferrel cell	Middle cell where air flows poleward between 60° & 70° latitude.
Polar cell	Smallest & weakness cell that occurs from the poles to the Ferrel cell.



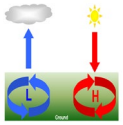
Climate Zones

The global circulation system controls temperatures by influencing precipitation and the prevailing winds. This creates distinctive climate zones.

Temperate Climate	Mid-latitude, 50° - 60° north &south of the Equator. Here air rises and cools to form clouds and therefore frequent rainfall. e.g. UK.
Tropical Climate	Found along the Equatorial belt, this zones experiences heavy rainfall and thunderstorms. E.g. Brazil.
Polar Climate	Within the polar zones cold air sinks causing dry, icy and strong winds. E.g. Antarctica.
Desert Climate	30° north and south of the equator, sinking dry airs leads to high temperatures without conditions for rainfall. E.g. Libya.

High and Low Pressure

High Pressure	Low Pressure
Caused by cold air sinking. Causes clear and calm weather	Caused by hot air rising. Causes stormy, cloudy weather.



What is wind?

Wind is the movement of air from an area of high pressure to one of low pressure.

Types of wind

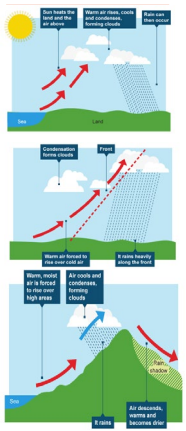
Katabatic Winds	Winds that carry air from the high ground down a slope due to gravity. e.g. Antarctic.
Trade Winds	Wind that blow from high pressure belts to low pressure belts.
Jet Streams	These are winds that are high in the atmosphere travelling at speeds of 225km/h.

What is precipitation?

This is when water vapour is carried by warm air that rises. As it gets higher, the air cools and the water vapour condenses to form a cloud. As water molecule collide and become heavier, the water will fall to Earth as precipitation.

Types of precipitation

Convectional Rainfall	When the land warms up, it heats the air enough to expand and rise. As the air rises it cools and condenses. If this process continues then rain will fall.
Frontal Rainfall	When warm air meets cool air an front is formed. As the warm air rises over the cool air, clouds are produced. Eventually steady rain is produced.
Relief Rainfall	When wind meets mountains, the warm air is forced to rise quickly and cool. This leads condensation and eventually rainfall. When the air descend however, little very rainfall falls, creating a rain shadow.

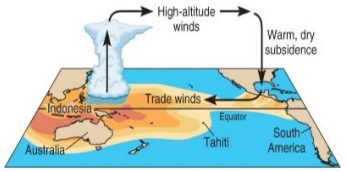


Distribution of Droughts

Drought can occur anywhere throughout the world but they are more frequent and severe along the tropics of Cancer and Capricorn. Australia and many countries within Africa, such as Ethiopia, suffer from severe drought conditions.

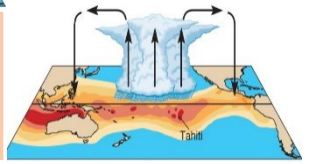
Causes of Drought: El Nino effect

The El Nino effect is also associated with creating dry conditions.



Normally, warm ocean currents off the coast of Australia cause moist warm air to rise and condense causing storms and rain over Australia.

In an El Niño year (every 2-7 years) the cycle reverses. Cooler water off the coast of Australia reverses the wind direction leading to dry, sinking air over Australia causing hot weather and a lack of rainfall.



Extremes in weather conditions

Wellington, New Zealand
Very high wind speeds (248mkm/h) due to the surrounding mountains funnelling wind.

Puerto Lopez
Found along the equator, high temperatures lead to rapid condensation and heavy rainfall.

The Atacama, Chile
The Andes mountains block moist warm travelling any further west. This causes rainfall to the east, but a rain shallow to the west.

Mawsynram, India
This village see a lot of rain each year (11m per yr). This is due to the reversal of air conditions/directions from sea to land. In the summer, this contributes to monsoons.

Changing pattern of these Hazards

Tropical Storms	Scientist believe that global warming is having an impact on the frequency and strength of tropical storms. This may be due to an increase in ocean temperatures.
Droughts	The severity of droughts have increase since the 1940s. This may be due to changing rainfall and evaporation patterns related to gradual climate change.

Distribution of Tropical Storms.

They are known by many names, including hurricanes (North America), cyclones (India) and typhoons (Japan and East Asia). They all occur in a band that lies roughly between the tropics of Cancer and Capricorn and despite varying wind speeds are ferocious storms. Some storms can form just outside of the tropics, but generally the distribution of these storms is controlled by the places where sea temperatures rise above 27°C.

