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KNOWLEDGE ORGANISER

YEAR 8
AUTUMN TERM

NAME & FORM

Persuasive Writing

Overview- Persuasive language is used for many reasons. We see it around us every day: in advertising to help sell products or services, politicians often convince us to agree with their viewpoints, and we all use it as a powerful tool for getting what we want!

Persuasive writing has been around for as long as we humans can remember. To persuade someone simply means trying to convince them of your point of view - can you remember the last time you tried to get someone to agree with you? It probably wasn't so long ago!

The ancient Greek philosopher Aristotle came up with some top tips on how we can ensure our persuasive writing is successful. He said we should always provide arguments that are rooted in **ethos, logos and pathos**:

- **Ethos**: our arguments should appeal to human ethics, i.e. they should depend on credibility and expertise as persuasive techniques.

  E.g. As a dentist, I see this problem a lot. So, I recommend using sensitive toothpaste.

- **Logos**: our arguments should appeal to human logic, i.e. they should depend on facts and statistics to persuade the audience.

  E.g. People who eat a small bar of chocolate per day are 73% happier than those who don't. So, we should eat chocolate every day.

- **Pathos**: our arguments should appeal to human emotion, i.e. they should create an emotional response to an impassioned plea to convince the audience.

  E.g. If you don't adopt the puppy, he may never find a home!

Match up task- this will help you with important persuasive techniques that you will need to remember (top tip: memorise the acronym '**DAFOREST**'!)

Direct Address		A personal viewpoint often presented as if fact, *e.g. 'In my view, this is the worst thing to ever have happened!'*
Alliteration		Vocabulary to make the audience/reader feel a particular emotion, *e.g. 'There are thousands of animals at the mercy of our selfishness and disregard for kindness'*
Facts		Exaggerated language used for effect, *e.g. 'How will you ever live with yourself if you ignore this?'*
Opinions		Three points to support an argument, *e.g. 'Safer streets mean comfort for you, your family and your friends'*
Rhetorical Question		Factual data used in a persuasive way, *e.g. '90% of customers agreed that this shampoo made their hair stronger'*
Emotive Language		When the writer speaks directly to the reader through words such as 'you,' *e.g. 'You must agree with me that…'*
Superlative		When words start with the same sound to grab the reader/audiences' attention, *e.g. 'This hair oil will give you smooth, silky locks…'*
Triples		A question which implies its own answer, *e.g. 'Don't you just dream of success?'*

What do we need to include in a successful piece of persuasive writing?

✓ **Introduction: clearly state your opinion**
✓ **2-3 main points**
✓ **Keep to your line of argument (do consider the counter-arguments, but only briefly - your objective is to crush them!)**
✓ **Conclusion: a strong final statement**
✓ **Use DAFOREST throughout**

What are some examples of persuasive topics to write on?

✓ Should the school hours shift to be later in the day?
✓ Are zoos cruel to animals?
✓ Should the voting age be lowered to 16?
✓ Is it necessary to enforce school uniforms for school children?
✓ Is social media ruining young peoples' lives?
✓ Is it necessary to give school children homework?
✓ Has music been destroyed in recent years?

Persuasive Writing Sentence Starters:

Firstly, it can be argued…

I firmly believe that…

It must be agreed…

Most people would agree that…

Only a fool would think that…

Secondly, it is true that…

A sensible idea would be to…

Doesn't everybody know that…?

The REAL truth is that…

Surely you would agree that…

Lastly, and most importantly…

Space to add your own-

_____

_____

Come up with your own example for each of the persuasive techniques:

Direct Address- _____

Alliteration- _____

Facts- _____

Opinions- _____

Rhetorical Question-_____

Emotive Language- _____

Superlatives-_____

Triples-_____

Space to add more-
_____
_____
_____

WORD BANK:

Use this word bank as a space for you to add the different words that we explore in the lessons. Note: you will discover more persuasive techniques than 'DAFOREST' along the way!

Animal Farm – Overview/Summary

Overview - Animal Farm is a short novel by George Orwell. It was written during World War II and published in 1945. It is about a group of farm animals who rebel against their farmer. They hope to create a place where the animals can be equal, free, and happy. In the end, however, they are betrayed and the farm ends up as bad it was before.

Summary - Manor Farm is run by Mr Jones, a cruel and drunken farmer. One day, the animals gather at a meeting to listen to Old Major, a wise old pig. Old Major makes a speech, calling for animals to rise up against their farmers. The animals are very keen about the idea. Old Major dies a few days later. The pigs, who are the most intelligent animals, begin planning a rebellion. They are led by Snowball and Napoleon.

About three months later, the animals revolt against Mr Jones and take over the farm. They change its name to "Animal Farm". They decide the farm will now be ruled only by animals, calling the system "animalism". They write seven commandments, with the most important being "All animals are equal".

Mr Jones and his friends attack the farm to try to take it back, but the animals drive them away. Mr Jones flees and never returns. Snowball and Napoleon fall out with each other, as they have different ideas for how Animal Farm should be led. Snowball announces plans to build a windmill, but Napoleon disagrees. Napoleon trains nine puppies, who grow into vicious dogs who will serve him. He takes control and rules the farm by himself (as a dictator).

Napoleon starts working with human beings outside, even though this used to be forbidden. The commandments are replaced by the words "All animals are equal, but some animals are more equal than others." In the end, other animals watch the pigs talking with a group of humans and decide they cannot tell which is which.

What do we need to include in a successful paragraph?

- ✓ **Quote**
- ✓ **Technique**
- ✓ **Analysis**
- ✓ **AO3 – What was the writer trying to say about their present day?**

Match up task - this help you with important techniques and word classes that you will need to remember for your QTA writing.

Adjective		Normally referred to as a 'doing word', for example walk, read or sing.
Simile		Exaggeration for emphasis – making something sound much worse than it actually is, for example.
Propaganda		A word that describes *how* something happens or occurs, for example yesterday, quickly and silently.
Verb		A persuasive technique often asked to make the audience ponder something – doesn't require an answer.
Hyperbole		A technique used to try and persuade someone, by making them feel like they are being spoken to directly.
Metaphor		The simple repeating of a word, within a short space of words, with no particular placement of the words to secure emphasis.
Adverb		Information of a biased or misleading nature, used to promote a political cause or point of view.
Rhetorical Question		A word used to describe something, for example tall, orange or old.
Repetition		A comparison between two things for effect, by saying that one thing *is* something else. For example, the man was a mountain.
Direct Address		A comparison between two things using the words 'like' or 'as', for example the man was as big as a mountain.

Why did Orwell write this book?
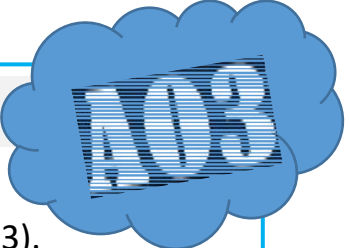
➢ George Orwell was a socialist and was opposed to dictatorship (rule by one person).
➢ In particular, he did not like the communist government of Joseph Stalin in the Soviet Union (1927-'53).
➢ In 1936 and 1937, Orwell fought in the Spanish Civil War. He had watched as democratic left-wing rebels were pushed out by pro-Soviet communist rebels.
➢ In the introduction to the 1947 Ukrainian translation of Animal Farm, Orwell said he wrote it because he wished to destroy what he called the "Soviet myth".
➢ Orwell also said he said he got the idea from seeing a young boy whipping a large cart horse. He explained, "It struck me that if only such animals became aware of (knew) their strength we should have no power over them, and that men exploit (badly use) animals in much the same way as the rich exploit the proletariat (the poor, the lower class)".

The Horn and Hoof flag described in the book appears to be based on the hammer and sickle, the Communist symbol. By the end of the book when Napoleon takes full control, the Hoof and Horn is removed from the flag.

Key Characters:

Old Major – An old prize-winning pig. He is the one who inspires all the animals to rebel against the humans. The character is based on Karl Marx and Vladimir Lenin.

Napoleon – A large boar who at first leads the revolution with Snowball, then grabs power for himself. He is the main villain of the story. The character is based on Joseph Stalin.

Snowball – One of the early leaders of the revolution. He is popular among the other animals and wants to make Animal Farm a fair place for them to live. He is mainly based on Trotsky.

Squealer – He serves as Napoleon's public speaker. He persuades the other animals to support Napoleon, no matter how bad his rule is.

Boxer – A loyal and dedicated cart-horse. He is the strongest worker among the animals.

Mr Jones – The farmer of Manor Farm. The animals revolt against him because he does not feed them or take care of them, and he whips them. He is based on Tsar Nicholas II.

Mr Pilkington - The farmer of Foxwood, a large neighbouring farm. He and his farm represent the United States.

Mr Frederick - The owner of Pinchfield, a small but well-kept neighbouring farm. He briefly enters into an alliance with Napoleon, but cheats the animals and later invades them. He is a reference to Adolf Hitler.

QTA Sentence Structures:
Address the question to start your QTA, making a clear point, and then follow these steps:

QUOTE:
For example, this can be seen in '…'
A quote to support this is '…'
This is shown through the line '……..'
TECHNIQUE:
Through the use of _____ the reader is able to…
Orwell uses the persuasive technique of _____ in order to…
ANALYSIS:
This suggests/this shows…
It could also suggest that…
The word _____ could highlight…
Another word that supports this is _____ because…
As a reader I understand…
AO3/THE WRITER:
Orwell used the character/idea/example to highlight…
Orwell was clearly trying to show that he felt…

WORD BANK:
Use this word bank as a space for you to add anything extra that we explore in the lessons.

Drama Knowledge Organiser

'Crime & Punishment'

Crime and Punishment

- The **perpetrator** of the crime is the name for the person who has committed a crime.
- The **victim** is the name for the person who has been harmed, injured or killed as a result of a crime.
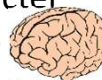
Drama Techniques!

A **flashback** takes the narrative of the Drama back in time.

A **flashforward** takes the narrative of the piece of Drama forward to the future. Both techniques can be used to create tension.

A **thought-track** is when a character speaks out loud to the audience about their thoughts and feelings.

Performance Terminology

Levels	Using different heights or levels in a scene to create meaning. E.g. a low status character may sit on the floor.
Proxemics	Using the space between each character to create meaning.
Gait	The way the character moves. This could show their age or how they're feeling.
Accent	The way in which people from a specific country or area pronounce different words.
Pitch	How high or low your voice is. This could show the audience the character's age, gender or mood.

Keywords:

Learn the 10 spellings below:

1.) Perpetrator
2.) Victim
3.) Punishment
4.) Flashback
5.) Flashforward
6.) Levels
7.) Proxemics
8.) Gait
9.) Accent
10.) Pitch

THE SOUNDSCAPE

Year 8 Autumn Term

KEY WORDS – test yourself! (definitions on the next page)

Soundscape   Graphic Score   Acoustic Environment   Musical Experimentation   Foley Technique
Pitch   Duration   Structure   Texture   Tone   Dynamics   Post-production

What is a Soundscape?

Soundscapes are when we use sound and **music** to create the atmosphere of a story being told. These sounds can be background noises, body/vocal percussion, electronic sound effects, or **musical** instruments that sound like what is happening (e.g. using a maraca or tapping on our teeth to sound like rain).

What is a Graphic Score?
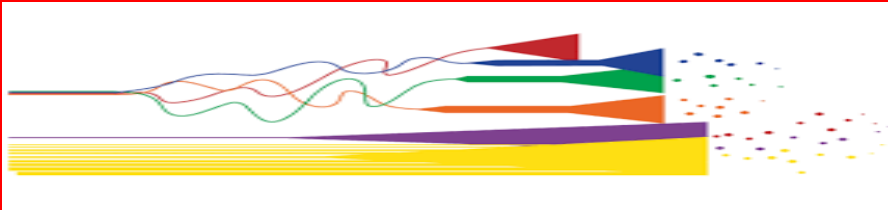
Graphic notation (or **graphic score**) is the representation of music through the use of visual symbols. Composers often rely on graphic notation in experimental music, where standard musical notation can be ineffective. Graphic notation relies heavily on the imagination to interpret the visual content. Because of this the pieces usually vary from performer to performer.

Graphic notation can show effective use of PITCH, DURATION, STRUCTURE, TEXTURE, TONE and DYNAMICS.
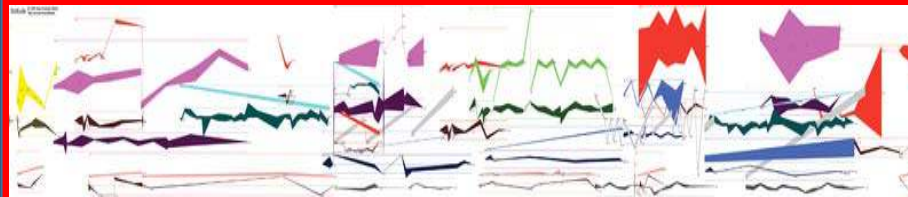
The Foley Method:

In filmmaking, **Foley** is the reproduction of everyday sound effects that are added to films, videos, and other media in post-production (after the film has been made) to enhance audio quality. These reproduced sounds, named after sound-effects artist Jack Foley, can be anything from the swishing of clothing and footsteps to squeaky doors and breaking glass. Foley sounds are used to enhance the auditory experience of the movie. Foley can also be used to cover up unwanted sounds captured on the set of a movie during filming, such as overflying airplanes or passing traffic.

