ALL SAINTS'
CATHOLIC VOLUNTARY ACADEMY

Year 8 Absolutes

Opportunity . Achievement . Success

Fidem House

"With faith, anything is possible"

Term 2 2025-26

NAME:
FORM:

Y8 Rhetoric Absolute

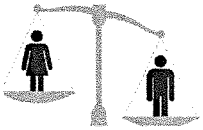
Concepts

Rhetoric

The art of persuasion, getting people to believe what you want them to.

Patriarchy

A society in which men hold power over women..



Injustice

When a result is viewed as being unfair. It may be based in bias and prejudice.

Democracy

A system of government where people vote their elected representatives into parliament.

Propaganda

Exaggerated ideas spread by the government or a political party to promote their ideas in a heavily biased way.

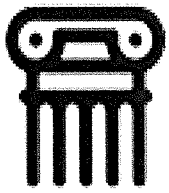
Vocabulary

Room 101 speech			**Marc Anthony Speech**		
1	**Riddled**	Full of	16	**Interred**	buried
2	**Obsolete**	Outdated; not used anymore.	17	**Ambitious**	showing a strong desire to succeed
3	**Arrogant**	Big-headed/someone who thinks they're better than others	18	**Grievous**	Bad and serious
Alexander the Great Speech			19	**Coffers**	money chests
4	**Venture**	A risky journey	20	**Thrice**	three times
5	**Endurance**	The act of suffering something painful or difficult	21	**Disprove**	Prove something is false
6	**Hesitate**	Pause over a decision	22	**Mourn**	Show sorrow for death.
Elizabeth 1st's speech			23	**Brutish:**	Cruel and violent
7	**Multitudes**	Many people			
8	**Treachery**	Betrayal of trust			
9	**Tyrant**	A cruel and harsh ruler			
10	**Feeble**	Weak/ dellicate			
11	**Scorn**	Hatred			
12	**Virtues**	Good qualities/high moral standards.			
13	**Obedience**	Following orders			
14	**Concord**	Peaceful behaviour			
15	**Valour**	Bravery			

Key word	Definition
Alliteration	Repeating the same sound at the start of consecutive words. *Today is a terrible tragedy.*
Anecdote	A short amusing or interesting story about a real incident or person. *Let me tell you a story….*
Antithesis	Putting two opposites together in clauses that mirror each other grammatically: *"One small step for man, one giant leap for mankind".*
Direct address	Use of a pronoun (you) to address the audience. *You need to listen.*
Emotive language	Words or phrases that encourage the reader or audience to feel a particular emotion. *Innocent, vulnerable children suffer cruel deaths in war.*
Epiphora	Ending each sentence with the same words. *I want change, you want change, we all want change!*
Ethos	Credibility. *"I have thirteen years experience as a teacher, so I know what I'm talking about."*
Hyperbole	Exaggeration to emphasise a point or idea. *This is the worst idea in the world.*
Hypophora	A question followed by the answer: *Should we do it? Of course we should!*
Logos	Using logic and reasoning as your appeal: facts and figures. *70% of students I surveyed agreed with me.*
Pathos	Pathos is the emotional influence of the speaker on the audience. Its goal is to make the audience feel something. *Can be created through emotive language (see above)*
Purpose	The reason the writer is writing. *E.g – to argue, to entertain or to persuade.*
Rhetorical question	A question that doesn't require an answer, but is instead used to make a point. *What do you think you're doing?*
Tricolon	Use of a list of three, or repetition of something three times, to emphasise a point. *It's unneccessary, cruel and wrong.*
Verbal irony	Saying the opposite of what you mean. It can be used to bring humour or express frustration: *"Lovely weather we're having!" (when it's raining).*

Further Knowledge

The study of rhetoric began in Ancient Greece and has continued to be important around the world today with political leaders, civil rights activists and those trying to get out of doing homework.



There are many devices used to strengthen different aspects of your rhetoric which can be identified in many different speakers work. Aristotle, Hitler and Malala all use the same aspects of rhetoric in their writings!

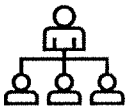
Rhetoric is everywhere: in the news, on the radio, in adverts. Be aware that every thing you hear may contain rhetoric. Keep a critical ear and be aware of how you're unknowingly being persuaded.

Y8 Animal Farm Absolute

Concepts

Social Responsibility

Looking out for others, particularly those that are disadvantaged.



Idolisation

Seeing or representing something as perfect or better than it is in reality.

Morality

Principles around how we distinguish between right and wrong or good and bad behaviour.

Prejudice

Holding the belief that certain types of people are better than others.

Propaganda

Exaggerated ideas spread by the government or a political party to promote their ideas in a heavily biased way.

Sentimentality

Exaggerated sadness, nostalgia.

Terminology

Allusion
An expression designed to call something else to mind with mentioning it explicitly.

Dramatic Irony

When the reader or audience know something that the characters don't

Allegory

A story with a hidder moral or political meaning.

Satire

Using humour, irony or exaggeration to expose and criticise stupidity.

Maxim

A short, memorable rule or truth often about how we as a society should act.

Foreshadowing

The playwright gives us hints or clues to suggest what will happen later in the plot.

Vocabulary

1. **Propaganda** (see 'concepts' for definition)
2. **Social Responsibility** (see 'concepts' for definition)
3. **Transgression** (Breaking the rules)
4. **Justice** (Fairness in the way people are dealt with)
5. **Compassion** (Pity and concern for the suffering of others)
6. **Protagonist** (the leading character)
7. **Antagonist** (the opponent to the protagonist)
8. **Dramatic Irony** (See 'terminology')
9. **Figurative Language** (when words go beyond their actual meaning – techniques such as metaphor, simile, personification)
10. **Satire** - (see 'terminology')
11. **Maxim** – (see 'terminology')
12. **Illusion** – When something isn't as it seems
13. **Logos** – The logic to an argument
14. **Ethos** – The ethics/credibility and trust behind an argument
15. **Pathos** - the raising of emotion
16. **Hierarchy** – A system where people are ranked according to status or authority.

Further Knowledge

The novel charts the **corruptions** of **Communist** ideals of **equality**, where workers are **promised** equality and freedom and are eventually **repressed** and treated **as bad**, if not worse under previous **Capitalist** rule.

Communism is where **everyone** gets an **equal share** of **wealth** and **resources**. In theory, there are no rich or poor people: everyone is the **same**.

Capitalism is where the **government** does **not control** the resources and wealth. Businesses are **competitive** and it's survival of the **fittest**. This way of organizing the economy allows people to become **very rich** while other people stay poor.

Y8 Animal Farm Absolute

Plot

Mr Jones, the owner of Manor Farm drunkenly falls asleep. All the animals of Manor Farm meet in the big barn where *Old Major* delivers a speech arguing for a rebellion against humans. The Animals sing 'Beasts of England', a song from Old Major's dream.

Old Major dies in his sleep. The pigs adapt his ideas into the seven commandments of animalism & teach the other animals. The rebellion occurs & Jones is driven from the farm. The farm is renamed 'Animal Farm'.

The animals work hard. Boxer works the hardest. There is a flag-raising ceremony every Sunday. Snowball and Napoleon often clash – Snowball tries to educate all animals but Napoleon just takes interest in the puppies. Squealer convinces the animals it's best for the pigs to eat the milk & apples.

The news of Animal Farm spreads to neighbouring farms. Jones and other farmers launch an attack on the animals but are easily beaten. Boxer and Snowball fight heroically and are awarded medals.

Mollie is tempted away from the farm. Snowball announces plan for a new windmill but Napoleon unleashes his dogs, which chase Snowball off the farm. Squealer defends Napoleon's actions as in their bets interests.

The animals work hard to build the windmill and their rations are cut. The pigs start to amend the commandments to suit their best interests. A storm destroys the windmill yet Napoleon blames it on the "traitor" Snowball.

Snowball is blamed for more and more failures. The hens rebel after their eggs are sol. Napoleon holds a meeting and has several animals executed for their apparent treason against the farm.

More commandments begin to change but Squealer persuades the animals that this isn't the case. Napoleon is now called 'Leader'. The humans destroy the second windmill and several animals are killed. The pigs begin drinking alcohol.

Animal Farm is named a republic with Napoleon the president. Moses returns with tales of Sugarcandy Mountain. Boxer collapses. He is taken away in a van to the slaughterhouse but Squealer says that this wasn't the case and he died on his way to the hospital.

Years pass by. Only a few animals remain alive who can remember the rebellion. Only the pigs seem richer but the animals are still proud of Animal Farm. The pigs begin walking on two legs. Humans come over for a meeting and the animals find it hard to differentiate between the pigs and people.

Characters

Mr Jones	*Drunken owner of Animal Farm. Embodies the tyranny of man.*
Napoleon	*Expels Snowball. Executes animals. Establishes himself as dictator. Controls with fear. Becomes Jones.*
Snowball	*Devoted to animalism and the education of animals. Hero at the battle of the cowshed.*
Squealer	*Mouthpiece of Napoleon. Uses propaganda to control animals.*
Old Major	*Wise, old pig. Inspires the rebellion with his rhetoric.*
Dogs + Sheep	*Instruments of fear and control, educated by Napoleon.*

Moses	*Tamed raven of Jones. Spreads idea of Sugarcandy Mountain.*
Boxer	Devoted citizen and immensely strong. Innocent and naïve.
Clover	*Maternal and loyal. Senses hypocrisy but can't express it*
Mollie	*Shallow & childish. Craves ribbons & sugar. Deserts the farm*
Benjamin	*Stubborn, cynical & apathetic. Only stirred to passion by Boxer's removal*

Key Quotations

Chapter 1	'Whatever goes upon two legs is an enemy'
Chapter 2	'All animals are equal'
Chapter 3	'Four legs good, two legs bad'
Chapter 4	'War is war. The only good human being is a dead one'
Chapter 5	'If Comrade Napoleon says it, it must be right'

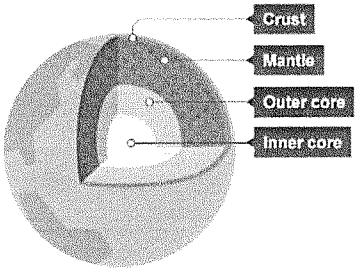
Chapter 6	'All that year the animals worked like slaves'
Chapter 7	'And so the tale of confessions and executions went on'
Chapter 8	'No animal shall kill any other animal *without cause*'
Chapter 9	'All rations were reduced except those of the pigs and the dogs'
Chapter 10	'All animals are equal but some animals are more equal than others'

All Saints' Absolutes - Geography: Year 8 – Tectonics

Earth Structure and Location of Volcanoes and Earthquakes

Earthquakes and volcanic eruptions are the result of physical processes.

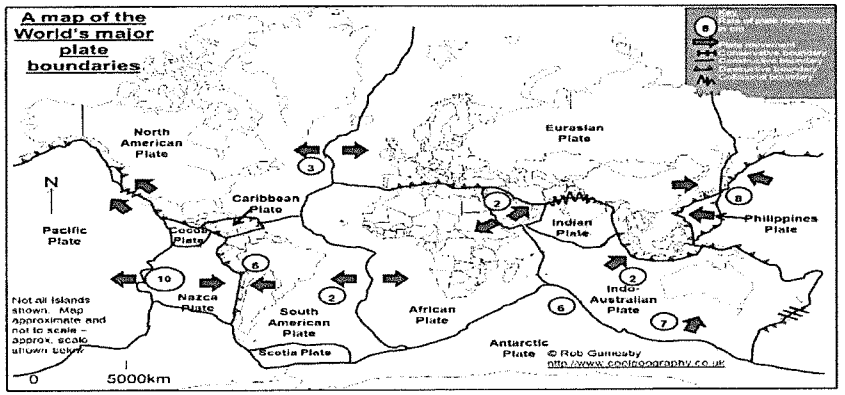
1. Plate tectonics theory.



Layers of the earth
Crust – rock layer at different thickness
Mantle – super heated, semi-molten rock
Crust – Made of metals such as iron and nickel

2. The crust is broken up into large slabs called tectonic plates. These plates float on the semi-molten rock of the mantle and are moved around by convection currents.
3. Continental plates: thick (30-50km) but light and old. Cannot be destroyed.
4. Oceanic plates: thinner (5-10km) but dense and younger.
5. Global distribution of earthquakes and volcanic eruptions and their relationship to plate margins.

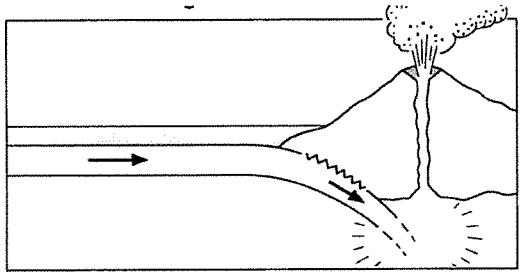
Global distribution of earthquakes and volcanic eruptions and their relationship to plate margins



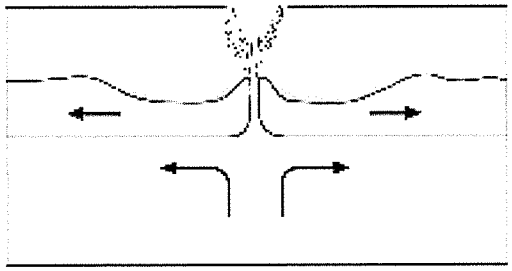
6. Volcanoes and earthquakes tend to be found along plate boundaries.
7. Volcanoes can be found mainly on constructive and destructive plate boundaries
8. Earthquakes can be found on all four types of plate boundary (see below)
9. Many volcanoes and earthquakes are found around the Pacific plate (ring of fire)
10. Areas further away from plate boundaries do not normally experience tectonic hazards.

Types of plate boundary

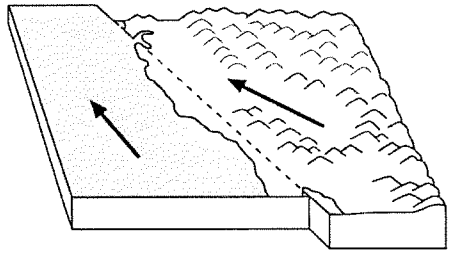
Destructive → ← Tectonic plate margin where two plates are converging or coming together and oceanic plate is subducted. (e.g. Nazca and South American plates) = earthquakes and volcanoes



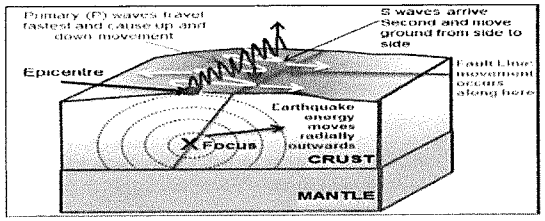
Constructive ← → Tectonic plate margin where rising magma adds new material to plates that are diverging or moving apart. e.g. North American and Eurasian plate) = volcanoes



Conservative ↑↓ Tectonic plate margin where two tectonic plates slide past each other. e.g. Pacific and North American plate creating San Andreas fault) = earthquakes



Earthquakes



11. An earthquake = a sudden or violent movement within the Earth's crust followed by a series of shocks.
12. Seismic waves = the vibrations of the crust's movement during an earthquake
13. Focus = the point in the earth's crust where seismic waves begin. Seismic waves are strongest nearest to the focus.
14. Epicentre = on the surface of the earth's crust directly above the focus on the earth's surface.

Causes of earthquakes

15. Convection currents move plates together (at a destructive boundary) or alongside each other (at a conservative boundary).
16. As the plates move past each other tension builds between them.
17. Suddenly this pressure is released as seismic waves and the earth's crust vibrates. This is an earthquake.
18. The seismic waves spread out from the focus.

Measuring earthquakes

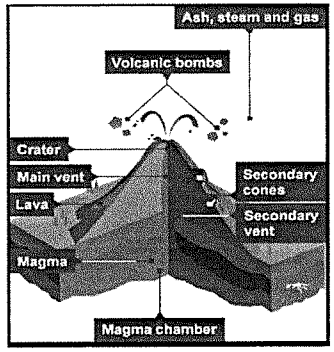
19. Richter scale measures magnitude (amount of energy released) of seismic waves on a logarithmic scale (0-9+)
20. Mercalli scale measures damage done by the earthquake 1 (very little damage) -12 (total destruction)

Volcanoes

21. A volcano is an opening in the Earth's crust. It allows hot magma, ash and gases to escape from below the surface.
22. There are two types of volcano, composite and shield.
23. Composite volcanoes are steep-sided and cone-shaped, made up of layers of ash and lava and containing sticky lava which doesn't flow very far. Mount St Helens is a composite volcano.
24. Shield volcanoes have gently sloping sides and runny lava that covers a wide area. Gases escape very easily from shield volcanoes. Mauna Loa in Hawaii is a shield volcano.

Mt St Helens

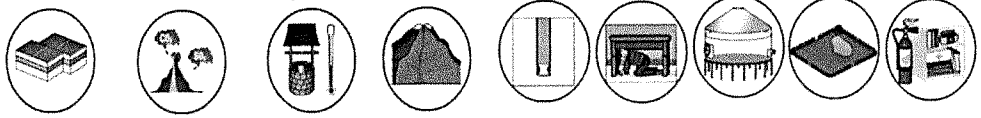
25. Mt St Helens is located in Washington state, North West USA.
26. It erupted on May 18, 1980.
27. It is a composite volcano on a destructive plate boundary where the Pacific plate subducts below the North American plate
28. As the vent was blocked a bulge formed on the flank of the volcano and an unusual lateral blast caused a pyroclastic flow, which killed 57 people.



Management of tectonic hazards

How can volcanoes be predicted?

How can people plan for earthquakes?