Formation of Tropical Storms

1	The sun's rays heats large areas of ocean in the summer. This causes warm, moist air to rise over the particular spots
2	Once the temperature is 27°, the rising warm moist air leads to a low pressure. This eventually turns into a thunderstorm. This causes air to be sucked in from the trade winds.
3	With trade winds blowing in the opposite direction and the rotation of earth involved (Coriolis effect), the thunderstorm will eventually start to spin.
4	When the storm begins to spin faster than 74mph, a tropical storm (such as a hurricane) is officially born.
5	With the tropical storm growing in power, more cool air sinks in the centre of the storm, creating calm, clear condition called the eye of the storm.
6	When the tropical storm hit land, it loses its energy source (the warm ocean) and it begins to lose strength. Eventually it will 'blow itself out'.

Case Study: UK Heatwave 2003

Causes

The heatwave was caused by an anticyclone (areas of high pressure) that stayed in the area for most of August. This blocked any low pressure systems that normally brings cooler and rainier conditions.,

Effects	Management
• People suffered from heat strokes and dehydration. • 2000 people died from causes linked to heatwave. • Rail network disrupted and crop yields were low.	• The NHS and media gave guidance to the public. • Limitations placed on water use (hose pipe ban). • Speed limits imposed on trains and government created 'heatwave plan'.

Case Study: Typhoon Haiyan 2013

Causes

Started as a tropical depression on 2rd November 2013 and gained strength. Became a Category 5 "super typhoon".

Effects	Management
• Almost 4,000 deaths. • 130,000 homes destroyed • Water and sewerage systems destroyed caused diseases. • Emotional grief for lost ones.	• The UN raised £190m in aid. • USA & UK sent helicopter carrier ships deliver aid remote areas. • Education on typhoon preparedness.

The structure of the Earth

The Crust	Varies in thickness (5-10km beneath the ocean. Made up of serval large plates.
The Mantle	Widest layer (2900km thick). The heat and pressure means the rock is in a liquid state that is in a state of convection.
The Inner and outer Core	Hottest section (5000 degrees). Mostly made of iron and nickel and is 4x denser than the crust. Inner section is solid whereas outer layer is liquid.

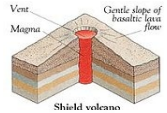
Convection Currents

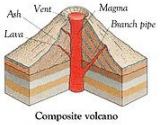
The Lithosphere is divided into tectonic plates which are moving due to convection currents in the asthenosphere.

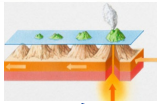
1. Radioactive decay of some of the elements in the core and mantle generate a lot of heat.
2. When lower parts asthenosphere heat up they become **less dense** and **slowly rise**.
3. As they move towards the top they cool down, become **more dense** and **slowly sink**.
4. These **circular movements** of semi-molten rock are **convection currents**
5. Convection currents create **drag** on the base of the tectonic plates and this causes them to move.

Types of volcanoes

Shield	Made of basaltic rock and form gently sloping cones from layers of runny lava. Location: hot spots and constructive margins. Eruptions: gentle and predictable
Composite	Most common type found on land. Created by layers of ash and lava. Location: Destructive margins Eruptions: explosive and unpredictable due to the build of pressure within the magma chamber.
Hotspots	These happen away from any plate boundaries. They occur because a **plume of magma rises** to eat into the plate above. Where lava breaks through to the surface, **active volcanoes** can occur above the hot spot. E.g. Hawaii.







Case Study: Eyjafjallajokull Eruption, Iceland 2010

Causes

- The North-American and Eurasian plates move apart- called constructive plate boundary.
- The disruption caused by Eyjafjallajökull was the result of a series of small volcanic eruptions, starting on the 20th March and ending in the October.

Effects

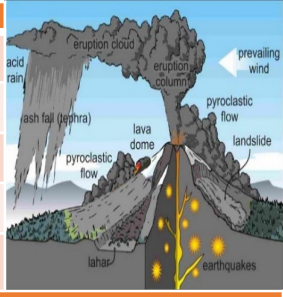
The thick ice cap melted which caused major flooding.
No reported deaths.
Airspace closed across Europe, with at least **17,000** flights cancelled
Costed insurers **£65million** to customers with cancelled flights.