<u>Interesting examples for you to look at:</u>
Create a Live Soundscape to a Story (Mr McGee)
https://vimeo.com/360684227
The Magic of Making Sound -
https://www.youtube.com/watch?v=UO3N_PRIgX0
Where the Sounds From the World's Favourite Movies Are Born
https://www.youtube.com/watch?v=0GPGfDCZ1EE
Kathy Berberian's 'Stripsody'
https://www.youtube.com/watch?v=0dNLAhL46xM

KEY WORDS AND MEANINGS:

|	
Soundscape	Music used to represent the impression of something (telling a story). This can be through the use of instruments, voice, electronic or natural sounds.
Graphic Score	A representation of sounds using symbols.
Acoustic Environment	An **acoustic environment** provides the framework of a sound picture e.g. the sounds of street life through an open window during the daytime or sounds of nature (birdsong, flowing water).
Musical experimentation	Trying several different combinations of sound before using the best version.
Foley technique	Using everyday objects to replicate sounds for film or radio – pioneered by Jack Foley.
Pitch	How high/low sounds are – changes can be sudden or gradual.
Duration	How long/ short sounds are.
Structure	How the music is organised from start to finish (e.g. verse-chorus song structure).
Texture	How many layers of sound are present (thick/ thin texture).
Tone	The sound quality – scratchy, smooth, mellow, thundering.
Dynamics	The volume – changes can be sudden or gradual.
Post-production	Something added to a film after it has been completed.

Geography Knowledge Organiser
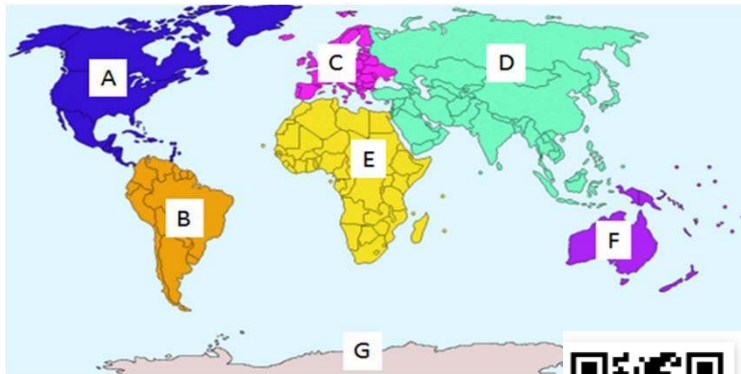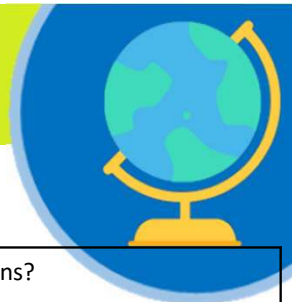
Section A Populations

Names of the continents: A- North America, B – South America, C – Europe, D- Asia, E –Africa F – Oceania, G- Antarctica

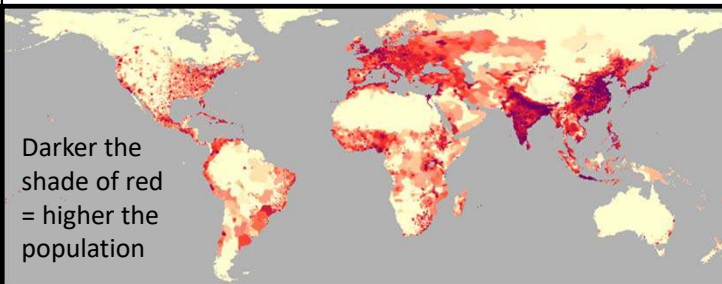**A choropleth map to show the world's population distribution**

Darker the shade of red = higher the population

Map interpretation:

From the map I can see the continent with the largest population is **Asia**. Countries in this continent with a high population are **India and China.** From the choropleth map I can see that the continents with a lower population are North America and Oceania.

Key terms for populations	
Population	The amount of something living in an area e.g. people in a country
Urbanisation	The process of more people living in towns and cities. Urban = towns and cities.
Birth rate	The number of babies born every year per 1000 people
Death rate	The number of deaths per 1000 people in a population
Migration	The movement of people from one place to another
Emancipation	To free from people / women from any controlling influence.
Refugee	People who must leave their home area for their own safety or survival.
Pull factor	A reason for wanting to go somewhere. E.g. new job
Push factors	A reasons for wanting to leave. E.g. natural disaster or no jobs

What is causing changes in populations?	
Key Word	How does it affect populations
Agricultural Change	As technology improves, like the development of tractors and farming equipment, the amount of crops grown increases and the need for labour lowers.
Increasing Urbanisation	People move to cities for jobs, which means that they are less likely to be focussed on having children. This is happening mostly in LIC countries.
Education	Increased education leads to people being more career focussed which means they are less likely to have as many children.
The emancipation & status of women	Women now have equal rights to men and they have equal opportunities in the workplace. Many women now decide to start a career rather than a family. In fact, one in five women in the UK is childless!

Why did the Windrush Generation come to Britain?

- Britain was short on workers after WW2
- People were encouraged by the 1948 British Nationality Act that granted citizenship and right of abode in the UK to all members of the British Empire
- Britain particularly needed people from the service sector or skills in working with raw materials

Geography Knowledge Organiser

Types of population policy: Pro-natalist policies means to encourage people to have children, France uses these policies. Anti-natalist policies means to stop people having children. China and Kerala (in India) both have anti-natalist policies but are very different in style.

What Kerala (in India) did to reduce their population?

- Improving education standards and treating girls equally as boys - Today more girls than boys go to university, most villages have new libraries
- Providing adult literacy classes
- Education people to understand the benefits of smaller families.
- Reducing infant mortality rates
- Improving child vaccination programmes
- Free contraception and advice
- Encouraging higher ages for marriage
- Allowing maternity leave for first 2 babies only
- Extra retirement benefits for those with smaller families

Why did Kerala need the policy and what did they do?

India has a growing population. They had tried many different anti-natalist strategies such as free contraception and changing the way people thought (social changes). Kerala had a population of 32 million this was 3.4 % of India's population. A population density of 819 people per km3 (three times higher than India's average!). Kerala needed to control the birth rate. They did this by using "social changes". These changes are summarised on the left. **China's** population was over 1 billion when they introduced their one child policy in __1979__. This had advantages and disadvantages(see below)

China's one child policy – populations topic

Advantages	Disadvantages
• Parents with one child had the education all paid for • Less children being born stopped the predicted famine of the 1990s • The % of educated young women in China has increased compared to before the policy • Focus on one child from parents supports their education and careers • It did reduce the population = 400 million births stopped!! • Recently it has changed to a 2 child policy to help reduce the negative impacts of the policy	• Infanticide – baby girls were often "still born" or killed at birth as boys were preferred to look after the family • Some children were spoilt known as "little emperors" • More boys in the population than girls as people preferred males • Child trafficking increased as parents tried to hide a 2nd born
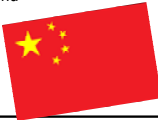
Most displaced Syrians are in the Middle East, with about a million in Europe

Estimated number of displaced Syrians, 2017

5,000,000   1,000,000   500,000   100,000

Sweden 110,000
Germany 530,000
Turkey 3,400,000
Lebanon 1,000,000
Syria 6,300,000
Canada 54,000
United States 33,000
Austria 50,000
Egypt 130,000
Jordan 660,000
Iraq 250,000

Syrian Refugees - This map shows that the most displaced Syrians are in Syria with 6, 300,000 people. There are also large numbers of displaced Syrians in Turkey, Lebanon and Jordan. Examples of other countries which have relatively high numbers of displaced Syrians include Sweden with 110,000 displaced Syrians and Canada with 54,000.

Why are they leaving their homes?

The Syrian crisis is an on-going armed conflict in Syria between forces loyal to the Ba'ath government and those opposing them. Civilian people (not involved in the war) are escaping the bombs and danger of war, looking for somewhere safer to live.
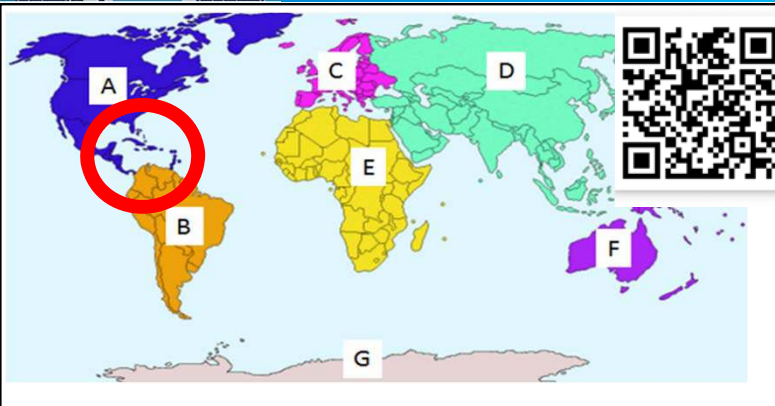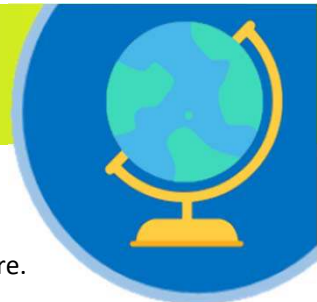
Names of the continents:
A- North America, B – South America, C – Europe, D- Asia, E –Africa F – Oceania, G- Antarctica.
The Caribbean is in the red circle. It is located in North America. It is South West from the UK. North of the equator, south of the Tropic of Cancer.

Climate graph for Kingston, Jamaica
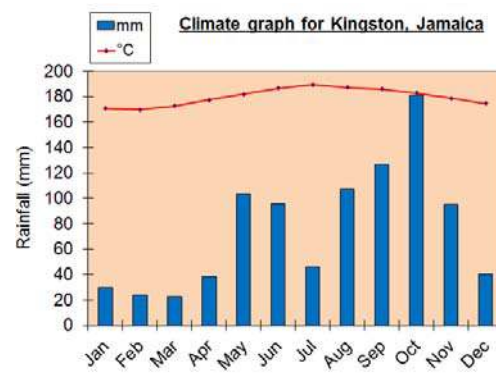
The bars show the rainfall and the line shows the temperature. Jamaica's wettest month is October with 180 mm. The coldest months are January, February and December at 26 °C.

The change in tourist numbers visiting Jamaica

Source of data - http://www.jtbonline.org/statistics/
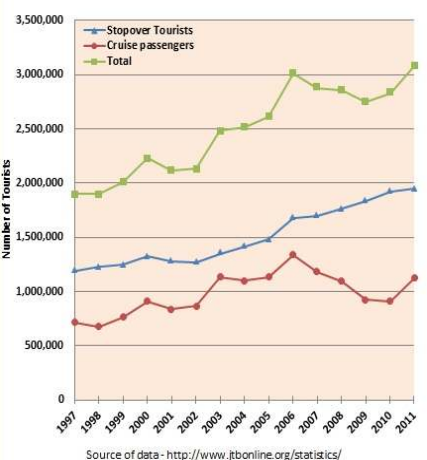
From the graph I can see that tourism has **increased** since 1997.

In **2001** there was a decrease in tourism.

The number of cruise passengers is much **lower (just over 1, 000,000 in 2011)** than the number of stopover tourists **(just under 2,000,000 in 2011).**

Key terms for Jamaica	
Mass tourism	When a large amount of tourists go to an area
Eco tourism	Tourism that works with the environment and local people. It is sustainable. tourism.