29. Monitoring: Recording physical changes, such as earthquake tremors around a volcano, to help forecast when and where a natural hazard might strike. [seismometers to detect tremors, tiltmeters to detect bulges in volcanoes, monitoring of sulphur dioxide levels]
30. Prediction: Attempts to forecast when and where a natural hazard will strike, based on current knowledge. This can be done to some extent for volcanic eruptions, but less reliably for earthquakes. Prediction then allows people to evacuate and move belongings.
31. Planning: Actions taken to enable communities to respond to, and recover from, natural disasters, through measures such as emergency evacuation plans, information management, communications and warning systems.
32. Protection: Actions taken before a hazard strikes to reduce its impact, such as educating people or improving building design [automatic shut off switches to gas and electricity supplies to prevent fires following earthquakes, rubber shock absorbers, interlocking bricks/steel frame, shatter proof windows to help buildings withstand earthquakes.]

Why do people live near volcanoes and earthquakes?

The advantages of living near volcanoes:

33. Fertile soils e.g. around Vesuvius where much of Italy's tomato crop is grown.
34. Geothermal power is often a cheap and clean source of power – e.g. Iceland
35. Usually, there are sufficient signs to move to safer places, so while property could be as risk injury is less likely e.g. Mount Pinatubo in the Philippines in 1991 was the 2nd largest eruption in the 20th century but only 300 died because of mass evacuation of the area.
36. People have lived in the area for many years and are confident that there won't be a severe eruption.
37. Tourism is a strong pull, e.g. in Uganda, the volcanic region around Mt Elgon is being heavily promoted for its landscape, huge waterfalls, wildlife, climbing and hiking and its remote 'get away from it all' location.

The advantages of living in earthquake zones:

38. Many earthquake areas are close to the coast – the climate is good, fishing and farming are easy.
39. Many of these places like Japan get daily earthquakes and they have learnt to deal with them. They cause little or no damage as they adjust building methods for example.
40. The big ones are very infrequent – 1906 and 1989 in San Francisco, so people believe they can manage

Development, Globalisation and Superpowers

Development

1.Development can be categorised into different types; each type has a different measurement.

- Economic Development –An improvement in wealth – measurement = GPD or unemployment rate.
- Social development - An improvement in standard of living – measurement = life expectancy and literacy rate.
- Political development - Developing stable and effective representative governments – measurement Corruption perception index.
- Environmental development - Improving or restoring the natural environment – measurement = air pollution levels.

2. It is best to look at multiple types of development for a country to give an overall picture of its development. Composite measures also give a good picture as they look at more than one factor such as HDI.

3.The development gap and inequalities occur both between and within countries and cities. There are numerous factors that can stop a country/city from developing. These can be split into physical and human factors

Human Factors

- Government Corruption – Even if the place is making money the government of the place could be corrupt and therefore not spending it improving the place.
- Colonisation – Places that have been colonised previously tend to have a harder time developing as the country that ruled them take their natural resources.
- War and Conflict – It is hard for a place to develop if it is busy spending money fighting war and conflict.

Physical Factors

- Climate – Extreme hot or cold climates hinder a place from developing.
- Natural Hazards – such as frequent earthquakes can destroy infrastructure and therefore stop a place from developing.
- Location – places at the coast are more likely to develop through trade.

Globalisation

1.Globalisation comes in many forms including:

- Economic globalisation – The growth of trade around the world
- Cultural globalisation - The growth of a shared norm around the world
- Social globalisation - The growth of migration globally
- Political globalisation - The growth of countries joining political group membership

2. Globalisation has increased due to two main factors:

- Transport developments – including trains, ships and air travel. These have enabled goods and people to be transported across the globe faster.
- Technological advancements – including the mobile, the internet and social media these have allowed the purchasing of goods to be a faster process.

3.MNC's – McDonalds

- McDonalds is an American MNC, that established in California in 1940.
- McDonald's became an MNC in 1967 when it opened a restaurant in Canada.
- McDonalds now has over 40,000 restaurants in 120 countries.
- McDonalds employs 200,000 people globally.
- McDonalds make around $10 billion in profit annually.
- The expansion of McDonalds globally has been referred to as 'McDonalisation'

4.The Global Shift has had both positives and negatives for LIC's/NIC's and HIC's.

LIC/NIC
+ More job opportunities lifting the population out of poverty
+ More tax money for the Government
-Increase in air and water pollution from manufacturing
- Growth of informal settlements

HIC
+ Products become cheaper due to it being cheaper to manufacture and import from abroad
+ Fewer pollution
-Loss of jobs, area becomes derelict and crime can occur

Development, Globalisation and Superpowers

Superpowers

1. What factors can make a country a superpower?
   - A strong economy
   - A strong military
   - A strong cultural influence
   - Physical location and size
   - Natural resources
   - A large population

2.History of Superpowers

The British Empire - 1500-1950

- Used hard power through a strong navy and military
- Controlled 25% of land globally during 1920
- India is a former colony of the British Empire, India gained independence in 1947
- British culture still remains in India today through sports, diet, language, architecture and politics.

The Cold War 1945- 1990

- During this time period the USA believed in capitalism whilst the USSR believed in communism
- The two countries never actually physically fought but instead used soft power to spread their politically ideologies to their allies
- The USSR lost the cold war due to a weak economy and weak allies.

Today/Future

- The USA is seen as the only superpower today, it is known as 'the global police' as it tends to get involved with global affairs such as wars.
- The BRICS (Brazil, Russia, India and China) are seen as the emerging superpowers of today.
- The future of superpowers is very hard to predict as anything can happen to help or hinder a countries superpower status.

3.IGO's

The World Bank is an IGO that was established after WW2 to help countries develop. The World Bank provides countries with low interest loans to invest in infrastructure e.g. ports. The World Bank along with other IGO's has been criticised for unequal voting rights however. For example, the US holds 16.5% of the World Banks voting rights and has the power to veto any decisions made.

Key terms:

Development – The process of countries getting better.
Development Gap - The widening difference in levels of development between the world's richest and poorest countries. There are also development gaps within countries.
Globalisation - Globalisation is the idea that the world is becoming more interconnected and therefore feels smaller than it did in the past.
MNC - MNC stands for multi-national company, it is a business that operates in more than one country. MNC's are also called TNC's (Transnational Corporations).
The Global Shift - The relocating of the global economic centre of gravity to Asia (LIC's/NIC's) from Europe and North America (HIC's), over the last 30 years.
Superpowers - A country with the ability to project its power and influence anywhere in the world.
Hard Power – Power through force.
Soft Power – Power through persuasion.
Empire - A body that takes over a large amount of territories.
Colony - A country under the full control of another country.
Communism - A political system in which a countries industries are owned in common and are available to all as needed.
Capitalism - A political system in which a countries industry is controlled by individuals for profit.
BRIC - An acronym for Brazil, Russia, India and China – the 4 main emerging economies in the world.
IGO - A group of countries who come together in good faith, on issues of common interest.
Uni/Bi/Multi Polar – Uni- A world with only 1 superpower. Bi - A world with 2 superpowers. Multi- A world with multiple superpowers.

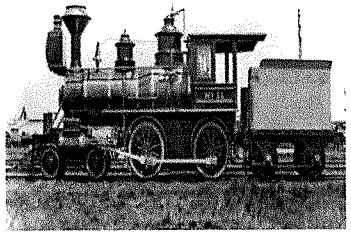
Test Yourself Questions:

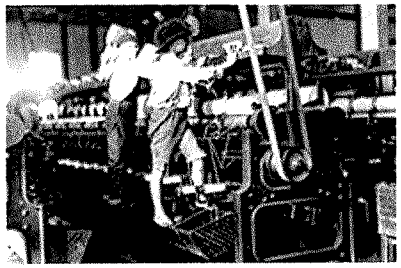
1. What are the different types of development?
2. Why is it better to look at composite indicators of development as oppose to single indicators?
3. Give and explain a human reason why a place struggles to develop
4. What are the UN's sustainable development goals? Which one is the most important?
5. Explain with examples what is meant by cultural globalisation
6. Globalisation is sometimes referred to as 'the shrinking world effect' what developments have allowed the world to feel like it has shrunk?
7. How does McDonalds contribute to globalisation?
8. What is the most important factor in creating superpower status? Can you provide an example to support your argument?
9. Is hard or soft power more likely to create superpower status?
10. In your opinion which type of world (uni, bi or multi) will create the most tension globally?

History Year 8

Topic Industrial Revolution

Timeline		
1.	1771	Richard Arkwright opens the first factory in Cromford, Derbyshire
2.	1825	The first passenger steam railway travels between Stockton and Darlington– invented by George Stephenson
3.	1830	The first inter-city railway is opened, travelling between Manchester and Liverpool.
4.	1831	Brunel designs Clifton Suspension Bridge
5.	1832	Reform Act- Began to give more people the vote including small landowners, tenant farmers and shopkeepers
6.	1833	Factory Act- No children under nine to work in factories, nine hours of work maximum per day for children aged 9-13, two hours of school per day. Factory inspectors appointed.
7.	1842	Edwin Chadwick writes a report to the government on the poor working and living conditions in London.
8.	1844	Factory Act- No women to work more than 12 hours per day, machines to be made safer.
9.	1847	Ten Hour Act- Maximum ten hour day for all women and workers under 18.
10.	1850	Factory Act- Machines to only be operated by women and children between 6am and 6pm.
11.	1851	The Great Exhibition is opened in Hyde Park, showcasing Britain's Industrial achievements.
12.	1854	John Snow discovers the cause of cholera
13.	1863	London underground is opened
14.	1867	Second Reform Act– gave working class men the vote for the first time
15.	1888	Jack the Ripper murders 5 women in London. The killer is never caught
16.	1895	Factory Act– Children under 13 to work a maximum of 30 hours per week





Key words		
1.	Population	All the people who live in a particular place
2.	Transport	Carry people/goods from one place to another
3.	Living conditions	Circumstances of a persons life e.g. shelter, food, clothing, safety, clean water
4.	Working conditions	The working environment e.g. hours, breaks, pay.
5.	Back to back houses	Form of terraced housing, share 3 out of 4 walls. The only windows and door are on the front.
6.	Cholera	Infectious disease of the small intestine, caught from infected water supply.
7.	Rural	Countryside
8.	Urban	Town/city
9.	Steam engine	Use steam to create power
10.	Spinning frame	Invention for spinning thread from cotton/wool
11.	Smallpox	Contagious disease which caused fever and spots all over the body.

Key individuals		
1.	John Snow	Discovered that dirty water caused cholera by plotting the deaths and linking them to the Broad Street pump. When the handle of the water pump was removed, the deaths stopped.
2.	Richard Arkwright	Opened the first factory in England and developed several machines to create thread from cotton and wool quickly
3.	George Stephenson	Invented the steam engine
4.	Abraham Darby	Invented smelting iron which was then used to create bridges and trains
5.	Isambard K Brunel	Designed bridges and tunnels which improved transport and access
6.	Jack the Ripper	A serial killer who killed 5 women in the Whitechapel area of London in 1888
7.	Edwin Chadwick	Wrote a report for the government on the poor living and working conditions in London to try and persuade them to make improvements.
8.	Edward Jenner	Discovered that smallpox could be prevented by giving people vaccinations containing cowpox.

History

Year : 8

Topic: World War One

- World War I was a major conflict fought in Europe and around the world between July 28, 1914 and November 11, 1918.
- Nations from across all non-polar continents were involved and over eight million people died, although Russia, Britain, France, Germany, and Austria-Hungary dominated.
- Much of the war was characterized by stagnant trench warfare and massive loss of life in failed attacks.

Timeline		
1.	28 Jun 1914	Arch Duke Franz Ferdinand assassinated by Gavrilo Princip during a visit to Sarajevo, Bosnia.
2.	4 Aug 1914	Germany activates Schlieffen Plan and invades Belgium. Britain declares war on Germany after ultimatum.
3.	Apr 1915	Second Battle of Ypres: Germans used poison gas for the first time.
4.	1 July 1916	Haig launched attack at the Somme to relieve French at Verdun. First day resulted in 57,000 British casualties. British used the tank for the first time.
5.	Nov 1916	Battle of the Somme ends with loss of 1.25 million men.
6.	April 1917	USA declares war on Germany
7.	Nov 1917	Battle of Cambrai: British attach -476 tanks are used along the entire line.
8.	Oct 1918	German Navy rebels and refuses to fight
9.	11/11/18	Armistice signed and fighting stops after German army is clearly defeated.
10.	June 1919	The Treaty of Versailles is signed, officially ending the war and dealing with Germany.

Key words		
1.	Militarism	The belief that a country should keepa strong military and be prepared to use it to defend national interests.
2.	Alliance	A group of countries that are formally united or working together for a similar aim or common purpose.
3.	Imperialism	Extending a country's influence by building a large overseas empire–usually using military force.
4.	Nationalism	A feeling of being superior o other countries and following your own national interest above all else.
5.	Artillery	Very large guns that fire at long range. Moved on wheels or tracks.
6.	No Mans Land	Land between the front line trenches of opposing sides.
7.	Morale	Positivity, confidence, motivation.
8.	Mobilise	To prepare and organize (troops) for active service.
9.	Franz Ferdinand	Heir to the throne of Austro-Hungarian Empire. Assassinated by Gavrilo Princip .
10.	Trenches	The area dug into the ground where the troops lived and fought, long and narrow and stretching for hundreds of miles.
11.	Triple Entente	France, Russia and Britain.
12.	Triple Alliance	Germany, Austria-Hungary and Italy
13.	Propaganda	Information that is usually biased or misleading, that is trying to persuade you to believe or support something.
14.	Conscription	Requiring everyone over a certain age to serve in the military, rather than using volunteers.
15.	Reparations	Making amends for doing something wrong, such as paying a compensation payment.

Key medical Developments

1.	Thomas Splint	Used to support compound fractures. Improved survival rate from 20% to 82%.
2.	Blood Transfusions	Blood bank at Cambrai. Citrate glucose added improved storage time up to 4 weeks.
3.	X-Ray	Became widely used to locate shrapnel. Mobile units were used on the front line.
4.	Plastic surgery	Carried out by Dr Harold Gillies . Used to reconstruct those with major head injuries.

History

Year 8

Topic—The Holocaust

Timeline		
1.	30th January 1933	Hitler became Chancellor of Germany
2.	1st April 1933	Hitler orders boycott of Jewish shops, doctors and lawyers.
3.	2nd August 1934	Hitler became Fuhrer of Germany
4.	May 1935	Jews forbidden to join the army
5.	Summer 1935	Signs saying 'Jews not wanted here' displayed in towns and villages, shops, restaurants and cafes etc.
6.	15th September 1935	Nuremberg Laws passed
7.	14th November 1935	National Law of citizenship- Jews are no longer German citizens
8.	1936	Anti- Jewish campaign slows down because of the Olympics which are held in Berlin. 25000 Jews emigrate.
9.	17th August 1937	All Jews to change their names to Israel and Sarah .
10.	5th October 1938	Jewish passports stamped with a red J.
11.	9th November 1938	Kristallnacht 'night of broken glass'.
12.	12th November 1938	Jews fined for the damage of Kristallnacht.
13.	15th November 1938	Jewish children had to go to Jewish schools.
14.	23rd September 1939	All Jewish radio sets were confiscated.
15.	8th December 1940	First deportations to extermination camps (Chelmno), SS and police begin killing operations.
16.	1941	All Jews over 6 forced to wear the yellow Star of David.
17.	January 1942	The Wannsee Conference took place—the Final Solution to the Jewish Question was created.
18.	June 1942	First mass gassings of Jews at Auschwitz concentration camp.
19.	30th April 1945	Adolf Hitler dies at the Fuhrerbunker.
20.	20th November 1945—1st October 1946	The Nuremberg trials, a series of military tribunals notably of leader of Nazi Germany, held after World War II by the Allied forces under international law and the laws of war.

Key words		
1.	Prejudice	Preconceived opinion that is not based on reason or actual experience.
2.	Anti-Semitism	Hostility to or prejudice against Jews.
3.	Kristallnacht	Targeted attacks against Jews and their homes and business in occupied Europe. Means night of broken glass.
4.	Holocaust	Destruction or slaughter on a mass scale
5.	Concentration camp	A place in which large numbers of people, especially political prisoners or members of persecuted minorities, are deliberately imprisoned in a relatively small area with inadequate facilities, sometimes to provide forced labour or to await mass execution.
6.	Nuremburg Laws	A set of Laws passed by Hitler which excluded the Jews from German life and took away their rights.
7.	Persecution	Hostility and ill-treatment, especially because of race or political or religious beliefs.
8.	Aryan race	Nazi belief about a superior Germanic race, typically with blonde hair and blue eyes.
9.	Ghetto	Small areas of cities where Jews were forced to live in poor conditions.
10.	Final Solution	The Nazi policy of exterminating European Jews.
11.	Bystander	A person who is present at an event or incident but does not take part.
12.	Perpetrator	A person who carries out a harmful, illegal, or immoral act.

Key people		
1.	Adolf Hitler	Leader of Nazi Germany between 1933 and 1945.
2.	Anne Frank	Lived in hiding in Amsterdam, died in Bergen-Belsen concentration camp. Famous for her diary documenting her years in hiding.
3.	Reinhard Heydrich	High-ranking member of the SS, leader of the Gestapo and SD. He chaired the Wannsee Conference.
4.	Joseph Goebbels	German Nazi politician and Reich Minister of Propaganda of Nazi Germany from 1933 to 1945.
5.	Maximillian Kolbe	A Polish Franciscan friar who volunteered to die in place of a stranger in the death camp, Auschwitz,
6.	Nicholas Winton	He supervised the rescue of 669 children, most of them Jewish, from Czechoslovakia on the eve of World War II - known as the kinder transport.
7.	Oskar Schindler	German industrialist and a member of the Nazi Party who is credited with saving the lives of 1,200 Jews by employing them in his factories.
8.	Adolf Eichman	One of the architects of the Final Solution to the Jewish Question.