Management

Iceland had a good warning system with texts being sent to residents within a 30 minutes warning.
Large sections of European airspace were closed down due ash spreading over the continent.
Airlines developed ash monitoring equipment

Volcanic Hazards

Ash cloud	Small pieces of pulverised rock and glass which are thrown into the atmosphere.
Gas	Sulphur dioxide, water vapour and carbon dioxide come out of the volcano.
Lahar	A volcanic mudflow which usually runs down a valley side on the volcano.
Pyroclastic flow	A fast moving current of super-heated gas and ash (1000ºC). They travel at 450mph.
Volcanic bomb	A thick (viscous) lava fragment that is ejected from the volcano.



Managing Volcanic Eruptions

Warning signs	Monitoring techniques
Small earthquakes are caused as magma rises up.	Seismometers are used to detect earthquakes.
Temperatures around the volcano rise as activity increases.	Thermal imaging and satellite cameras can be used to detect heat around a volcano.
When a volcano is close to erupting it starts to release gases.	Gas samples may be taken and chemical sensors used to measure sulphur levels.

Preparation	
Creating an exclusion zone around the volcano.	Being ready and able to evacuate residents.
Having an emergency supply of basic provisions, such as food	Trained emergency services and a good communication system.

Earthquake Management

PREDICTING

Methods include:

- Satellite surveying (tracks changes in the earth's surface)
- Laser reflector (surveys movement across fault lines)
- Radon gas sensor (radon gas is released when plates move so this finds that)
- Seismometer
- Water table level (water levels fluctuate before an earthquake).
- Scientists also use seismic records to predict when the next event will occur.

PROTECTION

You can't stop earthquakes, so earthquake-prone regions follow these three methodsto reduce potential damage:

- Building earthquake-resistant buildings
- Raising public awareness
- Improving earthquake prediction

Earthquake proof buildings ideas

1. Counter-weights to the roof to help balance any swaying.	2. Roof made from reinforced cement concrete.
3. Foundations made from reinforced steel pillars, bail-bearings or rubber.	4. Windows fitted with shatter-proof glass to reduce breakage.
5. Lightweight materials that cause minimal damage if fallen during an earthquake.	6. Ensure gas pipes have an automatic shut off to prevent risk of fire.

Types of Plate Margins

Destructive Plate Margin

When the denser plate subducts beneath the other, friction causes it to melt and become molten magma. The magma forces its ways up to the surface to form a volcano. This margin is also responsible for devastating earthquakes.

Constructive Plate Margin

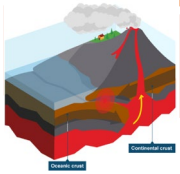
Here two plates are moving apart causing new magma to reach the surface through the gap. Volcanoes formed along this crack cause a submarine mountain range such as those in the Mid Atlantic Ridge.

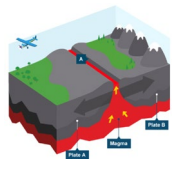
Conservative Plate Margin

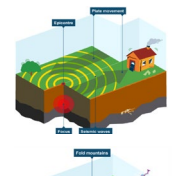
A conservative plate boundary occurs where plates slide past each other in opposite directions, or in the same direction but at different speeds. This is responsible for earthquakes such as the ones happening along the San Andreas Fault, USA.

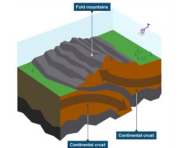
Collision Zones

Collision zones form when two continental plates collide. Neither plate is forced under the other, and so both are forced up and form fold mountains. These zones are responsible for shallow earthquakes in the Himalayas.









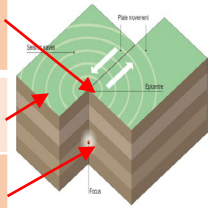
Causes of Earthquakes

Earthquakes are caused when two plates become locked causing friction to build up. From this stress, the pressure will eventually be released, triggering the plates to move into a new position. This movement causes energy in the form of seismic waves, to travel from the focus towards the epicentre. As a result, the crust vibrates triggering an earthquake.

The point directly above the focus, where the seismic waves reach first, is called the **EPICENTRE**.

SEISMIC WAVES (energy waves) travel out from the focus.

The point at which pressure is released is called the **FOCUS**.



Depth of Earthquake

Shallow Focus	Deep Focus
-Usually small and common. -Seismic waves spread and damage wide area.	-Occur on destructive margins. -Damage is localised as seismic waves travel vertically.

How do we measure earthquakes?

Mercalli Scale

- Measures how much damage is caused, based on observations, not scientific instruments.
- Base from 'Instrument' and 'Weak' to 'Extreme' and 'Cataclysmic'.
- Limitations is that its subjective due to it being based on perception.

Richter Scale

- Is a scientific measurement based on the energy released.
- Measured by seismometers using measurement from 1 – 10
- Logarithmic – each point up the scale is 10 times greater than the one before.