Positives and negatives of Tourism in Jamaica

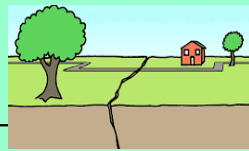|			
Tourism in the main source of employment in Jamaica. Providing 200 000 people either directly in hotels, transport, tourist attractions, shops, and banking. (20% of the countries GDP) **p**	Tourism can lead to a high level of investment on the north coast where much of the country's tourism is concentrated. **p**	Mass tourism can create environmental problems such as footpath erosion, excessive waste and harmful emissions. Water pollution from the cruise ships. **N**	Many jobs are seasonal, so people become unemployed. **N**
Local people can not afford the facilities put in for tourists. **N**	Community tourism and sustainable ecotourism is expanding in more isolated regions, with people running small – scale guest houses or acting as guides. **P**	Those in employment learn new skills which can improve their prospectus for higher paid jobs. **P**	The locals are paid poor wages whereas managers from other countries are paid a high wage. **N**
Land for the massive hotels takes away land from famers and habitats for wildlife. **N**	Large TNCs (Trans National Companies) such as Thomas Cook organise the holidays and make most of the money, so the profits go out of Jamaica and into LICs **N**	.Montego Bay on the north coast has been improved by landscaping. **P**	**KEY:** Positives = P (green) Negatives= N (red)

Geography Knowledge Organiser

What is the significance (importance) of the Caribbean countries?			
COSTA RICA	**JAMAICA**	**PANAMA**	**HAITI**
The capital is San Jose and it has the country has a population of 4.9 million.	The Capital is Kingston and the country's population is 2.8 million.	The Capital is Panama City and it has a population of 4 million.	The Capital city is Port-au-Prince and has a population of 10.9 million.
It has 2 coastlines with the Pacific Ocean to the south and the Caribbean Sea to the North. It is one of the most bio-diverse places on the planet, including cloud forests and tropical rainforests.	The fasted man in the world, Usain Bolt was born here. See his world record run in the QR code	It has 2 coastlines with the Pacific Ocean to the south and the Caribbean Sea to the North.	In 2010 there was a devastating earthquake measuring 7.0 on the Richter scale. It killed 316,000 people
Fairtrade has benefitted coffee and banana farmers in this country by giving them a fairer wage for the goods we like to consume.	Fairtrade has benefitted sugar cane and banana farmers in this country by giving them a fairer wage for the goods we like to consume.	It has the largest artificial canal which cuts through the country so that the Atlantic Ocean and the Pacific could connect. It was built so that cargo ships could cut sail times and avoid travelling round the tip of South America to transport goods to countries in the Pacific or the west coast of S. America.	It lies on 2 fault lines of tectonic plates, including the fault line of the Caribbean plate
It is located on the fault line of the Cocos plate and the Caribbean plate. It is a subduction zone, which has created volcanoes, several of which are still active today. This is good and bad!	It used to be part of the British Empire and the British took slaves there to work on sugar cane and other plantations (slave farms).	It used to be part of the Spanish Empire. People speak Spanish.	It used to be part of the French Empire. Most people speak French.

The capital of Costa Rica is **San Jose**. It is located in the central west area of Costa Rica. Inland from the coast.

Biodiversity	The different variety of plant and animal life in an area. TIF vocab **flora** (plants)and **fauna** (animals)
Fairtrade	Trade between companies and producers in which fair prices are paid to the producers and workers

Volcanoes in Costa Rica		
	Opportunities	**Challenges**
Social	Quality of life can be improved as jobs are created. The landscapes created by volcanoes attract tourists and the land is good for farming with creates jobs for people in the local area.	Eruptions can be deadly and create toxic fumes like carbon monoxide. They can also damage infrastructure. e.g. *2014 a volcano (Plantat) erupted ejecting ash, which reached as far as the capital of San Jose. Stopping air travel.*
Economic	- Panoramic views and stunning scenery attract 2.6 million tourists which brings in (14% of economy) money to the LIC country and boosts the GDP - These volcanoes also create new land and ash contributes to fertile land boosting the agricultural aspect of things.	Cost of damage can be extremely high, this is difficult to repair for a poor country like Costa Rica

Topic 1: The British Empire

Why did the British want an empire:
- Take control of new resources (e.g. gold in Africa and South America, spices in Asia)
- Spread the Christian faith
- Compete with other empires (e.g. France, Spain)

How did the British achieve such a large empire:
- It's army and navy overwhelmed the native population through new technology and clever tactics.
- Trade companies (such as the East India Company) were paid to explore and conquer new lands.
- Success in certain wars (e.g. Seven Years War) allowed us to take a lot of land in a short period of time.

The British Empire in the 1920's

What countries were included in the British Empire:

A total of 70+ countries were in the empire at its height. Three examples include:

Australia (1770-1942)   India (1858-1947)   Canada (1867-1982)

How did it benefit the British:
- New businesses made overseas.
- Thousands of jobs were created.
- New resources made Britain wealthy.
- Colonies in Africa and America allowed us to develop the slave trade which made Britain rich.
- Soldiers from the empire helped in wars (e.g. WW1).

How did it change India:

Positive 👍	Negative 👎
- The British invested around £400 million into India whilst they ruled. - British abolished sati (tradition where widows were burned alive). - Railways, roads and hospitals built in India.	- The **Amritsar Massacre** commanded by General Dyer led to hundreds of deaths. - Cash crops were grown which caused famine. - Religious groups were mistreated by British.

What was the Amritsar Massacre:
- Indians gathered to peacefully protest for independence
- A law passed by the British prohibited large groups from gathering
- The British blocked off exits to the park and 50 riflemen fired for 10 minutes, killing at least 379
- Local hospitals denied care to injured Indians

History Key words:
Colony – a country that belongs to another country   mutiny – a rebellion against authority   independence – being free to rule yourself

History Knowledge Organiser
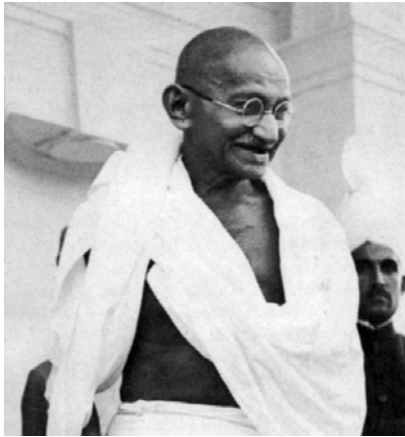
Topic 1: The British Empire

How did India achieve independence in 1947:
- *Gandhi and other Indians protested peacefully for independence.*
- *Activities*
- *Indians had historically rebelled against British rule (e.g. Sepoy Mutiny).*
- *India had helped Britain win WW2.*
- *Controlling India became too costly for the British government.*

How did Australia change under the British Empire:
- *Australia was used as a penal colony by the British to send prisoners for petty crimes.*
- *Convicts established settlements and eventually these became large towns.*
- *Native aboriginal people were mistreated by the British and their land was taken from them.*

How did the Empire come to an end:
- *Some countries fought for their independence and became their own nations (e.g. the British Thirteen Colonies became the USA).*
- *Countries who gave their service in the World Wars demanded the right to rule themselves.*
- *Countries protested for independence (e.g. Kenya, Nigeria, Gambia)*

Topic 2: Transatlantic Slavery

What is slavery:
- *Slavery is the act of using somebody to complete work without paying them a wage and they do not have their human rights*
- *Slavery began before the triangle trade. Egyptians and Romans used slaves.*

What is the triangle trade:
- **EUROPE TO AFRICA:** *Manufactured goods like textiles, rum and firearms were taken to be sold in Africa.*
- **AFRICA TO AMERICAS:** *African people were taken as slaves. This was journey was called **the Middle Passage.***
- **AMERICAS TO EUROPE:** *Farmed goods such as sugar, tobacco and cotton taken back to be used in factories etc.*

What was life like on the Middle Passage:
- *The journey took between 6-12 weeks to cross the Atlantic Ocean.*
- *Slaves remained tied down during the journey with limited space.*
- *Disease was incredibly common and the dead thrown overboard.*
- *Some slaves would try to rebel and take over the slavers' ship.*
- *10-15% of Africans did not survive the journey across the sea.*

History Knowledge Organiser

Topic 2: Transatlantic Slavery

What was Africa like before the Transatlantic Slave Trade:
- Rich African kingdoms such as Mali and Ghana existed before the arrival of white Europeans in Africa.
- Goods were traded between kingdoms such as gold, textiles and spices.
- Kingdoms had their own art and culture before the arrival of Europeans.
- Religion existed prior to colonisation. Islam and Christianity were worshipped alongside other religions that originated from Africa.
- Slavery did exist in Africa already as Africans captured in battle were sold to other African warlords.
- When European sailors arrived, warlords realized they could sell captive Africans to Europeans for more money and for firearms.

What happened on arrival to the Americas:
- Africans were separated from their families and sold at auctions to slave owners. Slaves who did not sell were punished.
- Men were sold based on their strength and size for farm work.
- Women were sold to complete tasks either inside the house or in the plantation fields. Younger women were preferred to breed slaves.
- Children could also be sold and would not always go with their families.
- People looked out for rebellious slaves (Africans who had whip marks on them).

What was life like on a plantation:
- Slaves could be expected to work from sunrise to sunset for their masters with zero breaks.
- Overseers watched over slaves and punished them for not working.
- Cotton, tobacco and sugar would be farmed all day.
- Slaves lived in small shelters close to the big house belonging to the master and the master's family.

How did slavery end:
- Politicians in both Europe and the USA wanted to bring an end to slavery and campaigned for it to be abolished.
- Plantation owners found that slavery became less profitable in the 1800s as new machinery was available and it became expensive to stop slave rebellions.
- The American Civil War from 1861-65 was fought over the debate around slavery. Abraham Lincoln promised to free slaves after the war had been won by the Union side.
- Freed Africans still faced discrimination in the USA.

How could slaves resist their masters:
- Passive resistance – working slow, pretending not to understand orders, singing songs, poisoning masters, stealing tools.
- Active resistance – murdering overseers or masters, arson of plantation property, running away to freedom in Northern states

History Key words:
Plantation – a large farming estate where slaves worked

passive resistance – non-violently resisting authority

active resistance – using violence to challenge authority

The 4 Sights and the Life of Siddhartha:
Siddhartha lived a life of luxury as a Prince but his father overprotected him and did not want him to leave the palace so he lived a life of luxury. He never understood that people lived very differently to him.
As an adult, Sid grew curious and wanted to see what was beyond the palace walls. When he left he saw four things which changed him forever. They were: **old age, illness, poverty and death.** Sid realised people lived lives of suffering. This made him feel COMPASSION and urged him to leave the palace to do something about it.

Enlightenment:
Siddhartha became the Buddha when he sat under a Bodhi tree and meditated for days. Buddha means 'Enlightened one'. Enlightenment means that you understand the truth of existence and how to live in happiness, even though there is suffering. It means you know longer want or desire things. Money and fame do not interest you as a goal. The Buddha taught that if you follow the 8 fold path, it will help you live in harmony, even when you grow old, get ill or die. Buddhist believe everyone is able to become enlightened and not just Sid.

YEAR 8 AUT 1/AUT2 BUDDHIST BELIEFS & PRACTICES

The 3 Universal Truths:
1. Anicca – nothing stays the same, nothing is permanent.
2. Anatta – no person stays the same.
3. Dhukka- we all suffer in life
Can you think of examples??

Karma means actions. Buddhists follow the 5 Precepts in order to create as much good karma as possible. They also help to reduce suffering in their lives and others, which is also good karma.

THE FIVE PRECEPTS
1. No killing
2. No stealing
3. No sexual misconduct
4. No lying
5. No intoxicants

1. No killing ~ Respect for life
2. No stealing ~ Respect for others' property
3. No sexual misconduct ~ Respect for our pure nature
4. No lying ~ Respect for honesty
5. No intoxicants ~ Respect for a clear mind

The 8 Fold Path.
These steps help Buddhists to limit suffering and desiring:

RIGHT UNDERSTANDING
RIGHT CONCENTRATION
RIGHT THOUGHT
RIGHT MINDFULNESS
RIGHT SPEECH
RIGHT EFFORT
RIGHT ACTION
RIGHT LIVELIHOOD

The 4 Noble Truths:
1. All is suffering (Dhukka)
2. Your desires cause you to suffer
3. To stop suffering you must stop wanting or desiring things
4. To help you to stop wanting you must follow the 8 fold path.
Can you give an example of how our desires cause us to suffer?

Reincarnation.

This is the Buddhist believe in life after death and means rebirth. We are in a constant cycle of Samsara. This is the life cycle and birth and death. Karma influences your rebirth. If you do good karma (actions) then your rebirth will be a reward. If you udo bad karma your next life will be a punishment. Humans are considered the best life to be reborn into because we are the most intelligent and therefore able to feel compassion and do more good karma such as help those in need. The cycle of Samsara only ends when enlightenment is achieved.

Life as a Buddhist Monk:

Many people in Buddhist countries become monks and live in the monastery. They do this because they hope to gain a good education and good karma and achieve enlightenment.

There are many rules they must follow.

1. No possessions- apart from a simple robe and sandals. This helps them to not desire things as they cannot have them
2. Shave their heads- a symbol of clearing their minds and not desiring to look good
3. Beg- using a bowl as they are not allowed to work or earn money. This helps those in the community to gain good karma.
4. Daily meditation- to focus the mind and clear negative thoughts
5. No relationships- they must not desire people or objects.

Remember – the Buddha taught desires cause human suffering so they must do all they can to avoid them.

Buddhist Worship

Buddhists worship at a shrine with an image of the Buddha at its focus point. Worshippers will give offerings to the shrine as a gift to the Buddha. Offerings are symbolic:

a) Flowers & candles symbolise that nothing lasts forever and the teaching of Anicca

b) Incense is lit and gives off a smoke and smell to symbolises that karma can spread through your life to the next.

Buddhists meditate to help focus their minds and get rid of negative thoughts which can cause them to suffer.

SEQUENCES

Key Concept

Types of Sequence

Sequence as pictures:
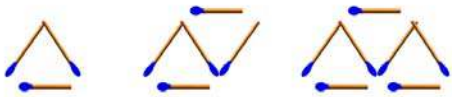
Linear sequence:

4, 7, 10, 13, 16, …
+3 +3 +3 +3

Fibonacci sequence:
(add the previous two terms)

1, 1, 2, 3, 5, 8, …

Key Words

Sequence: A list which is in a particular order following a pattern.
Term: Each particular part of a sequence.
Linear sequence: A sequence which is formed by adding or subtracting the same amount each time.