History Year 8 Topic World War Two

Timeline		
1.	1933	Hitler becomes Chancellor In Germany
2.	1936	Hitler's troops enter the Rhineland breaking the Treaty of Versailles
3.	1938-39	Germany invades Austria, Czechoslovakia and Poland
4.	1st September 1939	Poland is invaded by Germany
5.	3rd September 1939	Britain declares war on Germany– WW2 begins
6.	September 1939 onwards	Evacuation of British children to the countryside
7.	26th May-4th June 1940	Evacuation of Dunkirk
8.	10th July-31st October 1940	Battle of Britain
9.	7-8th Dec 1941	Japan attacks the USA navy at Pearl Harbour
10.	4th June 1942	Battle of Midway USA beats Japan
11.	3rd September 1943	Italy surrenders
12.	6th June 1944	D-Day landings
13.	30th April 1945	Hitler commits suicide
14.	7th May 1945	Germany surrenders
15.	6th-9th August 1945	USA drops the atomic bomb on Japan
16.	2nd September 1945	World War Two ends

Main Participating Countries

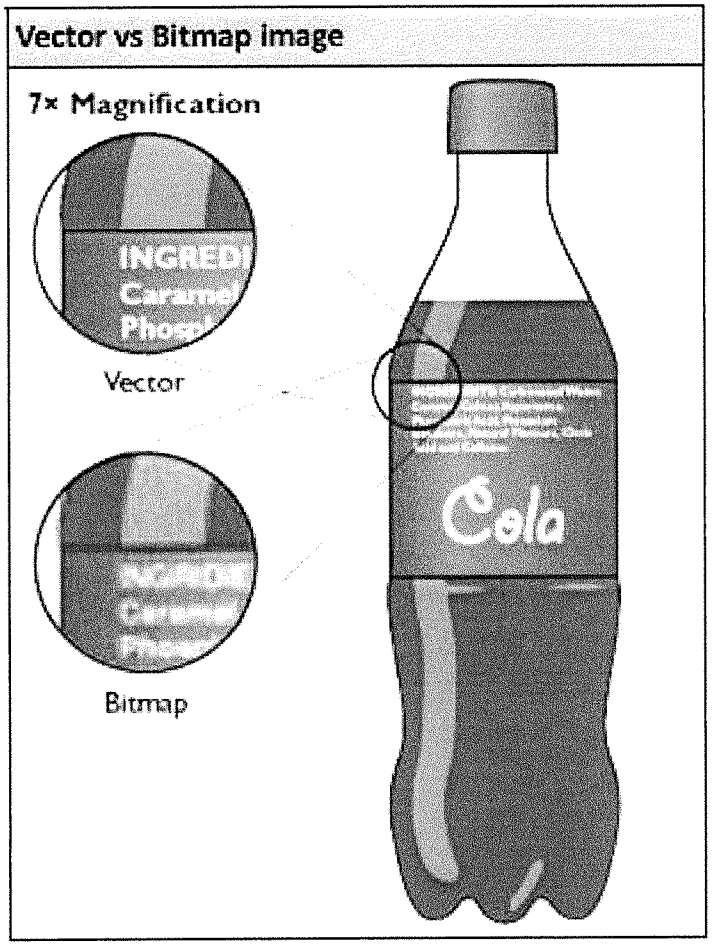
ALLIED POWERS			AXIS POWERS		
Country	Date Joined	Death Toll	Country	Date Joined	Death Toll
FRANCE	3rd Sep, 1939	600,000 1.44% of population in 1939	GERMANY	1st Sep, 1939	approx. 7,200,000 8.5% of population in 1939
UK	3rd Sep, 1939	450,900 0.94% of population in 1939	ITALY	11th Jun, 1940	approx. 500,000 1.14% of population in 1939
SOVIET UNION	22nd Jun, 1941	approx. 24,000,000 13.7% of population in 1939	HUNGARY	27th Jun, 1941	464,000 5.08% of population in 1939
USA	8th Dec, 1941	419,400 0.32% of population in 1939	JAPAN	7th Dec, 1941	approx. 3,000,000 4.7% of population in 1939

Key words		
1.	conflict	A serious disagreement and argument
2.	invasion	When a foreign army enters a country by force
3.	occupy	Take control of (a place, especially a country) by military conquest or settlement
4.	Appeasement	Giving into a person or group's demands in order to avoid conflict
5.	Evacuation	Removal of vulnerable people from cities and towns
6.	Blitzkreig	German tactic of huge, powerful and speedy attacks. Translates to "Lightning war"
7.	Fascism	A government ruled by a dictator. Hitler in Germany and Mussolini in Italy were both Fascist countries
8.	Ultimatum	A final demand, the rejection of which will result in retaliation or a breakdown in relations
9.	Holocaust	Attempted genocide of Jews before, and during WWII
10.	Rationing	Limiting the amount of supplies (food, fuel, clothes) in times of dire need
11.	Total war	War which in which the accepted rules of war are disregarded
12.	Allied Powers	Included Britain, France, Russia and USA
13.	Axis Powers	Included Germany, Italy, Japan
14.	Dictator	A ruler with total power over a country
15.	Blitz	The bombings of London and other key cities between 1940-41

Key People		
1.	Sir Winston Churchill	Was the British Prime Minister between 1940-45. He is often remembered for his excellent leadership in those difficult times.
2.	Adolf Hitler	Was a German politician who became the chancellor of Germany in 1933.
3.	Franklin D Roosevelt	Was President of the USA 1933-1945. He guided America out of the depression and through WW2.
4.	Josef Stalin	Was a communist dictator 1928-53. Originally the USSR was staying out of the war but this changed after the German invasion 1941.
5.	Benito Mussolini	The leader of the Italian National Fascist Party. He became a dictator of Italy from 1925 onwards.

Year 8 Computing – Graphics

Types of images



Photopea Tools

Move tool

Marquee tool

Magic wand/quick select tool

Crop tool

Spot healing tool

Brush tool

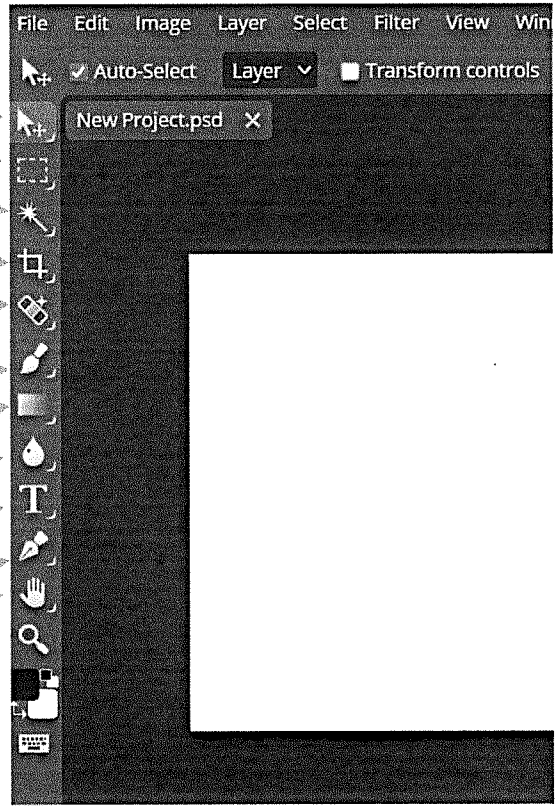
Gradient/paint bucket tool

Blur/Sharpen/Smudge tool

Text tool

Pen tool

Hand tool



https://www.photopea.com/

Year 8 Computing – Web Design

Navigation

Navigation usually occurs in the form of a navigation bar at the top of the webpage.

External links

External links will take the user to another website. This is usually done for social media icons and other related websites.

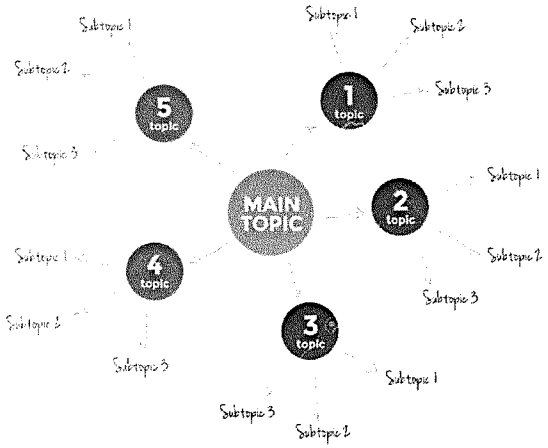
Image Gallery

Image Galleries are used to display multiple images in a certain section of a webpage.

Video/ Sound

Videos and audio can be embedded in a webpage to make the webpages more interesting to the viewer.

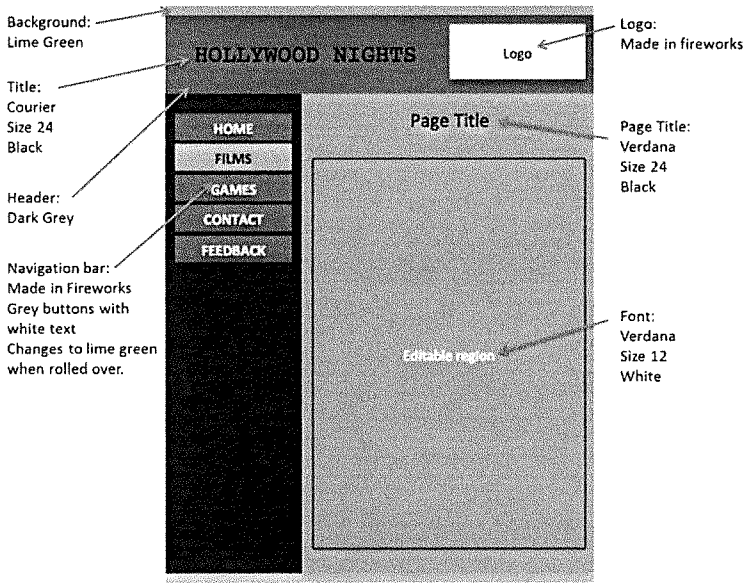
Mind Map



The purpose:

- Generate ideas
- Show content of a media product
- Show development routes
- Show content needed e.g. images and text for a magazine

Visualisation Diagram



This is a rough diagram / plan of still products (i.e. non-moving).

They give an outline idea of what a final product may look like.

They should include graphics and sketches

They show details such as; Where things will be placed, Size, colour, fonts

HTML Cheat sheet

Year 8 Computing – HTML

Basic Tags	
<html></html>	HTML document
<head></head>	Page head
<body></body>	Page body
<title></title>	Page title
	Creates a hyperlink

Formatting Tags	
	Creates a new paragraph
 	Inserts a line break
	Creates a numbered list
	Precedes each list item, and adds a number
	Creates a bulleted list

Image Tags	
<img src=" image name">	Adds an image
<img src=" image name " align="left">	Aligns an image: left
<img src=" image name " align="right">	Aligns an image: right
<img src=" image name " align="top">	Aligns an image: top
<img src=" image name " style="border: 5px solid red;"	Adds a 5px border around an image

Text Tags	
	Creates the largest headline
	Creates the smallest headline
	Creates bold text
	Creates italic text
	Sets h1 font size 13
	Sets paragraph colour to red

Keywords

Ratio: a statement of how two numbers compare
Equal Parts:: all parts in the same proportion, or a whole shared equally
Proportion: a statement that links two ratios
Order: to place a number in a determined sequence
Part: a section of a whole
Equivalent: of equal value
Factors: integers that multiply together to get the original value
Scale: the comparison of something drawn to its actual size.

Ratio

Associates two or more quantities

3 to 4

3 : 4

3 for every 4

What is the Ratio of Apples to Bananas ?

There are 5 apples and 6 bananas, so the ratio is 5 to 6.

The Ratio is Apples : Bananas = 5 : 6

Order is Important

"For every dog there are 2 cats"

Dogs: Cats

1:2

The ratio has to be written in the same order as the information is given

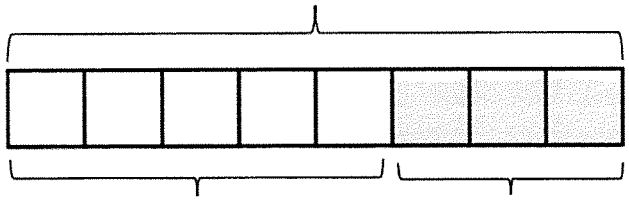
e.g. 2:1 would represent 2 dogs for every 1 cat ✗

Representing a ratio

"For every 5 boys there are 3 girls"

5:3

This is the "whole" – boys and girls together

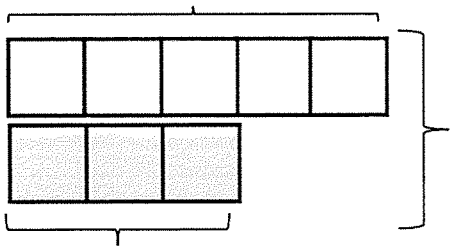


This represents the 5 boys

This represents the 3 girls

Double Number Line

This represents the 5 boys



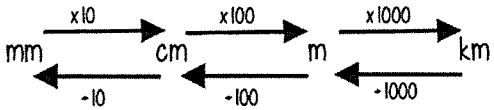
This is the "whole" – boys and girls together

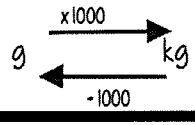
This represents the 3 girls

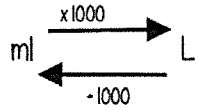
Units are important:

When using a ratio – all parts should be in the same units

Useful Conversions







Simplifying a ratio

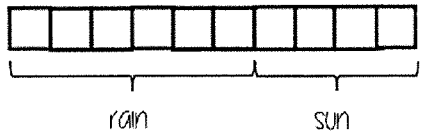
Cancel down the ratio to its lowest form

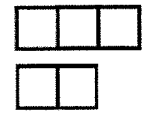
"For every 6 days of rain there are 4 days of sun"

6:4

÷ by 2

3:2





Find the biggest common factor that goes into all parts of the ratio

For 6 and 4 the biggest factor (number that multiples into them is 2)

"For every 3 days of rain there are 2 days of sun" – when this happens twice the ratio becomes 6:4

20:5:10

÷5 ÷5 ÷5

4:1:2

Factors of 20	Factors of 5	Factors of 10
1 2 4	1	1 2
20 10 (5)	(5)	4 (5)

32 : 18

÷2 ÷2

16 : 9

We can write an equivalent ratio in the form 1:n or n:1

This is not usually the simplest form

n is usually a decimal or fraction

Ratio 1:n (or n:1)

This is asking you to cancel down until the part indicated represents 1

Show the ratio 4:20 in the ratio of 1:n

The question states that **this part has to be 1 unit** Therefore **Divide by 4**

4 : 20

1 : 5

This side has to be divided by 4 too – to keep in **proportion**

H the n part does not have to be an integer for this type of question

Finding a value given 1:n (or n:1)

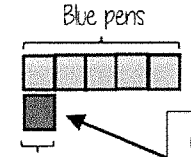
Inside a box are blue and red pens in the ratio 5:1 If there are 10 red pens how many blue pens are there?

Model the Question

Blue Red

5 : 1

□ = one part = 10 pens



One unit = 10 pens

Put back into the question

Blue Red

x 10 5 : 1 x 10

50 : 10

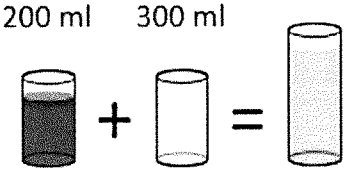
Blue pens = 5 x 10 = 50 pens

Red pens = 1 x 10 = 10 pens

There are 50 Blue Pens

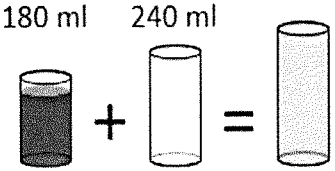
Kate is mixing **blackcurrant concentrate** with **water** to find the **perfect strength** drink.

200 ml 300 ml



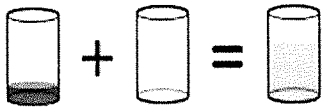
2:3

180 ml 240 ml



3:4

40 ml 140 ml



2:7

Examples:

5 : 4

÷5 ÷5

$1 : \frac{4}{5}$

$a : b =$

2 : 3

1 : 1.5

100% : 150%

There are 50% more white disks than grey disks.

b is 1.5 times larger than a.

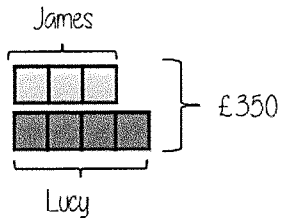
Sharing a whole into a given ratio

James and Lucy share £350 in the ratio 3:4
Work out how much each person earns

Model the Question

James : Lucy

3 : 4



Find the value of one part

Whole: £350
7 parts to share between
(3 James, 4 Lucy)

£350 ÷ 7 = £50

□ = one part
= £50

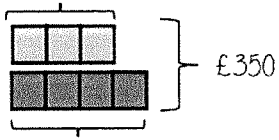
Put back into the question

James : Lucy

(x 50) 3 : 4 (x 50)

£150 : £200

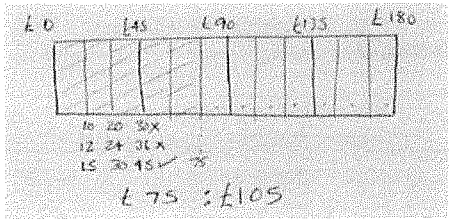
James = 3 x £50 = £150

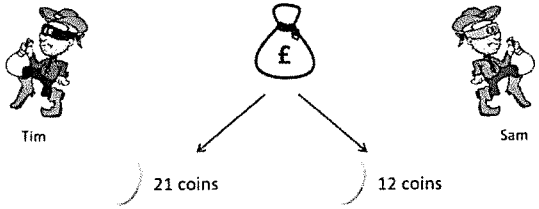


Lucy = 4 x £50 = £200

Example: Share £180 in the ratio 5: 7

Step 1 – put £0 at one end of the bar and £180 at the other
Step 2 – split the bar into 12 (5+7) equal pieces
Step 3 – Work out the vale of 1 piece (£180 ÷ 12)
Step 4 – work out therefore how much 5 and 7 pieces would be





The coins were divided in the ratio

21 : 12

simplify ÷ 3

7 : 4

"For every 7 coins Tim got, Sam got 4."