LA FAMILIA

Family members | Physical descriptions | A good friend | Family relationships

Family members

padrastro – stepdad
madrastra – stepmum
hermanastro/a – stepbrother/sister
tío – uncle
tía – aunty
primo – cousin (m)
prima – cousin (f)
bisabuelo – great-grandad
bisabuela – great-nan
sobrino – nephew
sobrina – niece
hijo – son
hija – daughter
nieto – grandson
nieta – granddaughter
novio – boyfriend
novia – girlfriend
marido – husband
mujer – wife
mis parientes – my relatives

A good friend

Un buen amigo es alguien que… – a good friend is someone who…

te apoya – supports you
te escucha – listens to you
te conoce bien – knows you well
te acepta como eres– accepts you as you are
te quiere mucho – loves you a lot
te da consejos – gives you advice
te hace reír – makes you laugh

Pienso que soy un buen amigo/una buena amiga porque… – I think I am a good friend because…

Physical descriptions

Soy – I am
Es – he/she is
Son – they are

calvo – bald
alto – tall
bajo – short
gordo – fat
delgado – slim

Tengo – I have
Tiene – he/she has
Tienen – they have

Los ojos – eyes: **azules** – blue, **marrones** – brown, **verdes** – green

El pelo – hair: **moreno** – dark brown, **rubio** – blonde, **castaño** – brown, **rojo** – red, **rizado** – curly, **liso** – straight, **ondulado** – wavy, **corto** – short, **largo** – long, **fino** – fine, **de punta** – spiky

la piel blanca/morena – fair/dark skin
pecas – freckles
los dientes prominentes – big teeth
Un tatuaje – a tattoo

Llevo – I wear/ have
Lleva – he/she wears/has
Llevamos – we wear/have

gafas – glasses
barba – a beard
bigote – a moustache

Family relationships

Me llevo bien con… – I get on well with
Me divierto con… – I have fun with
Echo de menos a… – I miss

Me apoya(n) – he/she supports me
Me acepta(n) como soy – he/she accepts me as I am
Me hace(n) reír – he/she makes me laugh
Me conoce(n) bien – he/she knows me well
Nunca me critica(n) – he/she never criticises me
Guarda(n) todos mis secretos – he/she keeps all my secrets
Tenemos mucho en común – we have a lot in common
Me da(n) consejos – he/she gives me advice
Me dice(n) la verdad – he/she tells me the truth

No me llevo bien con… – I don't get on well with
Me peleo con… – I argue with
Estoy harto de… – I am fed up of

Me juzga(n) – he/she judges me
Me trata(n) como un niño/una niña – he/she treats me like a child
No me deja(n) salir – he/she doesn't let me go out
No me da(n) libertad – he/she doesn't give me freedom
Me critica(n) – he/she criticises me

Wow!

Ojalá tuviera un hermano/una hermana – If only I had a brother/sister
Nos peleamos como el perro y el gato – we fight like cat and dog
Somos uña y carne – we're inseparable
Lo que más me gusta es (que)… – the thing I like the most is (that)…
Lo que menos me gusta es (que)… – the thing I like the least is (that)…

Me llamo María y tengo **quince** años.	My name is Maria and I am **15**.
Tengo el pelo **largo** y **rubio** y no soy ni **alto** ni **bajo**.	I have **long** **blond** hair and I'm neither **tall** nor **short**.
Si tuviera la opción, quisiera tener **un tatuaje** pero **lo haré cuando sea mayor**.	If I had the option I would like to have **a tattoo** but **I will do it when I'm older**.
En mi familia somos **cinco**.	In my family there are **five** people.
En general **diría que** me llevo bien con **mis padres** **aunque sean** **estrictos** a veces.	In general **I would say that** I get on well with my **parents** **even though they are** **strict** sometimes.
Yo **me parezco mucho** a **mi madre**. Las dos tenemos el pelo **castaño**.	**I look a lot like** **my mum**. We both have **brown** hair.
También nos llevamos superbien ya que **tenemos mucho en común** y siempre **me apoya**.	Also, we get on really well because **we have a lot in common** and **she** always **supports me.**
Antes adoraba a **mi hermana menor** pero ahora **la encuentro** **molesta** y **nunca guarda mis secretos**.	Before I loved my **little sister** but now **I find her** **annoying** and **she never keeps my secrets**.
Para mí un buen amigo **debe ser** **comprensivo** y creo que **es importante que tengamos** **intereses en común**, por ejemplo **la música**	For me a good friend **should be** **understanding** and I believe that **it's important that we have** **common interests**, for example **music**.
Creo que soy una buen amiga ya que siempre **apoyo** a mis amigos y **doy consejos buenos**.	**I believe that** I am a good friend because I always **support** my friends and **I give good advice**.