Examples
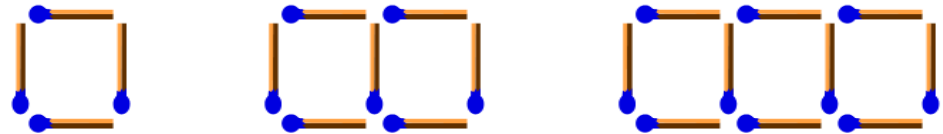
Next pattern is:
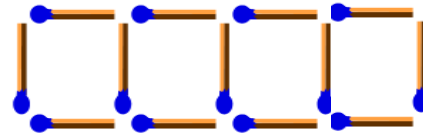
Sequence = 4, 7, 10, 13, ….
Term to term rule = + 3
Nth term   4, 7, 10, 13, 16, …   **= 3n + 1**
+1   +3 +3 +3 +3

Tip

If a sequence is decreasing, the 'n' term will be negative.
Eg, 15, 11, 7, 3, …
nth term = -4n + 19

Year 8

Questions

1) Find the next two terms and the term to term rule
a) 9, 13, 17, 21, …   b) 7, 12, 17, 22, …   c) 9, 7, 5, 3, …   d) 3, 4, 7, 11, 18
2) Find the nth term   a) 7, 9, 11, 13, …   b) 8, 13, 18, 23, …
                        c) 15, 12, 9, 6, …   d) 1, -3, -7, -11, …

ANSWERS: 1) a) 25, 29 Rule = +4 b) 27, 32, Rule = +5 c) 1, -1, Rule = - 2 d) 29, 47, Rule = add previous 2 numbers   2) a) 2n + 5   b) 5n + 3   c) -3n + 18   d) -4n + 5

PERIMETER AND AREA

Key Concepts
Area

$A = l \times w$

$A = b \times h$

$A = \frac{1}{2} (b \times h)$

$A = \frac{1}{2} (a + b)h$
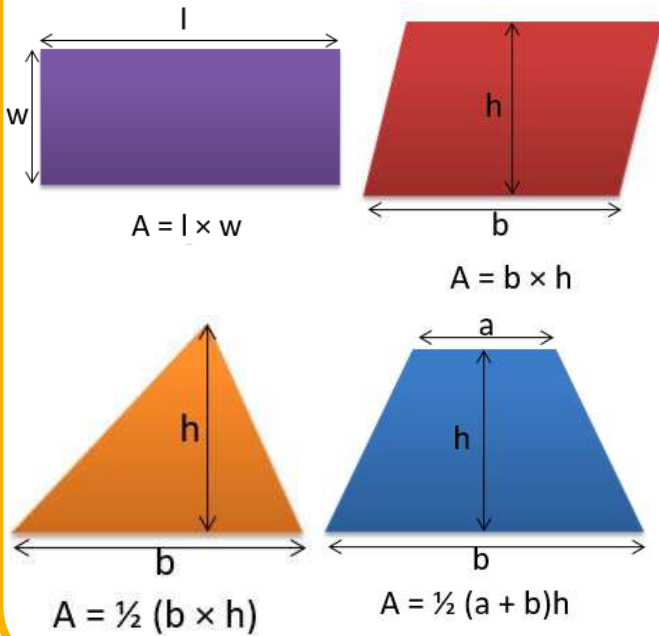
Key Words

Perimeter: The distance around the outside of the shape.

Area: The amount of square units that fit inside the shape.

Dimensions: The lengths which give the size of the shape.

Shapes: Rectangle, Triangle, Parallelogram, Trapezium, Kite.

Examples

4 m, 2 m

$$Area = 2 \times 4 = 8m^2$$

$$Area = \frac{1}{2}(10 \times 12)$$
$$= 60cm^2$$

12 cm, 10 cm

5 mm, 14 mm

$$Area = 5 \times 14$$
$$= 70mm^2$$

8cm, 2cm, 5cm, 5 cm, 3cm

$$Area = (5 \times 3) + (2 \times 5)$$
$$= 25cm^2$$
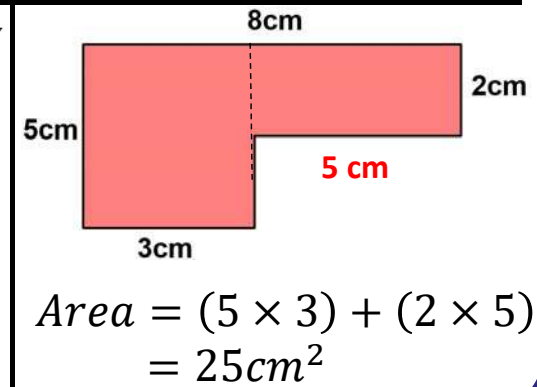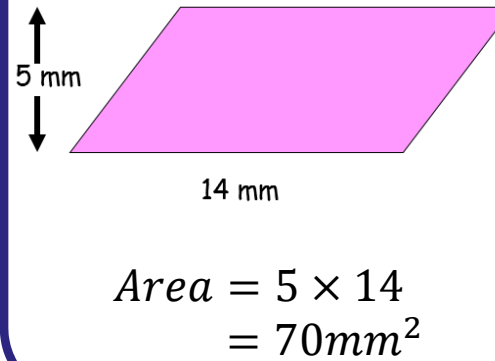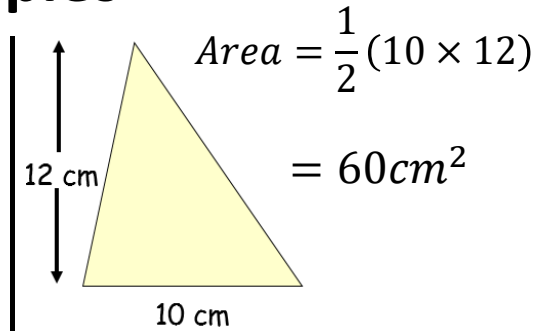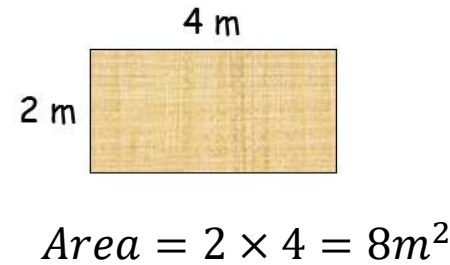
Tip

Always remember units. These units are squared for area. mm^2, cm^2, m^2, etc
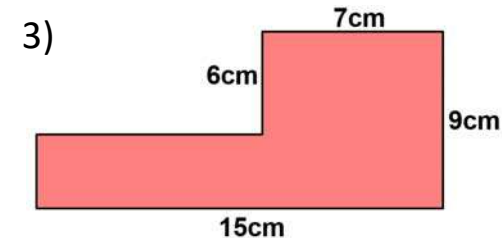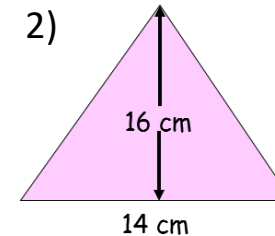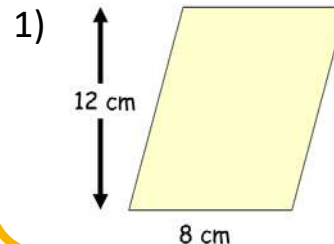
Questions – Find the area.

1) 12 cm, 8 cm

2) 16 cm, 14 cm

3) 7cm, 6cm, 9cm, 15cm

ANSWERS: 1) 96 cm² 2) 112 cm² 2) 87 cm²

Year 8

Key Concept

Perform calculations that cross zero

Number lines are useful to help you visualise the calculation crossing 0

$4 - 6 = -2$

Use the number line to guide subtraction of 6

Start at 4

Find the difference between 6 and -4

From 6 to 0
6
From 0 to -4
4

10 beads between them

$-5 + 5 = 0$ Rearrangements of the same equation $5 - 5 = 0$
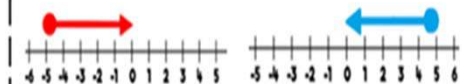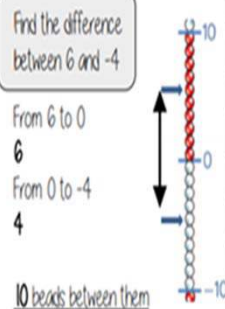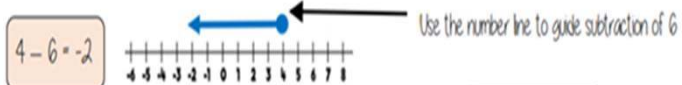
Key Words

Subtract: taking away one number from another.

Negative: a value less than zero.

Add directed numbers

$2 + -4 = -2$

Zero pair $(-1 + 1 = 0)$

Two "−1" left = −2

Representations: red = −1, yellow = 1

$8 + -3 = 5$

Partitioning

$8 + -3 = 5$

$5 + 3 + -3 = 5$

Partition the value to create a zero pair calculation

Generalisation: $+ - = -$

Examples

Subtract directed numbers

red = −1, yellow = 1

Representation for calculation

"Subtract" − means take away or cross

$2 - -1 = 3$

Take away one red

Start with the representation of 2

$2 - -3 = 5$

Generalisation: $- - = +$

Multiply/ Divide directed numbers

$2 \times -3 = -6$

Two representations of the same calculation

Negative, Negative calculation

-2×-3

This is the negative of 2×-3

The act of making counters into their negative is turning them over

$-2 \times -3 = 6$

Divisions are the inverse operations

Year 8
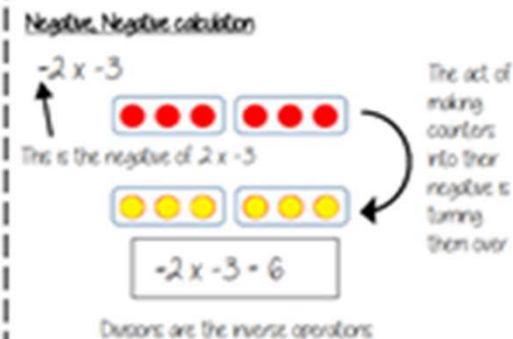
Tip
Use a number line to help you when adding and subtracting with negative numbers

Questions
1) 3 -7   2) -5 – 6   3) 6 - - 3   4) -7 - -4   5) 5 x -4   6) -6 x – 7   7) -24 ÷ 8

ANSWERS: 1) -4   2) -11   3) 9   4) -3   5) -20   6) 42   7) -3

Averages and Statistical Diagrams

Key Concept
Pie Charts

There are 360 degrees in a pie chart. So you need angles that add to 360°.

Eye colour	F	
Blue	15	× 4 = 60
Brown	43	× 4 = 172
Other	32	× 4 = 128

$\frac{360}{90} = 4$ = 90   = 360

Key Words

Frequency: Total.
Mean: Total of data divided by the number of pieces of data.
Mode: The value that occurs most frequently.
Median: Middle number when they are in order.
Range: Difference between the largest and smallest values.

Tips

- There can be more than one mode.
- Range is a measure of spread, not an average.
- Bar charts have gaps between the bars.

Examples

5, 9, 9, 9, (11) 12, 13, 15, 16

Averages

$$Mean = \frac{5 + 9 + 9 + 9 + 11 + 12 + 13 + 15 + 16}{9} = \frac{99}{9} = 11$$

Median = 11   (The middle number shown above)

Mode = 9   (This number occurs most often)

Measure of Spread

Range = 16 − 5 = 11
   (A bigger range means the data is more spread out)

Questions

1) Find the mean, mode, median and range of:
   a)   3, 12, 4, 6, 8, 5, 4   b) 12, 1, 10, 1, 9, 3, 4, 9, 7, 9
2) For the table:
   a)   Draw a pie chart to show the data.
   b)   Draw a bar chart to show the data.
   c)   Work out the mean of the data.

Age	Frequency
11	17
12	11
13	8

Year 8

Year 8

Key Concepts

B Brackets

I Indices

D Division

M Multiplication

A Addition

S Subtraction

If a calculation contains division and multiplication or addition and subtraction calculations work from left to right.

Key Words

Operation: In maths these are the functions $\times \div + -$.
A **formula** involves two or more letters, where one letter equals an **expression** of other letters.
An **expression** is a sentence in algebra that does NOT have an equals sign.
When **substituting** a number into an expression, replace the letter with the given value.

Tip

Put brackets around the calculations which need to be done first.