You can also **compare** ratios by **scaling.**

The ratio $a : b = 2 : 5$

The ratio $b : c = 3 : 1$

What is the ratio $a : b : c$?

	a	b	c
×3	2	5	
		3	1
×5	6	15	5

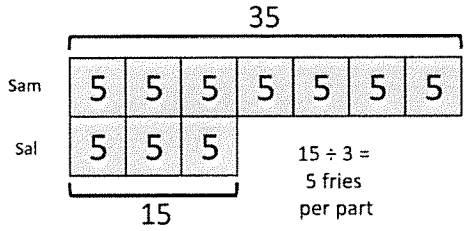
$a : b : c = 6 : 15 : 5$

Reverse Ratios

Sometimes you are given the total amount but not the whole ratio. You need to use what you know to solve.

Sam and Sal shared **some fries** in the ratio **7 : 3**
Sal got **15 fries.** How many did Sam get?

Draw a **Bar Model** to calculate how much **one part** is worth.



Greta is three times as old as Francis.
Harriet is 5 years older than Greta.
The sum of their three ages is 75
Find the ratio of **Francis' age to Greta's age to Harriet's age.**

Work out which person is youngest. Write their age as x and the other ages in terms of x.

Francis: x
Greta: $3x$
Harriet: $3x + 5$

Form an equation for the total of the ages and solve for x.

$x + 3x + (3x + 5) = 75$
$7x + 5 = 75$
$7x = 70$
$x = 10$

Write the required ratio and simplify

$10 : 30 : 35$
$2 : 6 : 7$

We can convert between **fractions, ratios, percentages** and **decimals.**

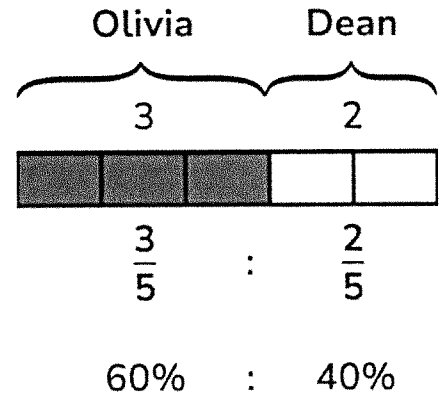
$2 \div 5 = 0.4$

$40\,\% = \frac{40}{100} = \frac{2}{5}$

Fraction	Ratio	Percentage	Decimal
$\frac{2}{5}$	2 : 5	40 %	0.4

$\frac{2}{5} \times 100 = 40$

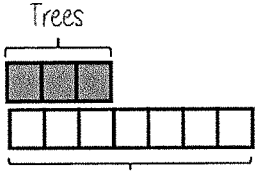
$0.4 = \frac{4}{10} = \frac{2}{5}$



Ratio as a fraction

Trees Flowers

3 : 7



Ratio

There are 3 parts for trees

Fraction of trees

Number of parts of in group / Total number of parts = $\frac{3}{10}$

Fraction

Tree parts 3 + Flower parts 7 = 10

Jess & John bought a bag of sweets.

Jess ate $\frac{1}{5}$ of the sweets. $\frac{1}{5} = \frac{4}{20}$

John ate $\frac{1}{4}$ of the sweets. $\frac{1}{4} = \frac{5}{20}$

Describe the ratio of the sweets Jess ate : John ate : Not eaten

Using a common denominator, the bag was split into 20. So the ratio will have 20 parts.

4 : 5 : 11

$\frac{4}{20} : \frac{5}{20} : \frac{11}{20} \longrightarrow 4 : 5 : 11$

examples

Find the total number of parts by adding the numbers in the ratio.

1. Anna and Brenda share some money in the ratio 2 : 3

$2 + 3 = 5$

a) What fraction of the money does Anna get? Anna gets 2 of the 5 total parts

Anna gets $\frac{2}{5}$ of the money

b) What percentage of the money does Anna get? $\frac{2}{5} = \frac{4}{10} = \frac{40}{100} = 40\%$

2. A bag contains counters. $\frac{4}{7}$ of the counters are red, $\frac{2}{7}$ are green and the rest are blue.

Work out the ratio red counters : green counters : blue counters

Give your answer in the simplest form.

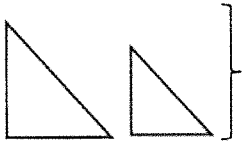
fraction of blue counters $= 1 - \frac{4}{7} - \frac{2}{7} = \frac{1}{7}$

red : green : blue $= \frac{4}{7} : \frac{2}{7} : \frac{1}{7}$

4 : 2 : 1

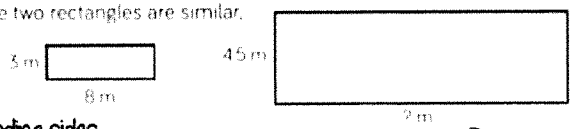
Write the ratio using the fractions, then multiply all parts to simplify.

Ratio between similar shapes

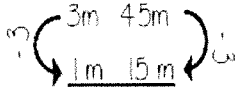


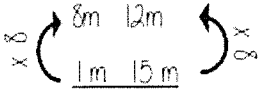
Angles in similar shapes do not change e.g if a triangle gets bigger the angles can not go above 180°

The two rectangles are similar.



Corresponding sides





Note

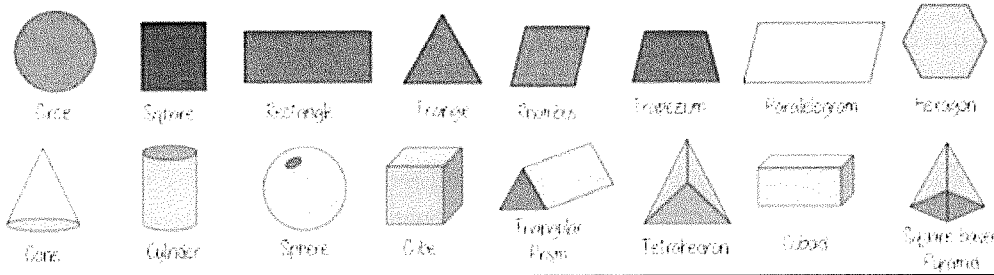
Simplify to the same ratio

Keywords

2D: two dimensions to the shape e.g. length and width
3D: three dimensions to the shape e.g. length, width and height
Vertex: a point where two or more line segments meet
Edge a line on the boundary joining two vertex
Face: a flat surface on a solid object
Cross-section: a view inside a solid shape made by cutting through it

Areas – square units
Volumes – cube units
Areas and volumes can be left in terms of pi π

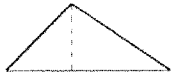
Name 2D & 3D shapes



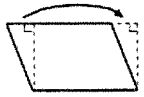
Area of 2D shapes

Rectangle
Base x Height

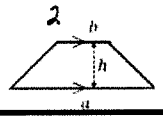
Triangle
½ x Base x Perpendicular height



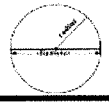
Parallelogram/ Rhombus
Base x Perpendicular height



Area of a trapezium
$\frac{(a+b)\times h}{2}$

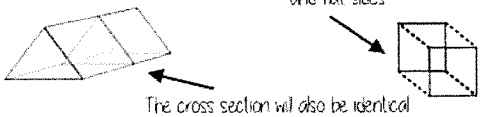


Area of a circle
π x radius^2



Recognise prisms

A solid object with two identical ends and flat sides

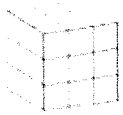


The cross section will also be identical to the end faces

A cylinder although with very similar properties does not have flat faces so is not categorised as a prism

Volumes

Volume is the 3D space it takes up – also known as capacity if using liquids to fill the space

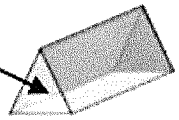


Counting cubes
Some 3D shape volumes can be calculated by counting the number of cubes that fit inside the shape

Cubes/ Cuboids = base x width x height

Remember multiplication is commutative

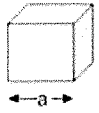
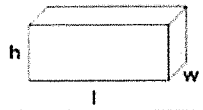
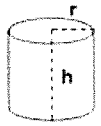
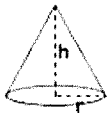
Cross section



Cross section

Prisms and cylinders = area cross section x height

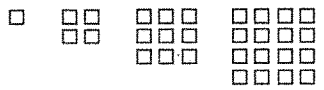
Height can also be described as depth

Figure	Formula	Variables
Cube 	a^3	a = length of edge
Rectangular prism 	l × w × h	l = length w = width h = height
Cylinder 	$\pi \times r^2 \times h$	r = radius of circular face h = height
Cone 	$1/3 \times \pi \times r^2 \times h$	r = radius of circular base h = height from tip to base
Sphere 	$4/3 \times \pi \times r^3$	r = radius

Keywords

Square number: the output of a number multiplied by itself
Square root: a value that can be multiplied by itself to give a square number
Hypotenuse: the largest side on a right angled triangle. Always opposite the right angle
Opposite: the side opposite the angle of interest
Adjacent: the side next to the angle of interest

Squares and square roots



This can also be written as 6^2

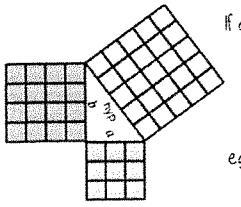
$\sqrt{\ }$ is the square root symbol

eg $\sqrt{64} = 8$
Because $8 \times 8 = 64$

1×1	2×2	3×3	4×4	5×5	6×6	7×7	8×8	9×9	10×10
1	4	9	16	25	36	49	64	81	100

Square numbers

Determine if a triangle is right-angled



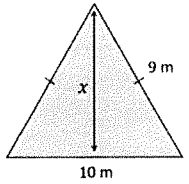
If a triangle is right-angled, the sum of the squares of the shorter sides will equal the square of the hypotenuse

$$a^2 + b^2 = \text{hypotenuse}^2$$

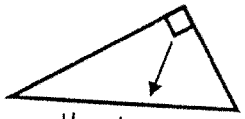
eg $a^2+b^2 = hypotenuse^2$
$3^2 + 4^2 = 5^2$
$9 + 16 = 25$

Substituting the numbers into the theorem shows that this is a right-angled triangle

You can create right angles in isosceles and equilateral triangles.

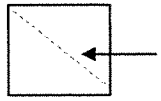


Identify the hypotenuse



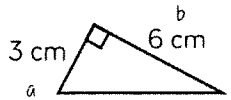
Hypotenuse

The hypotenuse is always the longest side on a triangle because it is opposite the biggest angle



Polygons can still have a hypotenuse if it is split up into triangles and opposite a right angle

Calculate the hypotenuse



Hypotenuse

Either of the short sides can be labelled a or b

$$a^2 + b^2 = \text{hypotenuse}^2$$

1 Substitute in the values for a and b

$3^2+6^2 = \text{hypotenuse}^2$
$9 + 36 = \text{hypotenuse}^2$
$45 = \text{hypotenuse}^2$

2 To find the hypotenuse square root the sum of the squares of the shorter sides

$\sqrt{45} = \text{hypotenuse}$
$6.71cm = \text{hypotenuse}$

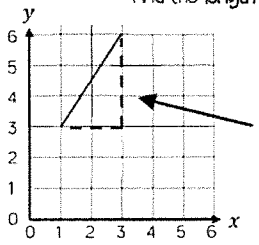
Pythagoras of Samos

c. 570 – c. 495 BC

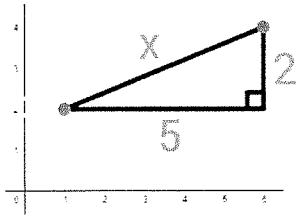
A Greek philosopher who taught students about religion and politics, and made mathematical discoveries

Pythagoras' theorem on a coordinate axis

Find the **length** of the line segment



The segment can be made into a right-angled triangle by adding the sides on the diagram

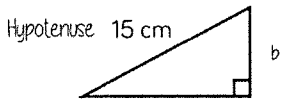


The line segment is the **hypotenuse**

$$a^2 + b^2 = \text{hypotenuse}^2$$

The lengths of a and b are the sides of the triangle

Calculate missing sides



Either of the short sides can be labelled a or b

$$a^2 + b^2 = \text{hypotenuse}^2$$

$12^2+b^2 = 15^2$

1 Substitute in the values you are given

$144 + b^2 = 225$
$-144 \quad -144$

Rearrange the equation by subtracting the shorter square from the hypotenuse squared

Square root to find the length of the side

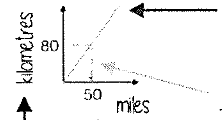
$b^2 = 111$
$b = \sqrt{111} = 10.54\ cm$

Keywords

Proportion: a statement that links two ratios
Variable: a part that the value can be changed
Axes: horizontal and vertical lines that a graph is plotted around
Approximation: an estimate for a value
Scale Factor: the multiple that increases/ decreases a shape in size
Currency: the system of money used in a particular country
Conversion: the process of changing one variable to another
Scale: the comparison of something drawn to its actual size.

Conversion Graphs

Compare two variables



This is always a straight line because as one variable increases so does the other at the same rate

Labelling of both axes is vital

To make conversions between units you need to find the point to compare – then find the associated point by using your graph
Using a ruler helps for accuracy
Showing your conversion lines help as a 'check' for solutions

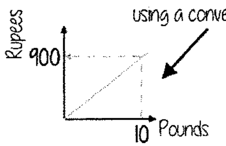
Conversion between currencies

£1 = 90 Rupees ← Currency is directly proportional

For every £1 I have 90 Rupees

× 10 (£1 = 90 Rupees) × 10
£10 = 900 Rupees

Currency can be converted using a conversion graph



Convert 630 Rupees into Pounds

× 7 (£1 = 90 Rupees) × 7 ← 630 ÷ 90 = 7
£7 = 630 Rupees

Direct Proportion

As one variable changes the other changes at the same rate

4 cans of pop = £2.40

× 0.5 (4 cans of pop = £2.40) × 0.5
2 cans of pop = £1.20

This multiplier is the same in the same way that this would be for ratio

This is a multiplicative change

× 3 (4 cans of pop = £2.40) × 3
12 cans of pop = £7.20

Sometimes this is easiest if you work out how much one unit is worth first
eg 1 can of pop = £0.60

Direct proportion

Inverse proportion

Inverse Proportion

If two quantities are inversely proportional, one **increases** as the other **decreases** at the same rate

y is inversely proportional to x.
Work out the missing values in the table.

x	5	2	
y	6		10

↓

x	5	2	3
y	6	15	10

Two inversely proportional quantities always multiply to the same constant.

$5 \times 6 = 30$

$2 \times \_\_ = 30$

$\_\_ \times 10 = 30$

Here you can work out that the constant is **30** from the first pair of values.

Ratio tables show pairs of corresponding values, with an equivalent ratio between each pair. You can create a ratio table by multiplying (or dividing) both quantities in the ratio by the same number.

Question: If 800g of turkey feeds 4 people how much do I need to feed 10 people?

Number of People	4	8	2	10
Turkey (grams)	800	1600	400	2000

× 2, ÷ 2, 8 + 2
× 2, ÷ 2, 1600 + 400

Answer: 10 people need 2000g to feed them

Question: Which is the best buy jar A 200g of coffee for £2.40 or Jar B 75g of coffee for £1.10
To work out which is the best buy a common amount of each item needs to be compared.

Mass (g)	200	400	600
Cost (£)	2.40	4.80	7.20

x2, x3

Mass (g)	75	150	300	600
Cost £	1.10	2.20	4.40	8.80

x2, x2, x2

Answer: Jar A is the best buy as 600g of jar A costs £7.20 and 600g of jar B costs £8.80

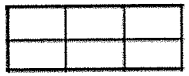
Keywords

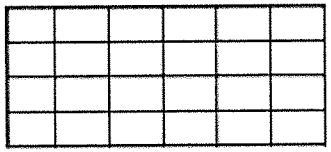
Similar Shapes: shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles.
Scale Factor: the multiple describing how much a shape has been enlarged
Enlarge: to change the size of a shape (enlargement is not always making a shape bigger)
Corresponding: objects (or sides) that appear in the same place in two similar situations.
Image: the picture or visual representation of the shape

Recognise enlargement & similarity

Shapes are similar if all pairs of corresponding sides are in the same ratio

These shapes are similar because all sides are increased by the same ratio

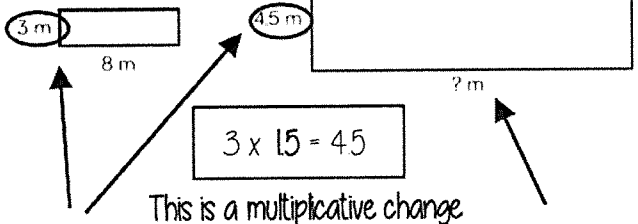




Enlargements are similar shapes with a ratio other than 1

Understand Scale Factor

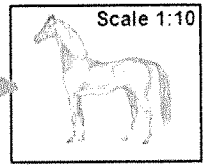
The two rectangles are similar.



Scale drawing - A drawing that shows a real object with accurate sizes reduced or enlarged by a certain amount (called the scale).
The scale - is shown as the length in the drawing, then a colon (":"), then the matching length on the real thing.