A model text on family and relationships

EL TIEMPO LIBRE

Activities Music Sports

Activities

Suelo – I tend to **Me encanta** – I love **Me mola** – I like **Me chifla** – I'm crazy about **Prefiero** – I prefer **Mi pasión es** – my passion is	**descansar** – relaxing **escuchar música** – listening to music **hacer deporte** – doing sport **ir al cine** – going to the cinema **leer libros/revistas/periódicos** – reading books/magazines/papers **salir con mis amigos** – going out with friends **quedar con amigos** – meeting with friends **ir de compras** – going shopping **montar en bici/monopatín** – riding my bike/skateboard **usar el ordenador** – using the computer **ver la tele** – watching tv **jugar con los videojuegos** – playing video games **cocinar** – cooking	**porque** – because **ya que** – because **dado que** – because	**es** – it is	**divertido** – fun **entretenido** – entertaining **relajante** – relaxing **sano** – healthy **aburrido** – boring **malsano** – unhealthy **adictivo** – addictive
No aguanto – I can't stand **No soporto** – I can't stand **Odio** – I hate			**soy adicto/a...** – I'm addicted **me ayuda a relajarme** – it helps me to relax **me hace reír** – it makes me laugh **me ayuda a olvidarme de todo** – it helps me to forget everything **necesito comunicarme con otra gente** – I need to have contact with other people **me aburre como una ostra** – it bores me to death **no me interesa** – it doesn't interest me	

Music

Me encanta escuchar – I love to listen to **Suelo escuchar** – I tend to listen to	**el soul/el rap/ el dance/ el hip-hop/el pop/el rock/el jazz/** **la música clásica/electrónica** **la música de...** – ...'s music	**porque** – because **ya que** – because **dado que** – because	**tiene ritmo** – it has rhythm **me encanta la letra** – I love the lyrics **...canta bien** – ...sings well
Toco – I play **Toca** – he/she plays **Tocan** – they play	**El teclado** – the keyboard **La batería** – the drums **La guitarra** – the guitar		**el piano** – the piano **la flauta** – the flute **la trompeta** – the trumpet
Asistir a un concierto – to attend a concert **Cantar** – to sing **Una canción** – a song **Un cantante** – a singer		**Mi cantante favorito/a es...** – my favourite singer is... **Mi grupo favorito es...** – my favourite band is... **un espectáculo** – a show **una gira mundial** – a world tour	

Sport

Soy – I am **Era** – I was	**aficionado/a de** – a fan of **hincha de** – a fan of **fanático/a de** – a _____ fanatic **miembro de un club de...** – a member of a _____ club	**Random**	**correr** – to run **entrenar** – to train **marcar un gol** – to score a goal **participar** – to participate **un partido** – a match **la temporada** – the season
Juego – I play	**al badminton/fútbol/rugby/tenis/hockey/croquet/béisbol** **al balonmano** – handball **al baloncesto** – basketball **al voleibol** – volleyball		
Hago – I do	**judo** – judo **karate** – karate **atletismo** – athletics **baile** – dance **boxeo** – boxing **ciclismo** – cycling **equitación** – horseriding **escalada** – climbing **gimnasia** – gymnastics **natación** – swimming **remo** – rowing **vela** – sailing **patinaje sobre hielo** – ice skating **tiro con arco** – archery **piragüismo** – canoeing		

En mi tiempo libre suelo descansar	In my free time I tend to relax
o, a veces, quedar con amigos en el centro	or, sometimes, meet my friends in town
para ir de compras ya que es entretenido.	to go shopping because it's entertaining.
En mi opinión, salir con mis amigos me hace reír	In my opinion, going out with my friends makes me laugh
y me ayuda olvidarme de todo	and helps me to forget everything
sin embargo nunca monto en bici	however I never ride my bike
ya que me aburre como una ostra	because it bores me to death
aunque sé que es sano.	although I know that it's healthy.
Además, me encanta escuchar música y	Moreover, I love listening to music and
suelo escuchar la música de Adele	I tend to listen to Adele's music
dado que canta bien y me encanta la letra.	because she sings well and I love the lyrics.
No toco un instrumento pero en el futuro	I don't play an instrument but in the future
voy a aprender tocar la batería.	I'm going to learn to play the drums.
Cuando era joven era hincha de FC Barcelona	When I was younger I was a fan of Barcelona FC
porque jugaba mucho el fútbol	because I played loads of football
pero ya no.	but I don't anymore.
Ahora prefiero ver un partido.	Now I prefer to watch a match.

A model text on hobbies