Examples

1. Simplify the following expressions:

a) $4p + 6t + p - 2t = 5p + 4t$

b) $3 + 2t + p - t + 2 = 5 + t + p$

c) $f + 3g - 4f = 3g - 3g$

d) $f^2 + 4f^2 - 2f^2 = 3f^2$

2) Find the value of $3x + 2$ when $x = 5$

$(3 \times 5) + 2 = 17$

3) $5 \times 4 - 8 \div 2$

$20 - 4 = 16$

Questions

1) $7 - 10 \div 2$ 　　　　　　　　　2) $12 \div (7 - 3)$

3) **Simplify:**

a) $7p + 3q + p - 3q$ 　　　　　　b) $5 + 4t + 3p - 2t + 7$

c) $m - 8g - 5m$ 　　　　　　　　　d) $b^2 - 7b^2 + 2b^2$

4) Find the value of $5m - 6$ when $m = 7$

Maths Knowledge Organiser

DECIMALS

Key Concept

Multiply/Divide by powers of 10

10 000	1000	100	10	1	•	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$

Multiplying

X 10   digits move LEFT **1** space
X 100   digits move LEFT **2** spaces
X 1000   digits move LEFT **3** spaces

←

Dividing

÷ 10   digits move RIGHT **1** space
÷ 100   digits move RIGHT **2** spaces
÷ 1000   digits move RIGHT **3** spaces

→

Rounding rules:
A value of 5 to 9 rounds the number up.
A value of 0 to 4 keeps the number the same.

Key Words

Decimal: A number that contains a decimal point.
Integer: Whole number.
Ascending Order: Place in order, smallest to largest.
Descending Order: Place in order, largest to smallest.

Examples

Ordering Decimals

0.3, 0.21, 0.305, 0.38, 0.209

Add zeros so that they all have the same number of decimal places.

0.300, 0.210, 0.305, 0.380, 0.209

Then they can be placed in order:

0.209, 0.21, 0.3, 0.305, 0.38

Round 3.527 to:

a) 1 decimal place

3 . 5 2 7 → 3.5

b) 2 decimal places

3 . 5 2 7 → 3.53

Year 8

Tip

- Add zeros when ordering decimals.
- The number of zeros tells you the number of places to move the digits.

Questions

1) Put in ascending order   1.52,   1.508,   1.5,   1.05,   1.51
2) Work out   a) 1.35×10 b) 0.6×100 c) $4.5 \div 100$
3) Round 2467 to the nearest 10, 100 and 1000

PERCENTAGES

Key Concept
FDP equivalence

F	D	P
$\frac{1}{100}$	0.01	1%
$\frac{1}{10}$	0.1	10%
$\frac{1}{5}$	0.2	20%
$\frac{1}{4}$	0.25	25%
$\frac{1}{2}$	0.5	50%
$\frac{3}{4}$	0.75	75%

Key Words
Percentage: Is a proportion that shows a number as parts per hundred.
Fraction: A fraction is made up of a numerator (top) and a denominator (bottom).

Examples

Non-Calculator

$$\frac{3}{4} \ of \ 32 = 32 \div 4 \times 3 = 24$$

$16\% \ of \ 240$

$10\% = 24$
$5\% = 12$
$1\% = 2.4$

$= 24 + 12 + 2.4$
$= 38.4$

Calculator

Find **32%** of 54.60 = **0.32** × 54.60 = 17.472

Increase 45 by **12%** = 45 × **1.12** = 50.4

Tip
There is a % function on your calculator.

To find 25% of 14 on a calculator:

2, 5, SHIFT, (, ×, 1, 4, =

Year 8

Questions
1) Find these fractions of amounts:

  a) $\frac{1}{3} \ of \ 15$ b) $\frac{1}{5} \ of \ 65$ c) $\frac{2}{7} \ of \ 14$ d) $\frac{4}{9} \ of \ 45$

2) a) 35% of 140   b) 21% of 360   c) Increase 60 by 15%

ANSWERS: 1) a) 5 b) 13 c) 4 d) 20 2) a) 49 b) 75.6 c) 69

KEY VERB FORMS IN THE PRESENT TENSES

AVOIR [to have]		ÊTRE [to be]	
j' [I]	ai [have]	je	suis [am]
tu [you]	as	tu	es
il/elle [he/she]	a	il/elle	est
nous [we]	avons	nous	sommes
vous you (pl)	avez	vous	êtes
Ils/elles [they]	ont	ils/elles	sont

REGULAR PRESENT TENSE

	-ER	-IR	-RE
Je	e	is	s
Tu	es	is	s
Il/Elle/On	e	it	
Nous	ons	issons	ons
Vous	ez	issez	ez
Ils/Elles	ent	issent	ent

Opinions & Pronoun phrase

J'aime [bien]

J'aime beaucoup

J'adore

Je préfère

ma matière préférée est…

(ça) m'amuse

Je n'aime pas

Je déteste

J'ai horreur de

Je n'aime pas du tout

(ça) m'énerve

Connectives

1. et aussi — and also
2. mais / cependant — but / however
3. parce que OR car — because
4. de plus — furthermore

Complexity

1. QUI s'appelle(nt) … - who/ which is/are called
2. Je n'ai pas **de** or **d' …** - I don't have a / any..
3. Je pense que c'est… - I think that it is …
4. Je trouve que c'est … - I find that it is …

Quantifiers

très (very); assez (quite);
trop (too); tellement (so)

Adjectives

actif [ive]	active
amusant [e]	fun
créatif [ive]	creative
intéressant[e]	interesting
relaxant [e]	relaxing
passionnant [e]	exciting
utile	useful
barbant [e]	Boring/tedious
ennuyeux [euse]	boring
nul [le]	rubbish
facile	easy
difficile	difficult
Le prof est sympa	The teacher is nice
Le prof est sévère	The teacher is strict
génial(e)	great
marrant(e)	Fun / funny

KEY QUESTIONS

1. Aimes-tu_____? — Do you like____?
2. Qu'est-ce que tu aimes? — What do you like?
3. Quelle est ta matière préférée? — What is your favourite subject?
4. Pourquoi? — Why?

KO. Yr 8 Aut 1 – Au collège

TOPIC VOCABULARY TRANSLATED

Les matières scolaires • School subjects

le français	French
le théâtre	drama
la géographie/la géo	geography
la musique	music
la technologie	technology
l'anglais (m)	English
l'EPS (f)	PE
l'histoire (f)	history
l'informatique (f)	ICT
les arts plastiques (m)	art
les mathématiques/maths (f)	maths
les sciences (f)	science

Quelle heure est-il? • What time is it?

Il est ...	It's ...
huit heures	eight o'clock
huit heures dix	ten past eight
huit heures et quart	quarter past eight
huit heures et demie	half past eight
neuf heures moins vingt	twenty to nine
neuf heures moins le quart	quarter to nine
midi	midday
minuit	midnight
midi/minuit et demi	half past twelve (midday/midnight)

Qu'est-ce que tu manges? • What do you eat?/ What are you eating?

Je mange ...	I eat/I'm eating ...
du fromage	cheese
du poisson	fish
du poulet	chicken
du steak haché	beefburger
du yaourt	yoghurt
de la pizza	pizza
de la purée de pommes de terre	mashed potatoes
de la glace à la fraise	strawberry ice-cream
de la mousse au chocolat	chocolate mousse
de la tarte au citron	lemon tart
des crudités	chopped, raw vegetables
des frites	chips
des haricots verts	green beans

USEFUL infinitives (verbs)

manger = to eat
boire = to drink
penser = to think
aimer = to like
adorer = to love
étudier = to study

L'emploi du temps • The timetable

A [neuf heures] j'ai [sciences].	At [nine o'clock] I've got [science].
le matin	(in) the morning
l'après-midi	(in) the afternoon
le mercredi après-midi	on Wednesday afternoon
la récréation/la récré	breaktime
le déjeuner	lunch

lundi
mardi
mercredi
jeudi
vendredi
samedi
dimanche

La journée scolaire • The school day

On a cours (le lundi).	We have lessons (on Mondays).
On n'a pas cours ...	We don't have lessons ...
On commence les cours à ...	We start lessons at ...
On a quatre cours le matin.	We have four lessons in the morning.
On étudie neuf matières.	We study nine subjects.
À la récré, on bavarde et on rigole.	At break, we chat and have a laugh.
On mange à la cantine.	We eat in the canteen.
On finit les cours à ...	We finish lessons at ...
On est fatigués.	We are tired.

MFL Knowledge Organiser – Year 8 Aut 2

KEY VERB FORMS IN THE PRESENT TENSES

jouer [to play]		faire [to do]	
je [I]	joue	je	fais
tu [you]	joues	tu	fais
il/elle [he/she]	joue	il/elle	fait
nous [we]	jouons	nous	faisons
vous you (pl)	jouez	vous	faites
Ils/elles [they]	jouent	ils/elles	font

REGULAR PRESENT TENSE

	-ER	-IR	-RE
Je	e	is	s
Tu	es	is	s
Il/Elle/On	e	it	
Nous	ons	issons	ons
Vous	ez	issez	ez
Ils/Elles	ent	issent	ent

Opinions & Pronoun phrases

J'aime [bien]

J'aime beaucoup

J'adore / Je préfère

Mon sport préféré est...

(ça) m'amuse

(ça) me plait

Je n'aime pas

Je déteste

J'ai horreur de

Je n'aime pas du tout

(ça) m'énerve

(ça) m'énnuie

Connectives

1. et aussi   and also
2. cependant / en revanche   however
3. parce que OR car   because
4. de plus / en plus   furthermore/ what's more

Complexity

1. ne….pas   not
2. ne….jamais   never
3. ne… plus   no more / no longer

4. qui est / qui sont   which is / which are

Quantifiers

très (very); assez (quite); trop (too); tellement (so): vraiment (really)

Adjectives

actif [ive]	active
amusant [e]	fun
énervant [e]	annoying
intéressant[e]	interesting
relaxant [e]	relaxing
passionnant [e]	exciting
violent	violent
barbant [e]	Boring/tedious
ennuyeux [euse]	boring
nul [le]	rubbish
facile	easy
difficile	difficult
dangereux [euse]	The teacher is nice
sportif [ive]	
génial [e]	great
marrant [e]	Fun / funny

KEY QUESTIONS

1. Qu'est-ce que tu fais?   What do you do?
2. Qu'est-ce que tu aimes faire?   What do you like to do?
3. Quand?   When?
4. Qu'est-ce qu'ils font?   What do they do?

TOPIC VOCABULARY TRANSLATED

Les ordinateurs et les portables
• Computers and mobile phones

Qu'est-ce que tu fais …	What do you do/are you doing …
avec ton ordinateur?	on your computer?
avec ton portable?	on your mobile phone?
Je joue.	I play/I'm playing games.
Je surfe sur Internet.	I surf/I'm surfing the net.
Je tchatte sur MSN.	I chat/I'm chatting on MSN.
Je regarde des clips vidéo.	I watch/I'm watching video clips.
Je télécharge de la musique.	I download/I'm downloading music.
J'envoie des SMS.	I text/I'm texting.
Je parle avec mes ami(e)s/ mes copains/ mes copines.	I talk/I'm talking to my friends/mates.
J'envoie des e-mails.	I send/I'm sending e-mails.

La fréquence • Frequency

quelquefois	sometimes
souvent	often
tous les jours	every day
tous les soirs	every evening
tout le temps	all the time
de temps en temps	from time to time
une fois par semaine	once a week
deux fois par semaine	twice a week

en été / hiver	in summer / winter
En printemps / automne	in spring / summer
quand il fait beau / chaud	when it's good / hot weather
quand il pleut / il neige	when it rains / snows
quand il fait froid	when it's cold
Il y a du soleil	it is sunny
Il y a du vent	it is windy
Il y a des nuages	it is cloudy
Il y a de l'orage	it is stormy
Il est variable	it is changeable

Quand? • When?

USEFUL infinitives verbs

jouer = to play
*faire = to do
télécharger = to download
*envoyer = to send

Qu'est-ce que tu aimes faire? • What do you like doing?

le soir/le weekend	in the evenings/ at the weekends
le samedi matin/ après-midi/soir	on Saturday mornings/ afternoons/evenings
J'aime …	I like …
… retrouver mes amis en ville.	… meeting my friends in town.
… regarder la télévision (la télé).	… watching TV.
… jouer sur ma PlayStation.	… playing on my PlayStation.
… écouter de la musique.	… listening to music.
… faire les magasins.	… going shopping.
… faire du sport.	… doing sport.
… jouer au football.	… playing football.
… traîner avec mes copains.	… hanging out with my mates.
… téléphoner à mes copines.	… phoning my mates.

Qu'est-ce que tu fais? What do you do?

Je fais du parkour.	I do parkour.
Je fais du patin à glace.	I go ice-skating.
Je fais du vélo.	I go cycling.
Je fais de la natation.	I go swimming.
Je fais de l'équitation.	I go horse-riding.
Je fais des promenades.	I go for walks.