Example: this drawing has a scale of "1:10", so anything drawn with the size of "1" would have a size of "10" in the real world, so a measurement of 150mm on the drawing would be 1500mm on the real horse.

Real Horse
1500 mm high
2000 mm long

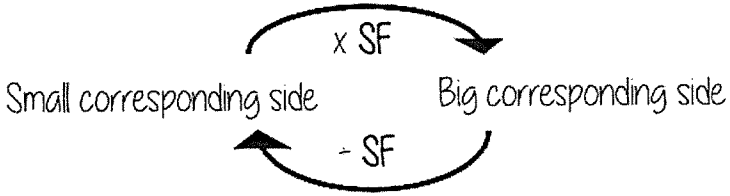


Drawn Horse
150 mm high
200 mm long

The **scale** of a **map** is the ratio of a distance on the **map** to the corresponding distance on the ground.

Scale factor can also be calculated by

Bigger corresponding side
Smaller corresponding side



For every 1cm on my image is 30cm in real life

The car image is 10cm

Image	Real life
1cm	30cm
10cm	300cm

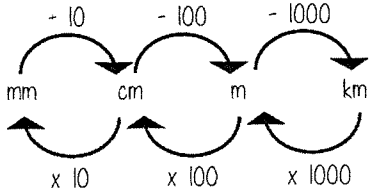
(×10 / ×10)

The car in real life is 21cm

Image	Real life
1cm	30cm
7cm	210 cm

(×7 / ×7)

Interpret maps with scale factors



1 cm : 250 m

Ratios need to be in the same units

1 cm : 250m
1 cm : 25000cm

250 x 100 = 25000

For every 1cm on my map is 25000cm in real life

All Saints Absolutes – Year 8 French Term 2a - Paris

Retrieval from last term

I went into town.	**Je suis allé (e)** en ville.
I stayed at home.	**Je suis resté (e)** à la maison.
I visited Nottingham.	**J'ai visité** Nottingham.
I bought a DVD.	**J'ai acheté** un DVD.
We ate a sandwich.	**Nous avons mangé** un sandwich.
It was great.	**C'était** génial.

Quiz 3.1 – Travel and Transport

I like to take **the train.**	J'aime prendre **le train.**
The plane is very fast.	**L'avion** est très rapide.
The bus is not comfortable.	**Le bus** n'est pas confortable.
I went **on the ferry.**	Je suis allé(e) **en ferry/en bateau.**
I travelled **on a coach.**	J'ai voyagé **en car.**
It is easy **in the car.**	C'est facile **en voiture.**

Quiz 3.2 – Monuments in Paris

Eiffel Tower	**la Tour Eiffel**
Arc de Triomphe	**l'Arc de Triomphe**
Notre Dame Cathedral	**la Cathédrale Notre Dame**
Louvre Museum	**le Musée du Louvre**
The Champs-Élysées	**les Champs-Élysées**
The Seine river	**la (rivière) Seine**

Quiz 3.3 – Past tense + monuments

I visited the Arc de Triomphe.	**J'ai visité l'Arc de Triomphe.**
We saw the Sacré Coeur	**Nous avons vu le Sacre Cœur.**
I did a boat ride on **the Seine.**	**J'ai fait** une promenade en bateau **sur la Seine.**
I bought a ticket for the Louvre.	**J'ai acheté** un billet pour **le Louvre.**
I climbed the Eiffel Tower.	**Je suis monté(e) la Tour Eiffel.**
The view **was** really fantastic.	La vue **était** vraiment fantastique.

Quiz 3.4 – Facilities in a hotel and hotel room

I am in **a 5 star hotel.**	Je suis dans **un hôtel cinq étoiles.**
I am in **a double bedroom.**	Je suis dans **une chambre avec un grand lit.**
In my hotel there is...	**Dans mon hôtel** il y a...
...a fantastic restaurant and a heated swimming pool	**... un restaurant fantastique et une piscine chauffée.**
In my bedroom il y a...	**Dans ma chambre** il y a...
...a balcony with a view of the Eiffel Tower and a big shower	**...un balcon avec une vue de la Tour Eiffel et une grande douche.**

Vocab book pages 20-21

Parallel texts

I am staying **in a 5 star hotel** in Paris.	Je reste dans **un hôtel cinq étoiles** à Paris.
It is near **the Eiffel Tower.**	Il est près de **la Tour Eiffel.**
In my hotel there is **a heated swimming pool,**	**Dans mon hôtel** il y a **une piscine chauffée,**
a gym and **a fantastic restaurant.**	**un gymnase** et **un restaurant fantastique.**
I am sharing a room with my sister.	**Je partage une chambre** avec ma sœur.
In my room there is **a plasma screen television**	**Dans ma chambre** il y a **une télévision écran plasma**
and **a minibar.**	et **un minibar.**
I love **the hotel,** but **the room** is a bit small.	J'adore **l'hôtel,** mais **la chambre** est un peu petite.
I travelled on a train from London.	**J'ai voyagé en train** de Londres.
It was **fast** and **very comfortable.**	C'était **rapide** et **très confortable.**
I hope to visit **the Arc de Triomphe**	J'espère visiter **l'Arc de Triomphe**
and **Notre Dame Cathedral.**	et **la Cathédrale Notre Dame.**
Paris is amazing!	Paris est magnifique !

I am staying **in a 5 star hotel** in Paris.	Je reste dans **un hôtel cinq étoiles** à Paris.
It is near **the Eiffel Tower.**	Il est près de **la Tour Eiffel.**
In my hotel there is **a heated swimming pool,**	**Dans mon hôtel** il y a **une piscine chauffée,**
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Paris is amazing!	Paris est magnifique !

All Saints Absolutes – Year 8 French Term 2b - Paris

Quiz 4.1 – Misconceptions from exam (to be completed after exam analysis)

Write down your WWW and EBI from your exam	

Quiz 4.2 – Future tense

I am going to visit Paris.	**Je vais visiter** Paris.
I am going to buy a souvenir.	**Je vais acheter** un souvenir.
We are going to relax in the hotel.	**Nous allons relaxer** dans l'hôtel.
I would like to go to the Eiffel Tower.	**Je voudrais aller** à la Tour Eiffel.
I would like to eat a pancake.	**Je voudrais manger** une crêpe.
I will go to the Stade de France.	**J'irai** au Stade de France. **HIGHER**

Quiz 4.3 – Future tense + opinions and times

After I am going to watch a show	**Après je vais regarder un spectacle.**
Then I am going to do some shopping.	**Puis je vais faire** du shopping.
Tomorrow I would like to explore Paris .	**Demain je voudrais explorer** Paris.
The following day I will go to the Champs-Élysées.	**Le lendemain j'irai** aux Champs-Élysées.
I will be great.	**Ça sera** génial.
It would be unforgettable.	**Ça serait** inoubliable.

Quiz 4.4 – Writing assessment preparation

I am staying in **a 5 star hotel with my family.**	Je reste dans **un hôtel cinq étoiles avec ma famille.**
We visited lots of monuments.	**Nous avons visité beaucoup de monuments.**
On Monday, I did some shopping and my sister visited the Louvre Museum.	**Le lundi, j'ai fait du shopping et ma sœur a visité le Musée du Louvre.**
After that, we went on a boat trip on the Seine.	**Après ça, nous avons fait une promenade en bateau sur la Seine.**
Tomorrow, I would like to see the Eiffel Tower.	**Demain, je voudrais voir la Tour Eiffel.**
I love Paris, but it is very busy and it can be expensive.	J'adore Paris, mais c'est très pressé est ça peut être cher.

Quiz 4.5 – Working in three tenses

I am in Paris. **(PRESENT)**	**Je suis** à Paris. **(PRÉSENT)**
I like my hotel because it is comfortable. **(PRESENT)**	**J'aime** mon hôtel parce que c'est confortable. **(PRÉSENT)**
Yesterday, **I visited** Notre Dame Cathedral. **(PAST)**	Hier, **j'ai visité** la Cathédrale Notre Dame. **(PASSÉ)**
I did some shopping, but **it was** expensive. **(PAST)**	**J'ai fait** du shopping, mais **c'était** cher. **(PASSÉ)**
Tomorrow, **I will go** to the Louvre Museum. **(FUTURE)**	Hier, **je vais aller/j'irai** au Musée du Louvre. **(FUTUR)**
It will be fun, but **it might be** busy. **(FUTURE)**	**Ça sera** amusant, mais **ça serait** pressé. **(FUTUR)**

Parallel texts

Vocab book pages 20-21

I visited **the Eiffel Tower** with my family.	J'ai visité **la Tour Eiffel** avec ma famille.
It was super and very interesting.	C'était super et très intéressant.
After I went to **the Champs-Élysées**	Après je suis allée **aux Champs-Elysées**
where **I saw the Arc de Triomphe.**	où **j'ai vu l'Arc de Triomphe.**
After having done that, **we saw** lots of	Après avoir fait cela, **nous avons vu** beaucoup de
historic monuments.	**monuments historiques.**
I ate at **the Moulin Rouge** with my parents.	J'ai mangé au **Moulin Rouge** avec mes parents.
I ate chicken and chips and I drank a coke,	J'ai mangé du poulet et des frites et j'ai bu un coca,
whilst my mum ate a big burger!	lorsque ma mère a mangé un gros steak haché!
We ate ice cream afterwards.	Nous avons mangé de la glace après.
It was delicious.	C'était délicieux.
Tomorrow, I would like to visit **the Louvre Museum,**	Demain, je voudrais visiter **le Musée du Louvre,**
because I love to see paintings and statues.	car j'adore voir les peintures et les statues.
Then I would like **to do a boat trip**	Puis je voudrais **faire une promenade en bateau**
on the Seine. It will be amazing,	**sur la Seine**. Ça sera formidable,
however my sister is afraid of water!	cependant ma soeur a peur de l'eau!

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It was super and very interesting.	C'était super et très intéressant.
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Then I would like **to do a boat trip**	Puis je voudrais **faire une promenade en bateau**
on the Seine. It will be amazing,	**sur la Seine**. Ça sera formidable,
however my sister is afraid of water!	cependant ma soeur a peur de l'eau!

Half Term 3 – Ich bin online

Quiz 3.1 – Beschreib dich (describe yourself)

Ich habe kurze Haare	I have short hair
Ich habe lange / mittellange Haare	I have long / mid length hair
Ich habe blaue /graue / grüne Augen	I have blue/grey/green eyes
Er hat lange schwarze Haare	He has long black hair
Sie hat kurze braune Haare	She has short brown hair
Meine Mutter hat grüne Augen und kurze rote Haare	My mum has green eyes and short red hair

Quiz 3.2 – Was machst du online? (What do you do online?)

Ich chatte mit Freunden auf Snapchat	I chat with friends on Snapchat
Ich mache Fotos oder Filme	I take photos or films
Ich suche Infos für die Hausaufgaben	I search for information for homework
Ich lese E-books	I read E-books
Ich simse	I message
Ich lade Musik herunter	I download music
Ich sehe / ich teile	I watch / I share
Ich surfe im Internet	I search the net
Ich spiele Computerspiele	I play computer games
Ich schicke SMS	I sent texts

Quiz 3.3 – warum? (why?)

denn es ist interessant	because it is interesting
denn es ist cool	because it is cool
denn es macht Spaß	because it is fun
denn es ist kostenlos	because it is free
, weil es interessant ist	because it is interesing (vs)
, weil es cool ist	because it is cool (vs)
, weil es irre ist	because it's awesome (vs)

Quiz 3.4 – warum machst du das? (Why do you do that?)

Ich finde es / es ist	I find it / it is....
sehr gut / cool / toll / super / irre	Very good / cool / great / super / awesome
Ich finde es stinklangweilig	I find it super boring
Ich finde es furchtbar	I find it dreadful
, weil es toll ist	because it's great (vs)
, weil es stinklangweilig ist	because it's dead boring (vs)

Model written answers

German	English translation (word for word)
Beschreib dich.	**Describe yourself** 
Ich habe kurze blonde Haare und blaue Augen aber ich möchte lange Haare. Meine Mutter hat lange braune Haare und grüne Augen und mein Vater hat kurze graue Haare und graue Augen. Er möchte mehr Haare. Mein Freund ist ziemlich groß und er hat mittellange rote Haare und blaue Augen. Er hat auch Sommersprossen und eine Brille aber er mag das nicht!	I have short blond hair and blue eyes but I would like long hair. My mum has long brown hair and green eyes and my dad has short grey hair and grey eyes. He would like more hair. My friend ist quite tall and he has mid-length red hair and blue eyes. He has also freckles and a glasses but he likes that not!

German	English translation (word for word)
Was machst du online?	**What do you do online?** 
Ich finde das Internet fantastisch. Ich benutze das Internet jeden Tag denn ich chatte mit Freunden auf Snapchat. Ich schicke SMS und ich teile Link mit meinen Freunden, weil es kostenlos ist. Aber ich spiele nicht Computerspiele denn es ist total langweilig. Am Samstag suche ich Infos für die Hausaufgaben aber es ist nicht interessant denn die Schule ist langweilig. Am Abend lese ich Bücher oder ich lade Musik herunter, weil es cool ist.	I find the internet fantastic. I use the internet every day because I chat with friends on Snapchat. I send texts and I share link with my friends, because it free is. But I play not computer games because it is totally boring. On Saturday search for I information for the homework but it is not interesting because the school is boring. In the evening read I books or I load music down, because it cool is.

Half Term 4 – in meiner Freizeit

Quiz 4.1 –was machst du in deiner Freizeit? (What do you do in your freetime?)

Ich fahre rad	I cycle
Ich lese einen Roman	I read a novel
Ich schwimme im Freibad	I swim in the outdoor pool
Ich sehe fern	I watch TV
Ich sehe Netflix	I watch Netflix
Ich gehe an mein Handy	I go on my phone
Ich tanze / ich reite	I dance / I ride

Quiz 4.2 – Was machst du in deiner Freizeit? (what do you do in your freetime?)

Ich gehe ins Kino	I go to the cinema
Ich esse Pizza	I eat pizza
Ich höre Musik	I listen to music
Ich gehe einkaufen	I go shopping
Ich chille	I chill
Ich gehe in den Park	I go to the park
Ich gehe in die Stadt	I go into town
Ich gehe einkaufen	I go shopping

Quiz 4.3 Wann machst du das? (When do you do that?)

Am Abend esse ich Pizza	In the evening I eat pizza
Jeden Tag höre ich Musik	Every day I listen to music
Am Wochenende gehe ich in den Park	At the weekend I go to the park
Zweimal pro Woche höre ich Musik	Twice a week I listen to music
Ich gehe oft einkaufen	I often go shopping
Ich gehe immer / nie in die Stadt	I always / never go into town

Model written answers

German	English translation (word for word)
Was machst du in deiner Freizeit?	**What do you do in your freetime?**
Normalerweise in meiner Freizeit gehe ich an mein Handy denn es ist lustig und interessant. Jeden Tag höre ich Musik oder ich gehe mit meinen Freunden in den Park. Einmal pro Woche, am Samstag, gehe ich mit meiner Mutter einkaufen, weil es cool ist. Ich spiele nie Fußball denn ich bin sehr faul. Am Abend sehe ich Netflix oder ich chille in meinem Schlafzimmer, weil ich oft müde bin. Am Sonntag mache ich oft Hausaufgaben, obwohl es langweilig ist.	Normally in my freetime go i on my phone because it is funny and interesting. Every day listen I music or I go with my friends to the park. One time per week, on Saturday, go I with my mum shopping, because it cool is. I play never football because I am very lazy. In the evening see I Netflix or I chll in my bedroom, because I often tired am. On Sunday do I often homework, although it boring is.

Could you try to include any of these high level phrases to include the quality of your work?

um mich zu entspannen	in order to relax
um frische Luft zu schnappen	in order to get fresh air
um fit zu bleiben	in order to keep fit
Wenn ich Zeit habe	if I have time

Example sentences.

1. Ich gehe mit meinen Freunden in den Park, um frische Luft zu schnappen
2. In meiner Freizeit spiele ich Fußball, um fit zu bleiben
3. Am Abend höre ich Musik, um mich zu entspannen
4. Wenn ich Zeit habe, gehe ich mit meiner Mutter einkaufen, weil es cool ist

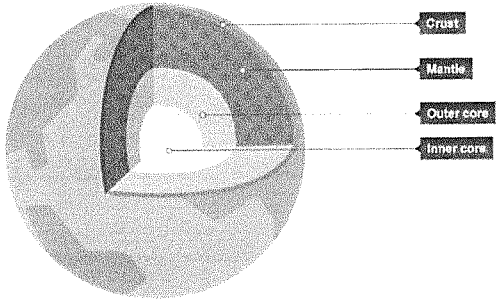
High level opinion words

anstrengend	hard work / tiring
empfehlenswert	highly recommended
ausgezeichnet	excellent
furchtbar / schrecklich	terrible

Example sentences.

1. Ich gehe oft ins Kino, weil es empfehlenswert ist
2. Ich mache nicht meine Hausaufgaben, weil es furchtbar ist
3. Am Wochenende spiele ich Fußball, obwohl es anstrengend ist
4. Am Abend sehe ich Netflix, weil es ausgezeichnet ist

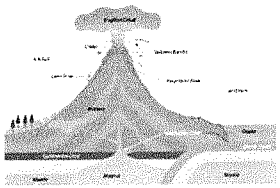
1. Structure of the Earth



The crust is made up of solid rock
The mantle is made up of solid and liquid rock
The outer core is made up of liquid iron and nickel
The inner core is made up of solid iron

2. Volcanoes

1. The Earth's crust is made up of plates that move
2. When these plates collide with one another one plate is forced into the mantle
3. The crust that makes up this plate will melt due to the temperatures in the mantle
4. The melting plate creates magma
5. This causes a build up of Magma
6. This magma will eventually be forced to escape through any weaknesses in the Earth's crust above it - this is a Volcano



3. Sedimentary Rock

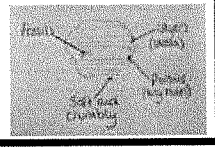
Steps of sedimentary rock formation:

1. Weathering and erosion
2. Transportation
3. Deposition
4. Sedimentation
5. Compaction
6. Cementation

Limestone ($CaCO_3$) requires carbon dioxide to be formed, removing it from the atmosphere and trapping it in the rock!