Le sport — Sport

Je joue …	I play …
au billard	billiards/snooker
au tennis de table/au ping-pong	table tennis
à la pétanque/aux boules	boules

Tu es sportif/sportive? **Are you sporty?**
Je suis (assez) sportif/sportive. **I'm (quite) sporty.**
Je ne suis pas (très) sportif/sportive. **I'm not (very) sporty.**
Mon sportif/Ma sportive préféré(e) est …
My favourite sportsman/sportswoman is …

8F The Periodic Table

1. Dalton's Atomic Model

Matter	All things are made of matter.
John Dalton	(1766-1844) An English chemist.
Dalton's Atomic Theory	• all matter is made up of atoms. • atoms in an element are identical. Each element has its own type of atom. • atoms cannot be destroyed or created. • In compounds each atom is always joined to a fixed number of other atoms. • atoms rearrange during chemical reactions to form new substances.
Atoms	Small particles that all matter is made up of.
Element	A substance made up of one kind of atom.
Compound	Contains atoms of two or more different elements chemically joined together.
Physical Properties	The properties that describe a substance on its own. *(colour, strength, density, etc.)*
Physical Changes	A change in which no new substances are formed.
Symbols	Letters used to represent the elements. *e.g. C represents Carbon*

2. Chemical Properties

Chemical Properties	How a substance reacts with other substances.
Hypothesis	An idea about how something works that can be tested using experiments.

|	
Prediction	What you think will happen in experiment and why.
Conserving Mass	The mass of the products of a reaction will be the same as the mass of the reactants.
Chemical Formulae	The combination of symbols and numbers that shows how many atoms of different element are in a particular molecule. *e.g. water is H_2O*
Ratio	Comparison of the proportion of two quantities *e.g. in water there are 2 hydrogens for every oxygen, the ratio is 2:1*

3. Mendeleev's Table

Johann Döbereiner	(1780-1849) German chemist who highlighted some groups of 3 elements had similar physical / chemical properties.
John Newlands	(1837-1898) English chemist who ordered elements by the mass of atoms and noticed every 8th element has similar properties.
Dmitri Mendeleev	(1834-1907) Russian chemist who published the first periodic table by ordering elements by increasing masses of their atoms forming groups of similar properties.
Gaps	Mendeleev left gaps in his table for undiscovered elements and predicted their properties.
Group	A vertical column in the Periodic Table- contains elements with similar properties.

Alkali Metals	Group 1 Very reactive metals, they even react with water.
Halogens	Group 7 React with most metals to form solid compounds.
Noble Gases	Group 0 Unreactive gases

4. Physical Trends

Melting Point	When a substance changes from a solid into a liquid
Boiling Point	When a substance changes from a liquid into a gas.
Freezing Point	When a substance changes from a liquid into a solid- the same as the melting point.

Heating Substances

How temperature depends on time (as sulfur is heated)
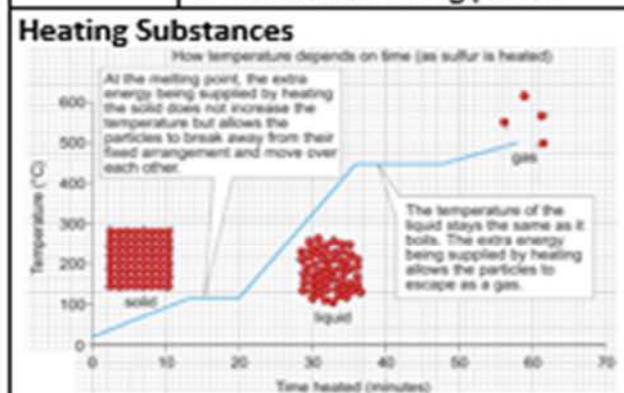
Periods	The horizontal rows in the Periodic table.
Transition Metals	Block of elements in the middle of the Periodic table- separates the eight main groups.
Metal Properties	High melting points, strong, flexible, malleable, shiny, good conductors.
Non-Metal Properties	Low melting points, brittle, dull, poor conductors.

5. Chemical Trends

Alkali Metals & Water	Alkali metals produce metal hydroxides and hydrogen when reacting with water. *(sodium + water → sodium hydroxide + hydrogen)*
Alkali Metals & Oxygen	Alkali metals produce metal oxides when reacting with oxygen. *(lithium + oxygen → lithium oxide)*
Reactivity	How quickly / vigorously something reacts.
Alkali Metal Reactivity	As you move down the group the reactivity increases.
Oxides	Formed when elements react with oxygen.
Oxide Trends	When we dissolve oxides in water there is a trend in their pH. Further to the left of the Periodic table oxides formed are more alkaline. Further to the right they are more acidic.

Work through memorising the information – highlight each definition once you know it. When you have completed your highlighting completed the gap fill and activities on the second sheet to support your retrieval practice.
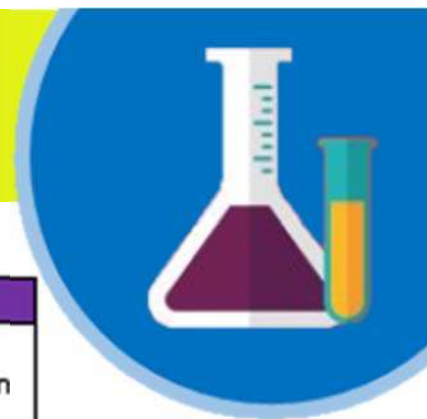
8K Energy Transfers

1. Temperature Changes

Temperature	How hot or cold an object is. *Measured in degrees Celsius (°C)*
Internal / Thermal Energy	The energy stored in the movement of particles. *Measured in Joules (J)*
Factors Affecting Amount of Internal Energy Stored	• temperature • material • mass
Energy Transfer	Always from a hotter object to a cooler one.
Evaporation	When a liquid turns into a gas. A way of transferring energy.
Cooling by Evaporation	The fastest moving particles escape a liquid to form a gas. The particles left are storing less energy so the temperature of the remaining liquid is lower.

2. Transferring Energy

Transferring Energy	Energy can be transferred by heating via evaporation, conduction, convection and radiation.
Radiation	A way of transferring Energy by heating through waves (it does not need a medium).
Emitting Radiation	All things give out (emit) infrared radiation, the hotter it is the more it emits.

Thermal Images	Instruments that measure infrared radiation and convert into maps of temperatures.
Conduction	When a solid is heated the particles vibrate more and these vibrations are passed through the solid transferring energy.
Thermal Conductors	Energy is transferred easily through them- metals.
Thermal Insulators	Energy is not transferred through them easily- wood / plastic.
Convection	In fluids (liquids and gases) when part of it is heated it become less dense and rises. Cooler fluid moves in to take its place and a convection current forms.

Convection Diagram
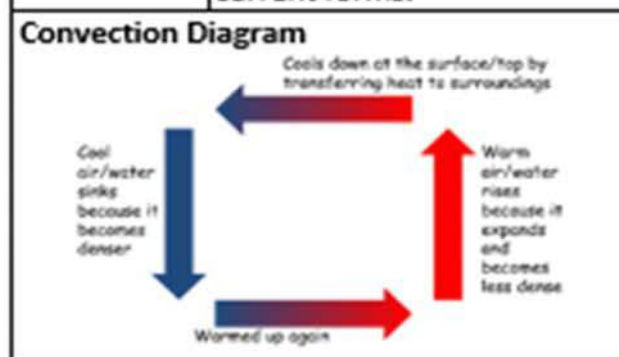
3. Controlling Transfers

Cold Climates	Houses are kept warm by burning fuel for heating and insulating houses to keep warmth inside.
Good Insulators	Brick, wood, carpet, feathers, wool.
Air	A very poor conductor because the particles are far apart
Hot Climates	Houses are kept cool by painting them white (light and shiny surfaces reflect infrared radiation).

Solar Panels	Painted black because dark colours absorb and emit infrared radiation well.
Vacuum Flask	Designed to reduce energy transfers and keep contents hot: • Plastic stopper to stop convection (and it is an insulator). • Glass walls with silver coating reflect radiation back in. • Vacuum between walls so no conduction or convection can occur.

4. Power and Efficiency

Power	The amount of energy transferred by an appliance per second.
Watts (W)	The units for measuring power. 1000W = 1kW (kilowatt)
Power Ratings	Tell us how much energy an appliance transfers.
Efficiency	The amount of useful energy transferred by a device compared with the amount of energy supplied to it.
Sankey Diagram	A diagram that represents energy transfers.

Sankey Diagram Example

Efficiency Formula

$$\text{efficiency} = \frac{\text{useful energy transferred}}{\text{total energy supplied}} \times 100\%$$

5. Paying for Energy

Kilowatt-hour (kWh)	The amount of energy transferred in 1 hour by an appliance. Used by energy companies to measure energy use.

Energy Use Formula

$$\underset{(kWh)}{\text{energy use}} = \underset{(kW)}{\text{power rating}} \times \underset{(hours)}{\text{time}}$$

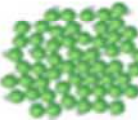|	
Saving Money on Electricity / Gas Bills	Not using as much energy will save money. Insulating houses and using more efficient appliances will help with this.
Payback Time	How long it will take you to save the money that an efficiency measure costs.
Payback Time Formula	$\text{payback time} = \dfrac{\text{cost of change}}{\text{saving per year}}$

Work through memorising the information – highlight each definition once you know it. When you have completed your highlighting completed the gap fill and activities on the second sheet to support your retrieval practice.

8I Fluids

1. The Particle Model

States of Matter	The three forms that a substance can be in; solid, liquid or gas.
Solid Properties	Do not flow, fixed shape, fixed volume, cannot be compressed
Liquid Properties	Can flow, no fixed shape, fixed volume, cannot be compressed
Gas Properties	Can flow, no fixed shape, no fixed volume, can be compressed
Particle Theory	Used to explain the different properties and observations of solids, liquids and gases.
Solid Particle Properties	Fixed arrangement of particles held closely together that cannot move over each other but vibrate.
Liquid Particle Properties	Held closely together but not in a fixed arrangement and can move over each other.
Gas Particle Properties	Far apart from each other and free to move about in all directions.
Diffusion	The movement of particles spreading out and mixing with each other without anything moving them.

Brownian Motion	An erratic movement of small specks of matter caused by being hit by the moving particles that make up liquids or gases.
Expanding	Materials expand when heated because the particles vibrate more, taking up more space.
Contract	Materials contract when cooled because the particles vibrate less and take up less space.
Density	The mass of a certain volume of a material. $$density = \frac{mass}{volume}$$

2. Changing State

Changes of State	Changing from one state of matter to another. Physical changes because no new chemicals are made.
Melting	Turning from a solid to a liquid- occurs at melting point
Freezing	Turning from a liquid to a solid- occurs at freezing point
Condensing	Turning from a gas into a liquid.
Sublimation	Turning from a solid to a gas.
Evaporation	Turning from a liquid into a gas. Can occur at the surface of a liquid at any temperature.
Boiling	When evaporation occurs within a liquid- occurs at the boiling point
Pure	A substance made up of a single type of atom or compound.
Pure Substances Changing State	Occurs at a set temperature. The temperature stays constant when changing state as bonds are broken or made.

Mixtures Changing State	Occurs over a range of temperatures as it contains substances with different melting/boiling points.
Water	Contracts as it is cooled up until 4°c and then it expands slightly. Ice takes up more space than water and is less dense

3. Pressure in Fluids

Fluids	Liquids and Gases
Pressure	The force of particles hitting things- comes from all directions in gases and liquids.
Pressure Units	Pascals (Pa) One pascal is the a force of one newton on every square metre.
Atmospheric Pressure	The pressure of the air- 100,000 Pa
Tyres	Contain air under high pressure because they are pumped with extra air causing more particles to hit the inside walls.
Temperature	Pressure in fluids increases as you increase temperature because particles move faster and hit the walls of the container harder.
Volume	If you compress a gas into a smaller volume the pressure increases because the particles hit the walls more.
Pressure From Above	As you go down the ocean there is more water above you so pressure increases. As you go up a mountain there is less air above you so pressure decreases.

4. Floating and Sinking

Upthrust	The force of water pushing upwards.
Weight	The amount of force with which gravity pulls on a mass.
Water	The density of water is 1 g/cm³
Floating	If something has a density less than water it will float in water.
Sinking	If something has a density greater than water it will sink in water.
Air	The density of air at sea level is around 0.001 g/cm³
Hot Air Balloons	Fly because the overall density of the balloon is less than the air around it.

5. Drag

Drag	A resistance force acting on an object to slow it down.
Water Resistance	Type of drag that occurs in water.
Air Resistance	Type of drag that occurs in air.
Friction	Partly causes the drag on a moving object.
Streamlined	Smooth shape to reduce air / water resistance.
Speed	The faster an object is moving, the greater the drag.
Balanced Forces	Equal forces acting in opposite directions.
Engine	Forward force of an engine needs to balance the drag.

Work through memorising the information – highlight each definition once you know it. When you have completed your highlighting completed the gap fill and activities on the second sheet to support your retrieval practice.

8C Breathing and Respiration

1. Aerobic Respiration

Robert Boyle	(1627-1691) placed a burning candle in a jar and sucked out all the air- the candle went out. Repeated with a mouse and the mouse died.
Joh Mayow	(1641-1679) did experiments to discover that only a certain part of the air was needed to keep candle burning and mouse alive.
Joseph Priestly & Antoine Lavoisier	(1733-1804) (1743-1794) Showed that oxygen was the part of air needed for the candle to burn and mouse to live- makes up 21% of air.
Aerobic Respiration	Using oxygen to release energy from glucose.

Aerobic Respiration Word Equation

glucose + oxygen → carbon dioxide + water

Combustion	The word equation for combustion (burning) of glucose is the same as above but occurs in a different way.
Reactants	The starting substances- written on left of word equation.
Products	The new substances made- written on right of word equation.

2. Gas Exchange System

Breathing	Muscle movement allowing the lungs to expand/contract.
Ventilation	Movement of air into / out of the lungs.

Diaphragm	Organ below the lungs that contracts / relaxes changing the size of the lungs.
Inhalation breathing in	Pressure in the lungs is reduced, so atmospheric pressure pushes air in. The muscles between and attached to the ribs contract, pulling the ribs up and out. The muscles in the diaphragm contract, moving it downwards.
Mucus	Sticky liquid that traps dirt, dust and microorganisms.
Cilia	Tiny hairs on cells that sweep mucus from the lungs into the gullet to be swallowed.
Gas Exchange	The swapping of gases between the lungs and the blood.
Diffusion	Movement of particles from a high concentration to low.
Alveoli	Little pockets on the lungs.
Adaptations of Alveoli	They increase the surface area for faster diffusion. The walls are one cell thick for faster diffusion.

3. Getting Oxygen

Red Blood Cells	Take in oxygen when it gets into the blood.
Haemoglobin	Where the oxygen binds to in red blood cells.
Arteries	Blood vessels that carry blood from the heart to the body.
Capillaries	Tiny blood vessels that the arteries divide into. oxygen leaves red blood cells here and dissolves into the plasma.

|	
Plasma	Liquid part of the blood that leaks out of the capillaries into the tissue fluid.
Tissue Fluid	Carries the oxygen to the cells.
Veins	Carry blood back towards the heart.
Exercise	Your muscles must release more energy so need more oxygen and glucose- your breathing and heart rates increase.
Frostbite	Blood vessels in skin narrow to avoid heat loss and less blood reaches cell. If the cells die this causes frostbite.
Heart Attack	Fatty substances build up inside blood vessels reducing blood flow causing cells to die.
Carbon Monoxide	Poisonous gas found in cigarette smoke- sticks to haemoglobin so red blood cells carry less oxygen.
Tar	In tobacco smoke- irritates alveoli and causes them to break apart leading to emphysema.
Asthma	Tiny tubes in lungs become narrow and fill with mucus meaning less air gets into and out of the lungs.

4. Comparing Gas Exchange

Limewater	Turns cloudy in the presence of carbon dioxide.
Hydrogen Carbonate Indicator	Turns from pink to yellow as carbon dioxide increases and the pH drops.
Gills	Water flows over feathery strands where oxygen diffuses into the blood and carbon dioxide out.

Stomata	Tiny holes in leaves that allow gas exchange.

5. Anaerobic Respiration

Anaerobic Respiration	Respiration that occurs in the cytoplasm of cells when oxygen isn't present during strenuous exercise.

Anaerobic Respiration Word Equation

Glucose → lactic acid

Energy	Anaerobic respiration releases less energy than aerobic.
Anaerobic Advantages	Allows for a quick, sudden burst of energy.
After Strenuous Exercise	Lactic acid enters the blood, is carried to the liver and converted back to glucose.
EPOC	Excess post-exercise oxygen consumption (or oxygen debt). Extra oxygen is needed after strenuous exercise to replace lost oxygen from blood / muscles and convert lactic acid to glucose.

Effect of exercise on oxygen demand
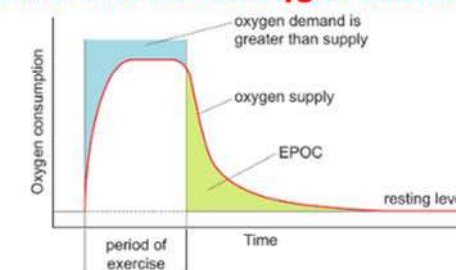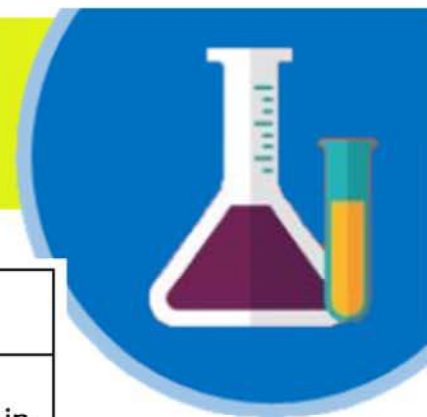
8D Unicellular Organisms

1. Unicellular or Multicellular

Cells	The basic unit of life. All organisms are made up of cells.
Unicellular	An organism made up of one cell.
Microorganisms	Organisms that are so small they can only be seen with a microscope.
Multicellular	An organisms made of many cells.
Diffusion	When particles spread to fill the area that they are in.
Kingdoms	All living organisms can be grouped into one of the five kingdoms.
Prokaryotes	Unicellular organisms that do not have a nucleus.
Protoctists	Mainly unicellular organisms. All have a nucleus.
Fungi	Mainly multicellular organisms that do not make their own food and have a nucleus.
Plants	Multicellular organisms that have a nucleus and make their own food.
Animals	Multicellular organisms that have a nucleus, do not make their own food and do not have a cell wall.
Bacteria	A type of microorganisms in the prokaryote kingdom.

Viruses	Not classed as living organisms because they cannot live without being inside a host.

2. Microscopic Fungi

Asexual Reproduction	Producing new organisms from one parent only.
Budding	Type of asexual reproduction used by fungi in which a small new cell grows out from a parent cell.
Aerobic Respiration	Glucose + oxygen → carbon dioxide + water
Anaerobic Respiration	A type of respiration which does not require oxygen.
Fermentation	The anaerobic respiration of microorganisms. Glucose → carbon dioxide + water
Population	The number of a certain organism found in a certain area.
Limiting Factor	Something that stops a population growing.

3. Bacteria

Lactic Acid	Produced by the anaerobic respiration of bacteria. Glucose → lactic acid
Enzymes	A substance that can speed up some processes in living organisms.
Binary Fission	Type of asexual reproduction used by bacteria in which a cell splits into two.
Chromosome	A long molecule that contains instructions for organisms and their cells.
Flagella	A tail-like structure that rotates, allowing a unicellular organism to move.

Statement Key	A series of descriptive statements used to work out what something is.

4. Protoctists

Algae	A type of protoctist that uses photosynthesis.
Photosynthesis	Carbon dioxide + water → glucose + oxygen
Chloroplast	Found in plant and some protoctist cells- the site of food production through photosynthesis.
Chlorophyll	The green substance inside chloroplasts that absorbs light.
Producers	Organisms that are able to make their own food- always the start of a food chain.
Food Chains	A way of showing what eats what in an ecosystem.
Energy Transfer	Represented by an arrow on a food chain diagram.
Pyramids of Numbers	A way of showing the numbers of different organisms in a food chain.
Poison	Can build up and become more concentrated as you move along a food chain.

5. Decomposers & Carbon

Ecosystem	All the physical environmental factors and all the organisms that are found in a habitat.
Decomposers	Organisms that feed on dead organisms or animal waste which allows substances to be recycled.
Decay	The breakdown of dead organisms or animal waste.

|	
Soluble	A substance that can dissolved in a liquid.
Carbon Cycle	Shows how carbon compounds are recycled in an ecosystem.
Combustion	Burning fuels and releasing carbon dioxide into the air.
Feeding	Transfers carbon compounds stored in plants to the animals eating them.
Carbohydrates	A nutrient used as the main source of energy.
Proteins	A nutrient used for growth and repair.
Fats	A nutrient used for storing energy and as a thermal insulator.

Work through memorising the information – highlight each definition once you know it. When you have completed your highlighting completed the gap fill and activities on the second sheet to support your retrieval practice.

Computer Science Knowledge Organiser

COMPUTING SYSTEMS

Modern computer systems receive an input, process that data and then produce an output. The data can be sored in memory. They are designed to automate any process by a program. To execute programs that operate on data.

Computing systems need a **processor**, **memory**, and **storage**. Modern systems also rely heavily on **communication** between them.
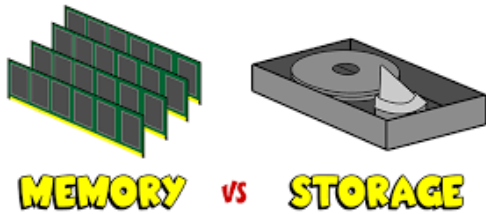
Communication Computing systems exchange information and form networks
Programs and **data** are transferred between computing systems, when required.

"AI has by now succeeded in doing essentially everything that requires 'thinking' but has failed to do most of what people and animals do 'without thinking' – that, somehow, is much harder!"
Donald Knuth, author of *The Art of Computer Programming, in* **1981**
Programming computers to learn from experience

The processor (CPU)the component that **executes** program instructions.

An instruction may:

- Perform arithmetic or logic operations on data
- Perform input/output of data
- Control program flow

The **storage** (secondary memory) is the set of components that **stores** programs and data.
Storage is **persistent**: it retains its contents when the power is off.

Main memory is referred to as RAM. The main component that **stores** the programs and data **currently in use**.

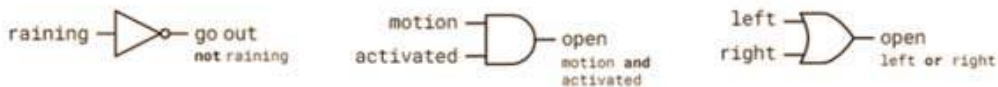Memory is **volatile**: its contents are lost when the power is off.

Logical operations operate on statements that are **true** or **false**. There are three basic logical operations. AND OR NOT
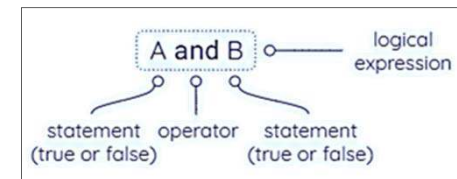
Logical expressions — **logic circuits** can be represented using diagrams

Logical operations — **logic gates** can be represented using symbols

FREE or OPEN software is where creators of a program can choose to provide access to its **source code**. This means that anyone can 'see inside' the program to understand how it works, check for errors, suggest improvements, and 'remix' it. Whilst still acknowledging the source.

Computer Science Knowledge Organiser

Binary

Key Words	
Bit (b)	The smallest unit of data. 0 or 1.
Nibble (N)	4 bits
Byte (B)	8 bits (note the difference between b and B)
Kilobyte (KB)	1000 bytes. Note KB is different from Kb.
Megabyte (MB)	1000 KB
Gigabyte (GB)	1000 MB
Terabyte (TB)	1000 GB
Petabyte (PB)	1000 MB
Binary number	A number system that contains two symbols, 0 and 1. Also known as base 2
Base 2 number system	A number system where there are only 2 digits to select from.
data	Units of information. In computing there can be different data types, including integers, characters and Boolean. Data is often acted on by instructions.
Denary (also known as decimal)	The number system you use. It contains 10 unique digits 0 to 9. Also known as decimal or base 10
Multiplier (also known as place value)	The value of the place, or position, of a digit in a number

Multipliers	128	64	32	16	8	4	2	1
Example binary number	0	0	0	1	0	1	1	1
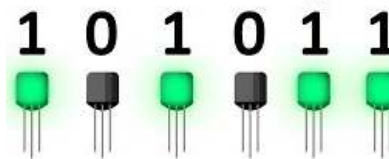
Representing information with sequences of symbols, is necessary for storing, exchanging and processing information. Information in computers must be represented in a form convenient for processing.

Humans have invented lots of different ways to code information using different sounds, symbols or even lights!

Computers represent all data, including numbers, letters, symbols, images, videos and sounds using binary numbers. All binary numbers are made up of the digits) and 1.

0s and 1s are called binary digits, or bits. All characters are represented using sequences of bits.

Computers only use the two symbols 0 and 1 because all computers are built out of electrical switched which can only be on (1) or off (0).