Examples of sedimentary rock:
- limestone
- Shale
- Chalk

Properties of sedimentary rock:
- Layers
- Small holes (porous)
- Soft and crumbly
- Sometimes fossils!

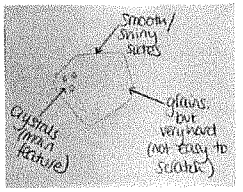


4. Igneous Rock

Formation of igneous rock:
- Liquid rock (magma) is released from a volcano, when it cools it forms **extrusive** igneous rock
- The magma can also cool down below the crust forming **intrusive** igneous rock
- Igneous rock forms crystals, intrusive rocks cool down slower meaning they have bigger crystals than extrusive rocks!

Examples of igneous rock:
- Obsidian
- Basalt

Properties of igneous rock:
- Crystals
- Sharp edges
- Dark and shiny

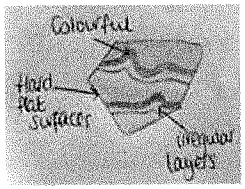


5. Metamorphic Rock

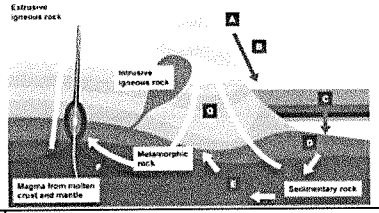
Formation of metamorphic rock:
- Metamorphic rick is formed from sedimentary and igneous rock
- The rocks experience high heat and pressure
- This causes the existing rock to chemically change into a metamorphic rock

Examples of igneous rock:
- Slate
- Gneiss
- Marble

Properties of igneous rock:
- Irregular layers
- Colours
- Hard and flat



6. Rock Cycle



A	Weathering breaks down rocks on the surface of the Earth. Wind and water move the broken rock particles away. This is called erosion.
B	Rivers and streams transport rock particles to other places. Rock particles are deposited in lakes and seas.
C	Rock particles form layers.
D	Compaction and cementation presses the layers and sticks the particles together. This creates sedimentary rock.
E	Rocks underground get heated and put under pressure, and are changed into metamorphic rock.
F	Rocks underground get heated so much they melt turn into magma. When the magma cools quickly, it turns into solid extrusive igneous rock.
G	Areas of rock can move slowly upwards, pushed up by pressure of the rocks forming underneath. This is called uplift.

7. Quarrying

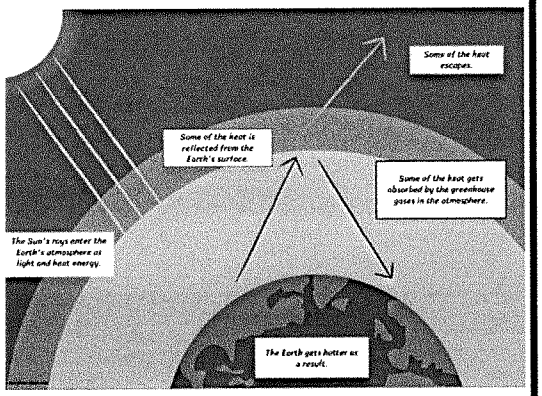
A quarry is a large, deep pit were materials can be extracted such as limestone and metal ores

Advantages	Disadvantages
Provides raw materials	Eye-sore
Economic benefits	Destroys habitats
Creates jobs in community	Increased traffic from lorries
Empty crater could be used as a reservoir/landfill	Dust particles released could cause health issues

8. Definitions 1

- **Weathering** – breaking up of rock into smaller pieces
- **Erosion** – breaking up of rock into smaller pieces and moving the pieces away
- **Transport** – moving of sediments far away from their original rock
- **Deposition** – settling of sediments that have moved away from their original rock
- **Compaction** – squashing of sediments together to make new rocks
- **Sedimentary rock** – rock formed by the compaction of smaller sediments of rock
- **Igneous rock** – rock formed when magma cools and solidifies and crystals form
- **Metamorphic rock** – rock formed under the surface of the earth at high heat and pressure
- **Quarry** – large, deep pit where materials can be extracted

9. Global Warming



- Greenhouse gases: carbon dioxide, water vapour, methane
- Human activities which can increase greenhouse gases: agriculture, deforestation, landfill, combustion of fossil fuels

10. Climate Change

- **Greenhouse effect** – greenhouse gases in the Earth atmosphere absorb heat radiation reflected by the Earth preventing it from escaping
- **Global warming** – an increase in the average temperature of the Earth
- **Climate change** – a long-term change in weather patterns

Greenhouse effect leads to global warming which leads to climate change

Impacts of climate change:
- Ice caps melting (destroying habitats)
- Bleaching coral reefs
- Increase in extreme weather
- Increases droughts
- Sea levels rise

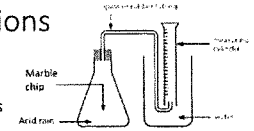
11. Acid Rain

Formation of acid rain:
1. Sulfur containing plant dies
2. Over millions of years the sulfur becomes **trapped** in fossil fuels
3. When these fossil fuels are burnt the sulfur **reacts with oxygen** forming **sulfur dioxide**
4. Sulfur dioxide **dissolves in rainwater** forming acid rain

Effects of acid rain:
- Lakes become acidic killing wildlife
- Soil becomes acidic killing plants and trees
- Statues and buildings are eroded

12. Acid Rain Investigation

Instructions

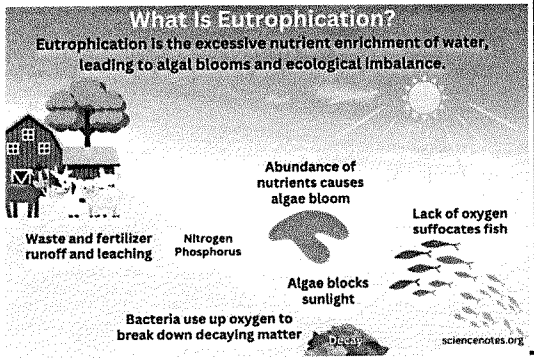


1. Set up your equipment as follows
2. Add $10cm^3$ of one of the acid rain samples into a conical flask and record in your table where the sample is from
3. Drop a marble chip into the conical flask
4. Record how long it takes to produce $25cm^3$ of gas
5. Repeat the experiment using the two other acid rain samples

Variables:
- Independent variable: The country the acid rain was from
- Dependent variable: the time taken for $25cm^3$ of gas
- Control variables: volume of acid rain, mass of marble chips, size of marble chips

13. Water Pollution

Causes of water pollution:
- Sewage and wastewater
- Oil spills from ships or pipes
- Industrial waste
- Agricultural runoff (e.g fertiliser)
- Marine dumping and plastic pollution in the sea
- Radioactive waste from nuclear power plants



14. Recycling

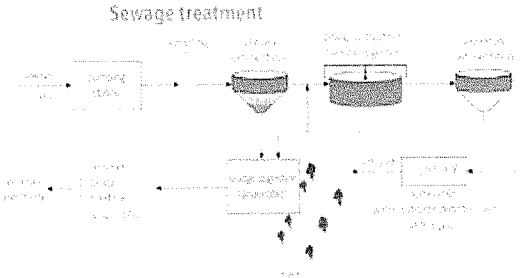
Reuse – using a product more than once
Reduce – reduce the demand for limited resources
Recycle – turn waste products into new products

Advantages and disadvantages of recycling:

Advantage	Disadvantage
Reduces the amount of energy required to manufacture new products	Recycled waste has to be transported, sorted and cleaned in factories
Reduces carbon dioxide	Requires lots of people
Requires lots of people	Some recycled items are poor quality
Limits waste in landfill	Costs a lot of money to transport, sort and clean goods
Reduces demand for limited resources	

15. Treatment of water

Treating sewage water:
1. Screening – removes large solids
2. Sedimentation – separates solid and liquid
3. Aerobic digestion of liquid (effluent)
4. Secondary sedimentation – removes bacteria
5. Sterilisation – with chlorine
6. Released into rivers and lakes
7. Anaerobic digestion of solid (sludge) – used for fertiliser or as fuel



16. Definitions 2

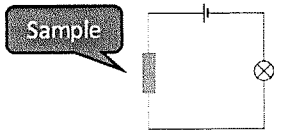
- **Greenhouse effect** – greenhouse gases in the Earth atmosphere absorb heat radiation reflected by the Earth preventing it from escaping
- **Global warming** – an increase in the average temperature of the Earth
- **Climate change** – a long-term change in weather patterns
- **Fossil fuels** – made from the remains of organisms over millions of years – coal, oil and natural gas
- **Eutrophication** = excessive nutrients in water leads to algal blooms and damages ecosystems
- **Reuse** – using a product more than once
- **Reduce** – reduce the demand for limited resources
- **Recycle** – turn waste products into new products

1. Metals and Non-metals

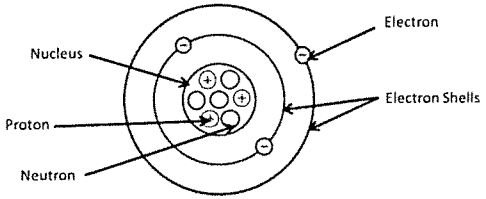
General properties of metals and non-metals:

	Metals	Non-metals
Magnetic?	Only iron, cobalt and nickel (FeCoNi)	No
Conductive?	Yes	No
Boiling point/Melting point	High	Low
Appearance	Shiny, smooth	Dull, rough
Hard or soft?	Hard	Soft
Examples	Lithium, gold, magnesium	Helium, oxygen, chlorine

We can test for conductivity using a circuit like this then seeing if the lamp turns on:



2. Atomic Structure



Sub atomic particles	charge	Relative mass	Where is it found in the atom?
Electrons	- 1	Almost nothing	Shells
Protons	+ 1	1	Nucleus
Neutrons	0	1	Nucleus

atomic mass = number of protons + neutrons

$^{14}_{7}N$

Atomic number = number of protons

Number of electrons = same as protons

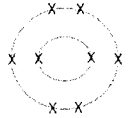
3. Electronic Structure

- The first electron shell will hold 2 electrons
- The following electron shells will hold 8 electrons each

Example: Oxygen

16 O oxygen 8

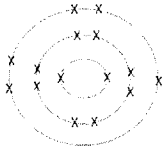
Protons – 8
Electrons – 8
Neutrons - 8



Example: Sulfur

32 S sulfur 16

Protons – 16
Electrons – 16
Neutrons - 16

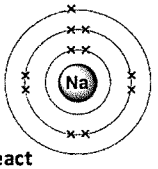


The group number of an element tells us how many electrons are in the outer shell!
The period number of an element tells us how many shells there are

4. Ions

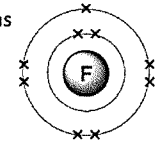
- Particles are most stable when they have a **full outer shell of electrons**
- Therefore, when atoms react, they **lose or gain electrons** to achieve a full outer shell
- When they do this, they become **ions (charged particles)**

- Sodium atoms have one electron in their outer shell
- Therefore, it will lose that one when it reacts
- It gets a +1 charge



All metals lose electrons when they react

- Fluorine atoms have seven electrons in their outer shell
- Therefore, they will gain one when they react
- It gets a 1- charge



All non-metals gain electrons when they react

5. Group 1

Li
Na
K
Rb
Cs
Fr

- Group one elements include lithium, sodium, potassium and rubidium
- Reactivity increases as you move down the group
- All group 1 elements have one electron in their outer shell
- During a reaction, group 1 metals will lose their outer shell electon forming ions with a charge of +1
- Boiling point increases as you move down the group due to the increase in atomic mass

Group 1 metals react violently with water:

Lithium + water → lithium hydroxide + hydrogen

Sodium + water → sodium hydroxide + hydrogen

6. Group 7

F
Cl
Br
I
At

- Group seven elements include fluorine, chlorine, bromine and iodine
- Reactivity decreases as you move down the group
- All group 7 elements have 7 electrons in their outer shell
- During a reaction, group 7 atoms will gain an electron forming ions with a charge of -1
- Boiling point increases as you move down the group due to an increase in atomic mass

In a displacement reaction, a more reactive element replaces a less reactive element within a compound, for example:

Potassium iodide + bromine → potassium bromide + iodine
Bromine is more reactive than iodine so they swap places!

7. Group 0

He
Ne
Ar
Kr
Xe
Rn

- Group zero elements include helium, neon, argon and krypton
- Group 0 elements are unreactive as they have a full outer shell of electrons
- Boiling point increases as you move down the group due to an increase in atomic mass

Element	Use
Helium	Balloons, airships, breathing gas
Argon	Light bulbs, gas blanket
Neon	Lasers, advertising signs, TV tubes
Xenon	Flash bulbs
Radon	Cancer treatments

8. The Periodic Table

Modern Periodic Table:

- Elements are ordered in increasing atomic number
- Vertical columns are called groups
- Horizontal rows are called periods
- Elements in the same group have similar properties
- Metals are on the left
- Non-metals are in the top right
- Group 1 = alkali metals
- Group 2 = alkaline earth metals
- Group 7 – halogens
- Group 0 – noble gases

Development of Periodic Table:

- A scientist called Mendeleev came up with one of the first versions of the periodic table
- He ordered the elements by atomic mass
- He tried to group elements with similar groups
- He left gaps for undiscovered elements

9. Oxides

- Metal oxides form when a metal reacts with oxygen
- Non-metal oxides form when a non-metal reacts with oxygen
- This is called an **oxidation reaction**

Examples

Sodium + oxygen → sodium oxide

Calcium + oxygen → calcium oxide

Carbon + oxygen → carbon dioxide

Iron + oxygen → iron oxide

Sulfur + oxygen →sulfur dioxide

- Metal oxides are **alkaline**
- Non-metal oxides are **acidic**

10. Rusting

- Rusting s the oxidation of iron to form iron oxide
- Iron oxide is rust **(only iron can rust!)**
- Other metals are said to **corrode**

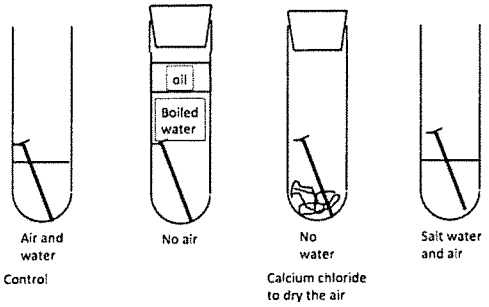
Iron	+	oxygen	→	iron oxide
4Fe	+	$3O_2$	→	$2Fe_2O_3$

Conditions required for rusting:
1. Painting
2. Covering with a layer of oil

Preventing Rust:
- Painting → provides a layer which stops water and air getting to the iron beneath
- Covering in a layer of oil → provides a protective layer over the iron so that it is not exposed to water or air

11. Rusting Investigation

Diagram of Apparatus:



- Independent variable: the conditions the nail is placed in
- Dependent variable: the mass of rust
- Control variables: the length of nail, the time left in the condition for

12. Extracting With Carbon

- Elements which are less reactive than carbon on the reactivity series can be extracted by displacement with carbon

MOST REACTIVE
POTASSIUM
SODIUM
LITHIUM
CALCIUM
MAGNESIUM
ALUMINIUM
CARBON
ZINC
IRON
HYDROGEN
COPPER
SILVER
GOLD
LEAST REACTIVE

Steps
1. Separate the mineral from its ore
2. Heat the mineral with charcoal (carbon) leaving the metal behind on its own

Advantages:
- Cheap
- Easy to get hold of charcoal

Disadvantges
- Limited to which metals you can extract

e.g. zinc oxide + carbon → zinc + carbon dioxide

13. Electrolysis

- Elements which are less reactive than carbon must be extracted by **electrolysis**
- Electrolysis is the extraction of a metal from a compound using electricity

Steps:
1. Extract the mineral from its ore
2. Heat the mineral until molten (liquid)
3. Pass an electric current through the liquid to separate the metal from other elements

Advantages:
- Can be used to extract any metals
- Very efficient

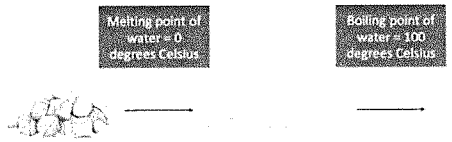
Disadvantages:
- Expensive as it requires a lot of energy for both melting the mineral and for the electricity needed!

14. Boiling Point

Boiling point – the temperature in which a liquid changes to a gas or a gas changes to a liquid

Melting point – the temperature at which a solid turns to a liquid or a liquid turns to a solid

- Metals generally have a much higher melting point and boiling point than non-metals
- Melting and boiling points increase as you move down a group
- We can decide what state a substance is in if we know its melting and boiling point



15. Definitions 1

- **Element** – a substance which is made up of only one type of atom
- **Ion** – a charged particle
- **Displacement reaction** - when a more reactive element replaces a less reactive element within a compound
- **Proton** – subatomic particle with a positive charge
- **Electron** – subatomic particle with a negative charge
- **Neutron** – subatomic particle with no charge
- **Atomic number** – the number of protons inside the nucleus of an atom
- **Atomic mass** – the number of protons and neutrons combined in the nucleus of an atom
- **Molten** – liquid
- **Boiling point** – the temperature in which a liquid changes to a gas or a gas changes to a liquid
- **Melting point** – the temperature at which a solid turns to a liquid or a liquid turns to a solid

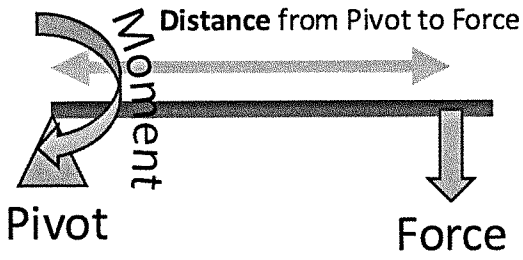
16. Definitions 2

- **Oxidation reaction** – addition of oxygen to an element
- **Rusting** – the oxidation of Iron to form iron oxide
- **Rust** – iron oxide
- **Corrosion** – when a metal which is not iron is oxidised
- **Minerals** – naturally occurring metals and their compounds
- **Natural resources** – substances obtained from the Earth's crust, atmosphere or oceans which are used by humans for materials or fuels
- **Ore** – a naturally-occurring rock which contains enough of a mineral to make it work getting the mineral out of the rock
- **Synthetic** – man-made
- **Reactivity series** – a list of elements from most to least reactive
- **Electrolysis** – the separation of metals from a compound using electricity

Year 8 – P5 - Moments, Pressure and Density

1 – Moments

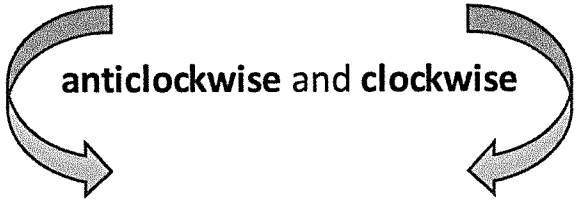
Definition: A moment is the turning effect of a force at a distance from a pivot.



We calculate the moment of a force using
Moment = force x distance
It is measured in Newtonmetres (Nm)

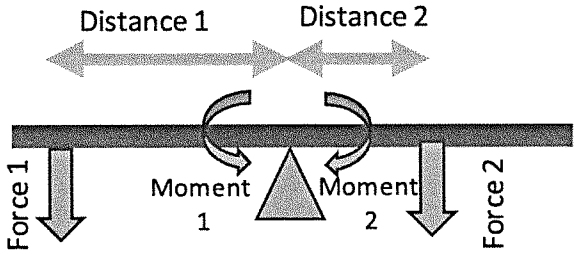
2 – Principle of Moments

This is about balancing forces on either side of a pivot.
Moments come in two forms:



The Principle of Moments states that:
For a system to be balanced,

The **sum** of the clockwise moments = The **sum** of the anticlockwise moments

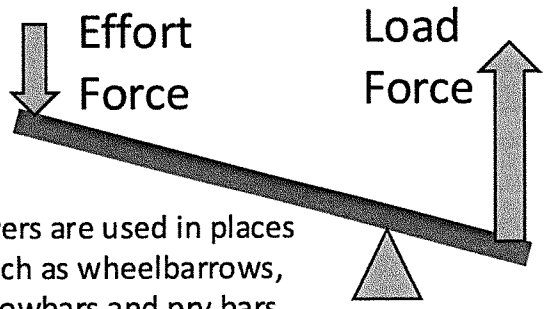


We calculate the moments on each side of the pivot to check if they balance or not.

Anticlockwise	Clockwise
Moment 1 = Force 1 x Distance 1	Moment 2 = Force 2 x Distance 2
If Moment 1 = Moment 2, the system will balance. If not, it will tip in the direction of the biggest moment	

3 – Levers

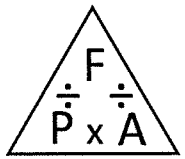
Levers are the simplest machines. They help us to increase the force we apply to a load by extending the distance between the effort force and the pivot, which makes a bigger force on the load.



Levers are used in places such as wheelbarrows, crowbars and pry bars

4 - Pressure

$$\text{Pressure, P (N/m}^2\text{)} = \frac{\text{Force, F (N)}}{\text{Area, A (m}^2\text{)}}$$



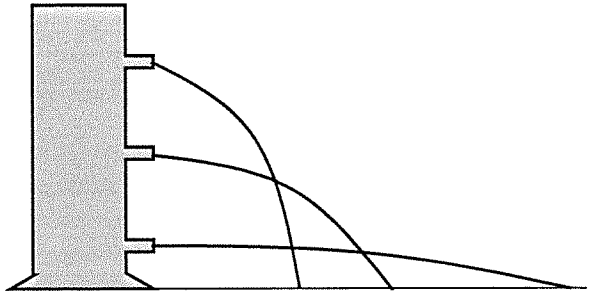
To increase pressure:
- Increase force
- Reduce surface area

High pressure is useful when trying to cut through things – eg, sharp knives.

Low pressure is useful when trying to prevent passing through things – eg, snow shoes.

5 – Pressure in Liquids

Pressure in a liquid **increases** as **depth increases**.

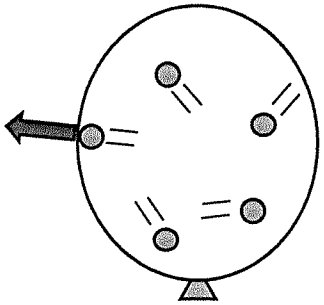


The water in the lower spout has more weight force of water above it, so will have more pressure and squirt further out.

Year 8 – P5 - Moments, Pressure and Density

6 – Pressure in Gases

- Particles collide with walls of container
- Producing a force
- Causing an outwards pressure.

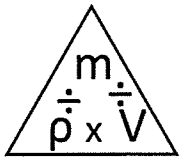


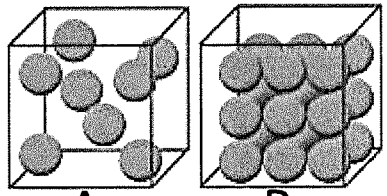
- Higher temperatures have faster particles
- So force and pressure increases.

7 – Density

- Density tells us how much matter is in a certain volume of space.
- It is measured in g/cm^3 or kg/m^3

$$\text{Density, } \rho = \frac{\text{Mass, m}}{\text{Volume, V}}$$

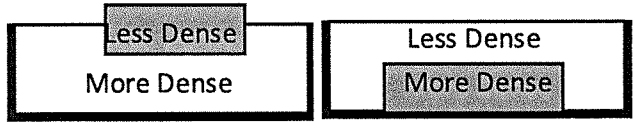




A is less dense than B

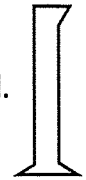
8 – Floating and Sinking

If an object is less dense than the fluid it is placed in, it will float.
If it is more dense, it will sink.



Density of liquids

The volume of a liquid can be found using a measuring cylinder.
1 ml= 1 cm^3
Then the density equation can be used.



Know Your Scientists!

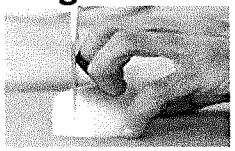
Archimedes (287-212 BC)

Considered to be the greatest mathematician of ancient history, and one of the greatest of all time. He discovered the law of upthrust:

"An object in a fluid experiences an upthrust equal to, the weight of the fluid displaced."

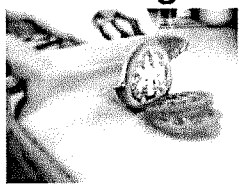
Y8 Food Preparation and Nutrition – Knowledge Absolute

Bridge and Claw

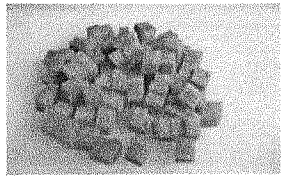


Fine Dice

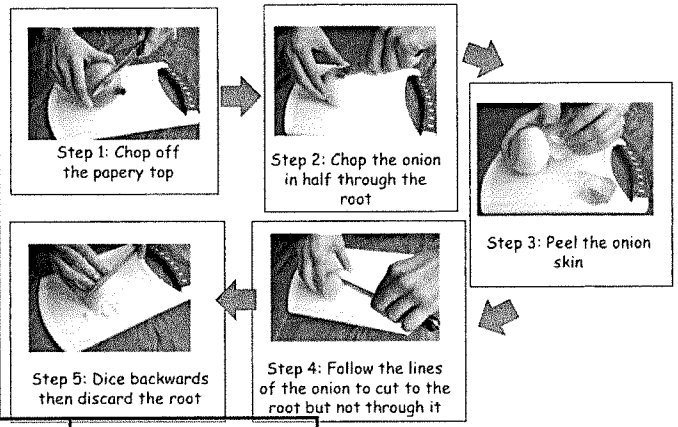
Slicing



Medium Dice



Chopping an onion



Quality Control – How do you ensure the product is of a high quality

- ✓ Weigh and measure accurately using scales and measuring jugs
- ✓ Check you are using the correct setting and heat on the oven
- ✓ When baking ensure no mixture is spilt on the side
- ✓ Chop ingredients accurately
- ✓ Keep products to the same size and thickness
- ✓ Use a timer
- ✓ Check for readiness before removing from the heat
- ✓ Space products out evenly

Nutrient	Function	Food Group	Food example
Carbohydrate	To provide the body with energy.	Starchy food	Rice, potatoes, bread, pasta
Fats	To insulate and protect the body.	Fats	Cheese, butter, oil
Protein	To help growth and repair of the muscles.	Meat, fish and alternatives	Chicken, beef, pork, salmon, eggs, lentils, beans
Vitamins	To perform specific functions e.g. vitamin C supports the immune system.	Fruits and vegetables	Carrots, strawberries, spinach
Minerals	To perform specific functions e.g. calcium keeps bones strong.	Dairy foods	Milk, cheese, yoghurt

Food Science Term	Description	Example
Caramelisation	When sugar turns brown with the addition of heat	✓ Baking a cake ✓ Frying onions
Coagulation	When an egg sets	✓ Omelette ✓ Cake
Dextrinisation	The browning of starch when heat is applied	✓ Cake ✓ Toast ✓ Pastry
Aeration	Adding air into a product e.g. whisking	✓ Cake ✓ Meringue
Shortening	The process of coat starch with fat in order to reduce the gluten strength and give a crumbly texture	✓ Shortcrust pastry ✓ Scones ✓ Shortbread biscuits
Gelatinisation	When starch is heated in a liquid until it bursts and thickens a liquid	✓ Roux sauce

Nutrition and health claims on labels

Nutrition and health claims are controlled by European regulations. Claims on a food or drink should have been authorised and listed on the European register of claims and have met certain conditions.

Nutrition claims - A nutrition claim describes what a food contains (or does not contain) or contains in reduced or increased amounts. Examples include: Low fat (less than 3g of fat per 100g of food): High fibre (at least 6g of fibre per 100g of food); Source of vitamin C (at least 15% of the nutrient reference value for vitamin C per 100g of food).

Health claims - A health claim states or suggests there is a relationship between a product and health. In order to make a claim, the amount present of the nutrient, substance or food must fulfil the specific conditions of use of the claim. The types of health claims are: 'Function Health Claims'; 'Risk Reduction Claims'; Health 'Claims referring to children's development'.

Y8 Food Preparation and Nutrition – Knowledge Absolute

To find out more about labelling , go to: https://bit.ly/2SPnj1g

Design Consideration	Issues
Healthy Eating	• Low in fat especially saturated (use low fat alternatives e.g. skimmed milk) Low sugar – use sweetener • Low in salt – don't add use herbs and spices • High in fibre- use wholemeal flour, bread, rice and pasta, use high fibre veg and leave the skins on • Varied – so you get all the nutrients you need
Allergies	• Gluten Intolerance people with coeliac disease can't eat protein called gluten. Gluten is found in wheat and other grains. They must avoid flour, bread, cereals and pasta. They can eat rice and potatoes. • Nut Allergies avoid products containing nuts. • Lactose Intolerance they can't digest lactose – at sugar found in milk. They avoid dairy products like milk and cream. They get calcium from green leafy vegetables and salmon. They often use soya, rice or almond milk instead of normal milk.
Health problems	• Obesity – Caused by overconsuming foods • Heart disease – Can be helped if saturated fat and health risk are lowered • Diabetes type 2 – Must control sugar levels in their diet • Dental caries – Caused by poor dental hygiene and consuming too much sugar
Vegetarian/ Vegan	• Vegetarian: don't eat meat or fish. They get protein from eggs, milk, nuts and pulses • Vegan – Eat a diet free from all animal products e.g. meat, milk, cheese, eggs, honey
Religion	• Hinduism – Mainly vegetarians, cows are considered sacred. • Islam – Meat must be halal, cant eat pork, fast during Ramadan. • Judaism – Food must be kosher, do not eat pork, dairy and meat must not be cooked or eaten together
Environmental	• Organic – Food produced without artificial fertilisers and pesticides. • Free range – Animals have more space to roam • Packaging – Recyclable packaging like cardboard is better for the environment • Food miles – The amount of miles food has travelled from farm to fork • Seasonality – When a product will grow better and with less help e.g. strawberries are in season in summer.

Key Terms

Upskilling
Origin
Uniformity
Fermentation
Caramelisation
Reduction
Al dente
Shortening
Plascity
Vegan
HBV
LBV
Pulses
Micronutrients
Macro nutrients

Food labelling

Labels provide the consumer with information that they can then use to justify their choice.

- ✓ Ingredients list
- ✓ Dietary information
- ✓ How to store and cook the food
- ✓ Origin
- ✓ Animal welfare

Food additives

Preservatives: Prevent food spoilage
Antioxidants Prevent foods going rancid or brown
Colours Help restore a foods colour after processing
Flavour enhancers Monosodium glutamate added to enhance the flavour of processed food

Function of ingredients

SR Flour – (raises the product) and plain flour – add bulk and 'form' to the mixture – create the structure
Golden syrup – adds sweetness, flavour, colour and moisture to the product
Butter/margarine – binds the ingredients and adds flavour, colour and moisture
Bicarbonate of soda/ baking powder (chemical raising agents)help the mixture to rise by releasing carbon dioxide
Water/milk – add moisture and 'bind' the ingredients together; help the mixture to rise (steam)

Storage of foods

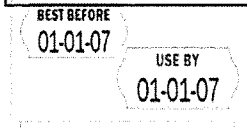
- ✓ Ambient foods— stored in a cool dry place at room temperature
- ✓ Frozen foods— stored in a freezer at –18°c
- ✓ Refrigerated foods stored in a fridge at 5°c

Date marks

Best Before The date after which foods may not be at their best, although probably safe to eat if stored according to instructions.
Use-by-date The date given to foods that spoil quickly, such as cooked meats. It is unsafe to eat foods beyond their use-by-date.

Key temperatures

- Freezer = -18°c
- Fridge = 5°c
- Cooked food = 75°c
- Hot Held Food = 63°c
- Danger zone = 5°c to 63°c



All Saint' s Absolutes : Design & Technology Y8 Clock

KEYWORDS

Customer	The person that you are designing for or who buys your product
Client Interview	Finding out the needs and wants of a client by asking questions, which will help a designer design a product.
Materials	What products are made from, metals, woods, manufactured boards, polymers (plastics), fabrics, papers and cards. Fixtures (nails, screws) and adhesives (glues)
Product analysis	Asking questions about a product performance. It can mean experts analysing a product or members of the general public or potential customers/groups of people. ACCESS FM questions used for evaluation of performance.
Mood board	This is a page of images that shows a range of existing products that help to produce a range of designs
Testing	A range of tests are carried out to check the performance and or quality of materials and or products for summative evaluation.
Analysis	Investigation into a contextual challenge, defining the needs and wants of the user and include relevant research to produce a design brief and specification.
Market research	Market research involves gathering in-depth information about customer or user needs and preferences.

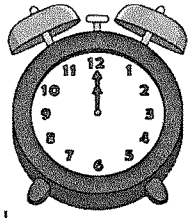
Specialist Terms	**Uses**
Mould	A former used to shape materials. E.g. for pewter casting
Gear 	A mechanism used to transfer rotary motion, which can also change the direction and magnitude of force transmitted.
Orthographic projection	This type of drawing shows a 3D object in a set of 2D drawings viewed from different angles. - A front view plan view and end view.
Stock Form-	The different shapes that materials can be bought in. Rods, sheets, planks, tubes etc.
The 4 Motions	**The four types of motion are:** Linear, rotation, reciprocation, oscillation.

Specialist equipment	**Uses**
Scroll saw	Scroll saws have a thin blade that allows you to cut intricate curves and corners.
Coping Saw	To cut shapes and cut small areas in wood and manufactured boards
Vacuum Former	Vacuum Forming is an industrial technique which may be used for batch production or mass production. The process deforms polymer sheet material.
Finite-	resource that will run out eventually. Also called a non renewable resource. For example : coal, oil or gas will run out.
Non-Finite-	A resource that can be replaced by natural processes as fast as it can be consumed. Also called a renewable resource. For example, trees.
Deforming processes	The method of shaping materials by either bending in a straight line or by creating a bowl or dish shape.

Materials	**Meaning**
P.V.C	PVC is available in sheet form or granules, making it suitable for vacuum forming or injection moulding. It is chemical and water-resistant and is commonly used in blister packs, plastic toys and window frames.
High Density Polystyrene HIPS	A tough, rigid polymer material with high impact strength. Used to vacuum form the clock design using the mould.
Acrylic -	A thermoplastic . 
Thermoforming Polymer / plastics	A type of plastic that can be melted and remoulded over and over again. E.g. acrylic, HIP's ...
Thermosetting Polymer	Thermosetting plastics are plastics do not soften on heating. They are used when resistance to heat is important (e.g. kettles, plugs, laptop chargers etc). A type of plastic that undergoes a chemical change when heated, which makes it permanently hard and rigid. Thermosetting plastics cant be remoulded. E.g. Urea Formaldehyde
M.D.F - medium density fibreboard	This is manufactured board that is made from wood dust and glue it is cheap but breaks easily when cutting. Used to make the mould base for the clock.

Design Specification

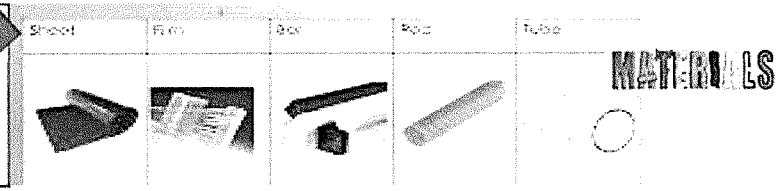
The 'Design Specification' is a list of conditions a product must meet, called design criteria. A specification is written in bullet points with each point explained. It is a detailed document providing information about the characteristics of a project to set criteria the developers will need to meet. Design specifications are used for everything from laying out plans for a new space ship to addressing the design concerns of a pencil holder. *The specification should cover:*



- Size — how big it is
- Aesthetics — how it looks
- Consumer — who will buy it
- Function — what it will do
- Quality — e.g. the required finish
- Cost — the price range
- Materials — what it is made of
- Safety — how to make sure it's safe
- Environment — the impact on the world
- Sustainability — its future impact

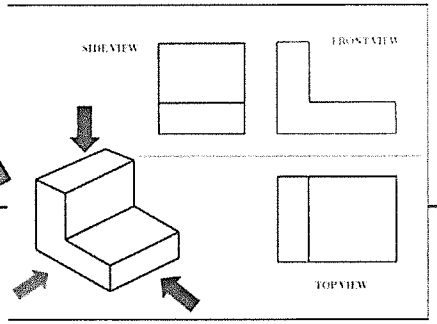
Stock Forms

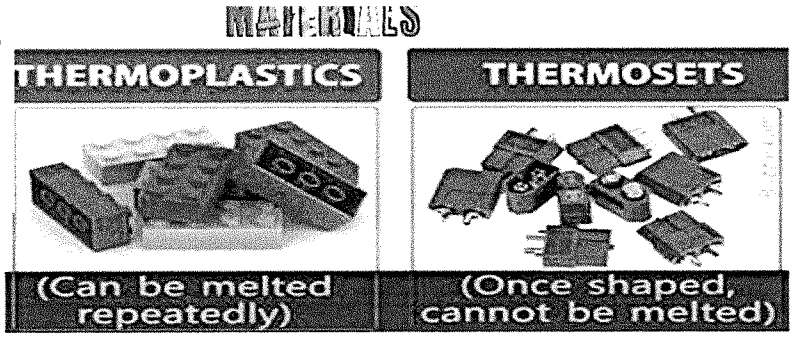
Polymers come in different forms - sheets tubes and rods can be cut to size and bent.



Orthographic Drawing

They show a 3D object in a set of 2D drawings viewed from different angles. - A front view plan view and end view.





Types of thermoplastic polymer

4

Type	Common Uses	Characteristics
Acrylic and Perspex	windows, bath tubs	Can be transparent. Hard wearing and tough. Softens between 85°C and 165°C.
High density polyethylene (HDPE)	Pipes, buckets, bowls	Strong and stiff. Softens at about 130°C.
PET	Drinks bottles, food packaging	High strength and toughness. Heat resistant. Softens about 80°C.
High impact polystyrene (HIPS)	Packaging	Good toughness and reasonable strength. Softens about 90°C.

Types of thermosetting polymer

4

Type	Common Uses	Characteristics
Polyester resin	Car bodies, boats, suitcases/luggage	Good strength and stiffness. Very good temperature resistance.
Melamine formaldehyde	Laminate coverings for kitchen worktops	Stiff, hard, strong, resistant to many chemicals and stains.
Polyurethane	Foam insulation panels, hoses, sealants	Hard with high strength. Flexible and tough.

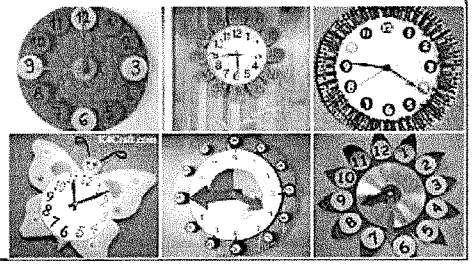
CAD CAM Modelling

CAD can be used to model. CAD can be used to draw detailed 3D designs, then CAM machines such as 3D printers can be used to produce models. The CAD package we use is school is called Tech soft 2D design.

Modelling a physical representation of a structure - built to study aspects of design or to communicate design ideas. Depending on the purpose, models can be made from a variety of materials, including blocks, paper, and wood, and at a variety of scales.

Is making a practice version of a design or part of a design. The benefits of card modelling are;

- Test out parts of a design/ the design in 3 dimensions.
- See how the product might look in real life.
- Check out material proportions and dimensions.
- Consider and identify fabrication issues that cannot be seen in a 2D paper drawing.
- Save on expensive high quality material where mistakes and changes in the 3D form might still occur.



THERMOSETTING POLYMERS

Thermosetting polymers undergo a chemical change and once formed or set, cannot be reformed. Thermosets are resistant to higher temperatures but tend to burn when heated rather than melt. They are harder, more brittle and provide good insulation and chemical resistance.

Polyester resin (PR)

Properties
Good electrics insulator, hard, but becomes tough when mixed with glass strands to form glass reinforced plastic (GRP)

Uses
Encapsulation, boat hulls as GRP.

Epoxy resin (ER)

Properties
Good strength to weight ratio, good electrical insulator, heat resistant

Uses
Bonding waterproof coatings, electronic circuit boards

Phenol formaldehyde (PF)

Properties
Heat resistant and a good electrical insulator

Uses
Heat resistant handles, electrical components, snooker balls

Urea formaldehyde (UF)

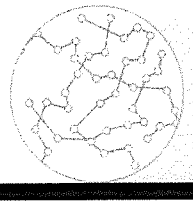
Properties
High tensile strength, heat resistant, good electrical insulator, hard, brittle, easily injection moulded

Uses
Adhesives for moulding particle boards, decorative laminates electrical casings.

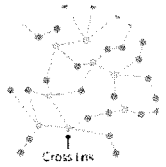
Melamine formaldehyde (MF)

Properties
Lightweight, hard but brittle

Uses
Worktops, surfaces, some kitchenware



Thermoforming
plastics are more flexible and have loose polymer chains that break apart when heated.



Thermosetting
plastics have rigid cross-linked polymer chains that set when heated and cannot be reformed

THERMOFORMING POLYMERS

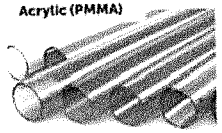
Plastics are mainly synthetic materials made from **polymers** traditionally derived from finite petrochemical resources. Naturally occurring plastics include amber and rubber.

Thermoforming polymers are generally more flexible than thermosets, especially when heated. This is owing to their physical structure; polymer chains are quite loosely entangled with very few cross links. This allows the chains to easily slide past each other when heated. They can be formed into complex shapes and reformed multiple times.

Polypropylene (PP)

Properties: Flexible, tough, lightweight, food safe
Uses: Kitchens, medical products

Acrylic (PMMA)



Properties: Tough but brittle, easily formed and bonded.
Uses: Car lights, alternative to glass, clothing.

High density polyethylene (HDPE)

Properties: light weight, rip & chemical resistant
Uses: Milk bottles, pipes, crates, wheelie bins.

High impact polystyrene (HIPS)

Properties: Flexible, impact resistant, light weight, food safe. **Uses:** yogurt pot , vac form products.

Polyvinyl chloride (PVC)

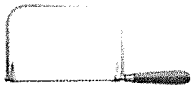
Properties: flexible, easy to extrude, tough, chemical resistant
Uses: Pipes, electrical tape

Polyethylene terephthalate (PET)

Properties: blow moulding, chemically resistant , recyclable
Uses: Drinks bottles , food containers.

Design and Technology – Clock

Coping saw

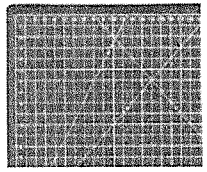


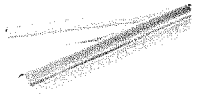
Uses: For cutting curved lines through a thin material

For: Timber, plastic and thin metal

Craft knife
General cutting and scoring of various materials.

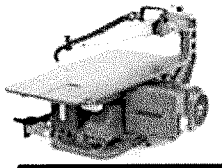
Cutting mat
Safe anti-slip, self-healing mat to protect work surfaces





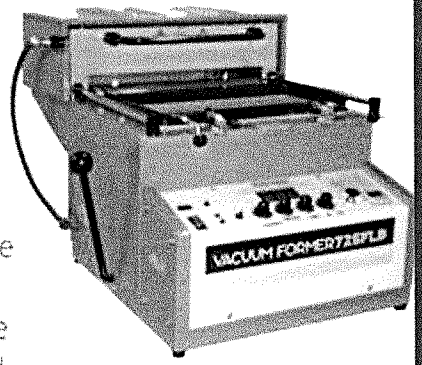
Maun safety rule
The rule has a 'M' profile which keeps fingers away from a knife when cutting or scoring paper

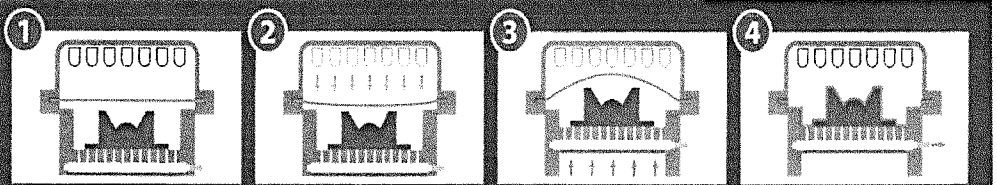
Scroll saws are used for cutting curves that are too intricate for a coping saw or jigsaw.



Vacuum forming

This technique is used to shape plastic. It works by heating a sheet of plastic, which is then pulled by the vacuum to form around the shape or mould. Once the plastic has cooled and set hard it can be removed from the moulding tool.





A plastic sheet is clamped above a mould.

The plastic sheet is heated causing it to become soft.

The vacuum bed and mould are moved up to the plastic.

Air is sucked out, creating a vacuum that pulls the plastic sheet onto the mould.

Once the plastic has cooled and set, the mould is lowered.

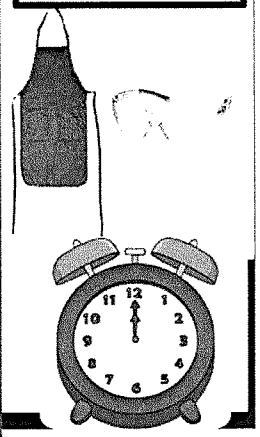
Vacuum forming is used to create various plastic products, including:

Food containers

Packaging

Signage

PPE : personal protective equipment



The Absolutes Y8 Textiles

KEYWORDS

Sublimation printing
Tolerance
Woven
Knitted
Synthetic
Over locker
Heat press
Inspiration board
Thread
Gantt Chart
Modification
Client
Life cycle analysis
Biodegrade

PRACTICAL SKILLS

Sublimation printing
Inserting a zip
Sewing machine
Over locker- neatening a raw edge

MATERIALS

Polyester
Polycotton
Zip
Thread

Tools and Equipment

Heat Press
Sublimation printer- uses dye instead of ink.
Zipper Foot- The Zipper Foot can be used for inserting zippers as well as making and inserting piping or cording. The zipper Foot allows the needle to stitch close to a raised edge such as the teeth of a zipper or the thickness of cording.
Iron
Unpicker- Unpickers are also known as seam-rippers, quick-unpicks. You insert the unpicker between the stitches and pull up so the trends are cut by the small blade.
Dressmaking scissors- Also called fabric shears to cut fabric. These have long very sharp blades.
Pins- Hold the fabric together before stitching together.
Needles- for hand stitching- there are several sizes for thickness of the thread/ beads being used.
Sewing Machine- are strong and work at high speeds.
Overlocker- finishes and edge and stops in from fraying. It has a blade to trim the fabric. They are also used for stretchy fabric like jersey.

Heat Press risk assessment

Minimise the risk of tripping by carefully arranging the heat press, ironing boards, etc. in relation to the socket outlets. Do not lean against the equipment. A 'HOT' warning sign is visible. Ensure the equipment has an annual portable appliance test, which should be sufficient to avoid electric shock but it would be advisable to check the equipment at suitable intervals for damage to the power cable. Always allow heat presses to cool before being put away.
It is advisable to store heat presses in a storeroom when not in use because of the risk of harm.

Research

Task Analysis- The designer should pick out all the key points in the brief- one way of doing this is through a spider diagram called a task analysis. It's a way of analysing the brief and deciding what research is needed. This helps the designer get ideas; checks people actually want the product; finds out what the target market likes/ dislikes about existing products; find out about materials, components, techniques, manufacturing processes and costs.

Inspiration Board a collage of various items, as photographs, drawings, words, fabric swatches, textures, used to visualize specifics in the design of a project. Include a summary of your inspiration and how the images will help you design.

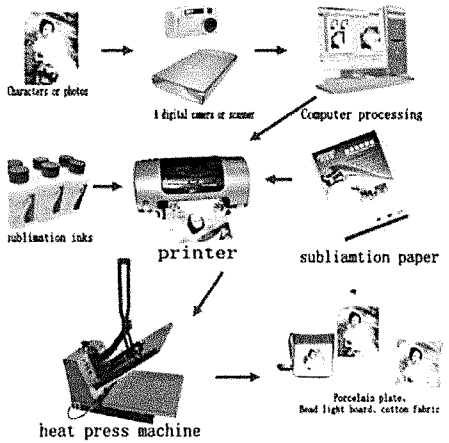
Client Interview - Interviews can give you more detailed information than a questionnaire. They can be difficult to analyse results than a questionnaire because of the breadth of knowledge. Information for the client will guide your design ideas.

Suggest Modifications
Modify means 'change'. On evaluation of your project suggest parts that you could modify in the future in order to improve your design. Explain where you modified your design from your original idea.

Tolerance - The margin of error allowed for a measurement of part of a product. Tolerances are usually given as an upper and lower limit. e.g. 23m (+/- 2)

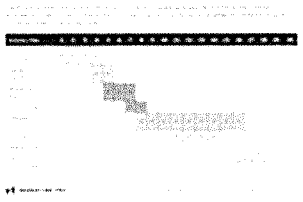
Manufacturing Process- Sublimation Printing

- Create an artwork/design using a product design software- 2d design or photoshop.
- Send the design to a sublimation printer and reproduce it onto transfer paper.



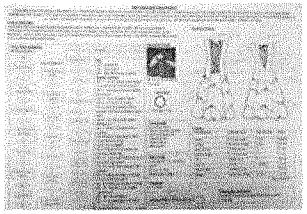
Gantt Chart

This is a sequenced diagram.
The tasks are listed down the left hand side and the timing is plotted across the top. The coloured squares show how long each task takes to complete.



Manufacturing Specification

Can be a series of written statements or working drawings and sequence diagrams. It can explain exactly how to make the product and should include; clear construction details, materials, equipment, sizes, tolerances, finishing details, quality control and costings.



Life Cycle Analysis

Life Cycle Assessment looks at how a product impacts on the environment from its raw state to its end of life. The LCA looks at the processes that occur during the life cycle of a product.
This includes:

Manufacture 	Natural resources? Does it use chemicals? Is it made from recycled goods? Where in the world is it made?
Packaging 	What is the packaging made from? Can the packaging be recycled? Is the packaging necessary?
Transportation 	How is it transported? Is it environmentally friendly? How can you limit pollution?
Use 	Does it use energy? Is it built to last? How can you make it environmentally friendly?
Recycling 	RECYCLE REUSE REDUCE RETHINK REPAIR REFUSE After it is no longer needed how can you recycle it?

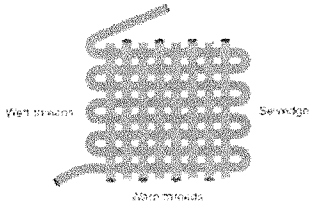
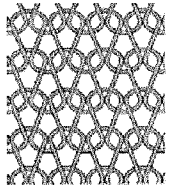
Key Word- **"Biodegradable"** refers to the ability of things being broken down by the action of living things (such as microorganisms) disintegrated (decomposed) naturally. There's no ecological harm during the process.

Synthetic fibres: polyester, polyamide (nylon), elastane (lycra) Polycotton

Synthetic fibres are manufactured from oil based chemicals.

	Example	Properties	Uses
Polyester		Tough, strong, hard wearing, very versatile, holds colour well, non-absorbent so quick drying, machine washes well. Often blended with other fibres. Easily coloured	Clothing, fleece garments bedsheets, carpets, wadding, rope, threads, backpacks, umbrellas and sportswear

Fabric construction

Fabric	Example	Properties	Uses
Woven fabric (Plain Weave)	 Woven fabric is manufactured on a loom. Weaving is a process where two yarns the warp and the weft are woven together at right angles to each other. The warp threads run the length of the loom with the weft threads being woven across. The edge that is wrapped around is called the selvedge.	Simple and cheaper to produce than more complicated weaves, stronger than other weave patterns	Used on textiles such as cotton calicos, cheesecloth and gingham, found on table cloths, upholstery and clothing
Knitted (Weft knitted)	 Knitted fabrics are produced by hand or by knitting machines. Knitting is produced horizontally. The loops above and below interlock holding the fabric together.	Warm to wear, different knits have different properties such as stretch and shape retention. Weft knits ladder and unravel more easily than warp	Jumpers, cardigans, sportswear and underwear fabrics, socks, tights and leggings, craft items such as soft toys