Multipliers or weights are the amount each digit in a sequence is worth e.g the number 30 contains three 10s and zero 1s . 10 and 1 are the multipliers or weights. Binary numbers use different multipliers or weights

To convert from binary to decimal (also known as denary) multiply each binary digit with its multiplier, then add up the products to work out the decimal number. For example in the binary number above 1 x 16 =16 4 x1 = 4 1x2 = 2 and 1x1 = 1 and 16 + 4 + 2 + 1 = 23

Computer Science Knowledge Organiser
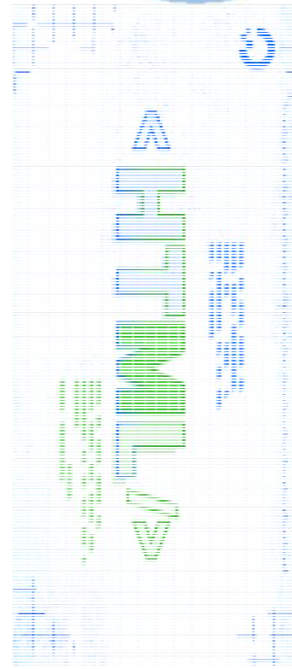
HTML

Key Words	
World Wide Web	Collection of webpages connected together by hyperlinks, using the Internet (Usually shortened to WWW)
Internet	A global network of computers all connected together
Webpage	A hypertext document connected to the world wide web
Website	A collection of webpages with information on a particular subject
Web browser	The software which displays a webpage or website on a computer
Uniform Resource Locator (URL)	An address that identifies a particular file or webpage on the internet
HTML	Hyper Text Mark-up Language – describes and defines the content of a webpage
Web script	A type of computer programming language used to add dynamic features to a webpages
Multimedia	Content that uses a combination of different types of media – for example, text, audio, images
Hyperlink	A link from a hypertext document to another location, activated by clicking on a highlighted word or image
Hotspot	An area on a computer screen which can be clicked to activate a function, especially an image or piece of text acting as a hyperlink
Navigation	The elements of a website that allows the user to move around the website. This is usually in the form of a menu or hyperlinked text or buttons
JPG	The main file type used for mages on the world wide web – uses lossy compression
PNG	Another type of image file used on the world wide web – supports transparency and uses lossless compression

Definitions: What does it do?	
<html>	Root of a HTML document
<body>	Contents of the page
<head>	Information about a page
<title>	Table title/defines title
<h1>,<h2>,<h3>	Headings
<p>	Paragraph
<img>	Image
<a>	Anchor (used in hyperlinks with href)
,	Order/unordered list
	List item
<table>	Creates and defines table
<tr>	Table row
<td>	Table data
<strong>	Bold
 	Linebreak
<div>	Divider
<!-- -->	Comment

```
<!DOCTYPE html>
<html>
<head>
<title>My First Webpage</title>
</head>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```
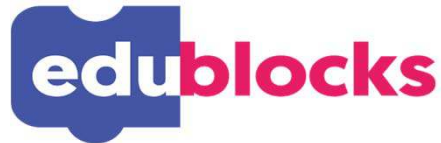

My First Heading

My first paragraph.

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PYTHON PROGRAMMING

edublocks

Python is a **text** based **programming language**. That can be used to create programs, games, applications and much more!

A **program** is a set of precise instructions, expressed in a **programming language**.
Translating the programming language is necessary for a machine to be able to **execute** the instructions.

To execute a Python program, you need a **Python interpreter**.

This is a program that translates and executes your Python program.

A list is where values can be stored. This is a comma-separated list of values (items) in square brackets.
```
flavours = ["strawberry", "chocolate", "mint",
"cherry","raspberry"]
```

This is an data structure organised in a structure, each item has its own index indicating its position in the list.
NOTE: List item numbering starts from 0—zero based system

When this code is executed
print (flavours[2])
Mint will be output as it is looking in the list flavours and selecting index position 2 to output

Arithmetic operators + addition, - difference, * multiplication, / division, // integer division
% remainder of integer division, ** exponentiation (to the power of)

Useful snippets of code	
list.append(item)	Add an item to the end of a list
list.insert,index.item)	Inserts an item to a given index
list.pop(index)	Remove item at given index and return it
list.remove(item)	Remove the first item from the list with a particular value
list.index(item)	Search for the index of an item
list.count(item)	List the occurrences of the item
list.reverse()	Reverse the list
list.sort()	Sort the list

Use an structure , a (**while**) when the program needs to **repeat** actions, while a **condition** is satisfied.

for loops are convenient for **iterating** over any sequence of elements

Walk through the program keeping track of what is happening to lists and variables as the loops are executed.

python

Computer Science Knowledge Organiser

MOBILE APP DEVELOPMENT

Key Words	
abstraction	Identify the important aspects to start with
algorithm	Precise sequence of instructions
Application (app)	Software designed to run on a mobile device
Computational thinking	Solving problems with or without a computer
debugging	Looking at where a program might have errors or can be improved
blocks	Scratch bricks that we can use to code algorithms
decomposition	Breaking down a problem into smaller parts
execute	A computer precisely runs through the instructions
GUI	Graphical User Interface
iteration	Doing the same thing more than once
selection	Making choices
sequence	Running instructions in order
variable	Data being stored by the computer

Sequence, **selection** and **iteration** are all processes. In order for computers to perform tasks there is more that is needed. For example a computer will take an **input** (this might be automatic or via human input) which the computer will then **process** and the **output** will be visible on the computer monitor.

A mobile application, most commonly called an app, is a type of application software designed to run on a
mobile device, such as a smartphone or tablet computer.

App Lab is a block or text based programming language. This allows creation and sharing of apps.

The point of an app is to connect and interact with users.
App creators tend to have an idea, a problem or a task that they want to develop user an app. These can be huge or relatively small ideas.
Decomposing the problem helps us make the task less daunting and more achievable. This involves breaking down the task into smaller more manageable parts to start with.

Most computers have an environment with tiles, icons and/or menus. These allow users to interact.
This type of interface is called the **graphical user interface (GUI)** because the user interacts with images through a mouse, keyboard or touchscreen. The GUI needs careful design consideration so that the user experience is a positive one so they want to continue to use it.

Making sure the app is successful and actually does what it was intended to do is important.
Setting **success criteria** should be determined at the start of the project and can be revisited frequently.
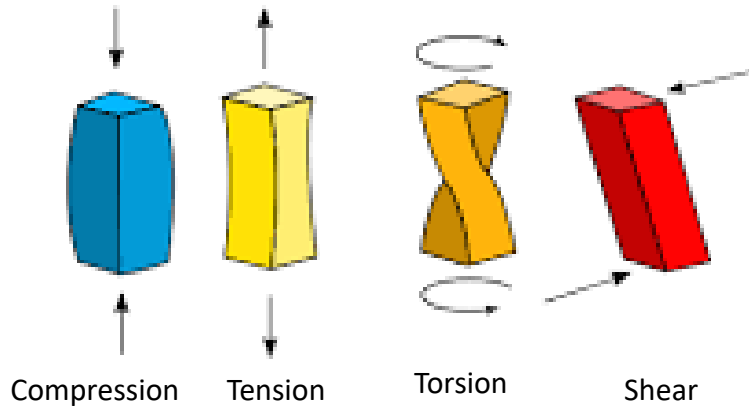The success criteria should be clear and easy to follow.

Evaluating and **debugging** allow for judging the quality of the app and enables errors to be corrected and improvements to be made.

Mechanical Properties

Tensile Strength	Material's resistance to the tension caused by pulling force.
Compressive Strength	Material's resistance to a crushing or squeezing force.
Shear Strength	Material's resistance to two parallel forces acting in opposite directions.
Torsional Strength	Material's resistance to a twisting force.

Compression   Tension   Torsion   Shear

Strength	The ability of a material to resist a force applied.
Hardness	The resistance of a material to scratching and wear.
Toughness	The ability of a material to not break when a force is suddenly applied.
Malleability	The ease with which the shape of a material can be changed without the material breaking.

Physical Properties

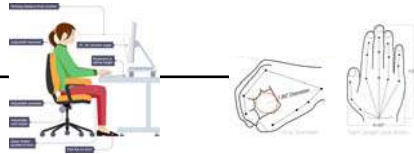| Density	The mass of a material per unit volume.
Electrical Conductivity	The ability of electricity to pass through a material.
Absorbency	The ability of a material to draw in moisture.

Design Specification – Key Questions

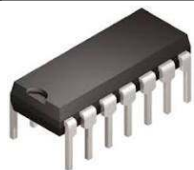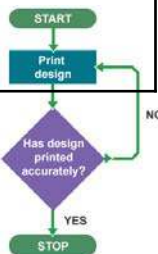| A	Aesthetics	What shape should the product be? What colour should be product be? What texture should the surface have?
C	Cost	What should the cost of the product be?
C	Consumer	Who is the client or the user of the product? What features of other similar products should it have? Does the client have any specific needs or wants for the product?
E	Environment	Should the product be made from recycled materials? How should the product be packaged? How will the product be disposed of when it is no longer needed?
S	Safety	What safety risks have to be considered? What safety standards must the product meet?
S	Size	How long, wide and tall should the product be? How much should the product weigh?
F	Function	What will the product be used for? How will it work? How should it be tested?
M	Materials and Manufacturing	What materials should the product be made from? Are there any limits on the sizes of the available materials? How many products need to be made? Which processes should be used to make the product?

Ergonomics and Anthropometrics

Anthropometrics is the practice of taking measurements of the human body and provides categorised data that can be used by designers. Anthropometrics help designers collect useful data, eg head circumferences when designing a safety helmet. In this example, as there is a large variation in size, the designer would need to build some adjustment into the safety helmet design.

Ergonomics can incorporate the use of **anthropometric data** when designing products to improve the user experience. If a designer doesn't use anthropometric data during the design process, it can lead to a poor user experience that causes discomfort, pain and potential injury. **Ergonomics** is a consideration that leads to a product being designed in a way to make it easy to use. Size, weight, shape, position of buttons and controls are all aspects that contribute to it being ergonomically designed.

How can we reduce our impact on the environment?

Use **renewable** materials rather than non-renewable means these can be replenished.

If non-renewable materials are used such as plastic (oil) **carbon emissions** are given off resulting in global warming.

Choosing **biodegradable** materials means they will break down naturally when the product comes to the end of its life. Non-biodegradable materials that have not been recycled will end up in the landfill or the sea damaging animals and habitats.

Apply the **6Rs** to ensure minimal impact on the planet.

Microcontrollers are programmable components that acts like a small computer within a single integrated circuit.

Peripheral Interface Controller **PIC** is a commonly used microcontroller

Flowchart program is a set of instructions laid out using flowchart symbols that tells a microcontroller what to do.

Advantages And Disadvantages Of Using Plastics

- Plastics are made from a **non-renewable** resources which cannot be replaced.
- Plastics are **non-biodegradable** and will not decay if disposed of in landfills or the the sea causing damage to animals and habitats.
- Not all plastics can be recycled.

+ Plastics are **strong** and **durable.**
+ Plastics come in a range of sizes and colours.
+ Plastics can be easily shaped.
+ Plastics are **insulators** and are **waterproof.**

The **Green Dot** does not necessarily mean that the packaging is recyclable, will be recycled or has been recycled.

The **Mobius Loop**. This indicates that an object is capable of being recycled, not that the object has been recycled or will be accepted in all recycling collection systems.

Age warning logo
This indicates the product is not suitable for under 3 year olds.

3

Tools and Equipment

Tools and Equipment	Name	• Use / • Safety point
	Coping Saw	To cut wood **Safety Rules when using it** Work should be clamped in a **vice**
	Half Round File	Smoothing wood or Styrofoam **Safety** Work should be clamped in a vice
	Vice	Used to hold work in place **Safety** Allows work to be safely clamped while being cut or smoothed
	Pillar Drill	Used to drill holes in wood or plastic **Safety** You must wear goggles, an apron, tie your hair back, have the guard down and worked clamped securely

Computer Aided Design
Computer Aided Manufacture

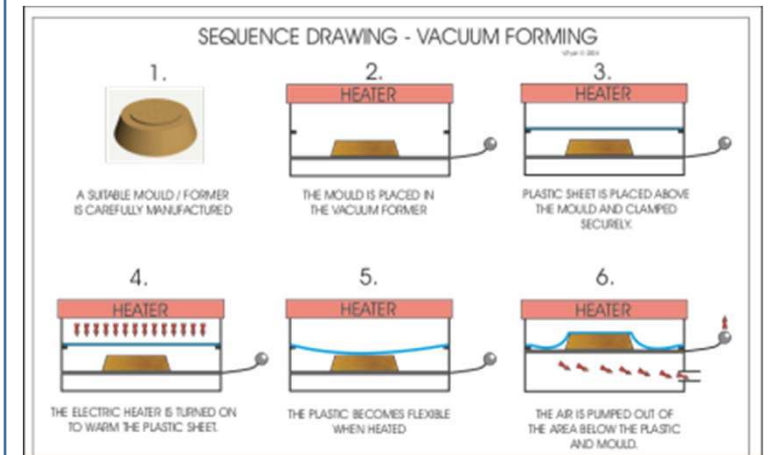| CAD	This is using computer software to draw and model a product. **Examples:** 2D Design, Photoshop, Macromedia Fireworks and Sketch Up **Advantages:** • Designs can be shared electronically • Accurate • Designs can be easily edited **Disadvantages:** • Software and training can be expensive • Security issues
CAM	This is using computer software to control machine tools to make products. **Examples:** Laser Cutter, 3D printer **Advantages:** • Faster • Complicated shapes are easily produced • Exact copied are easily made • Machines can run 24/7 **Disadvantages:** • High initial set up costs as CAM machines are expensive

Most <u>polymers</u> are synthetic. This means they are man-made. They are usually made from crude oil which can be obtained by drilling underground or under sea level. Crude oil is a non-renewable resource- this means that it is not replaced as it is used.

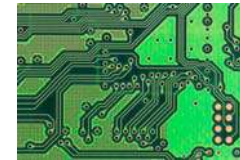**Thermoplastic polymers** can be reshaped when heated. They can also be recycled.

Thermosetting polymers cannot change shape when reheated and cannot be recycled. They have extra links between the individual chains of polymer. These links stop the chains being able to move, meaning that thermosetting polymers are typically stronger and more rigid than thermoplastics polymers.

Vacuum Forming is a process that uses heat and air pressure to shape a thermoplastic. It can be used to manufacture **blister packaging.**

SEQUENCE DRAWING - VACUUM FORMING

1. A SUITABLE MOULD / FORMER IS CAREFULLY MANUFACTURED
2. THE MOULD IS PLACED IN THE VACUUM FORMER
3. PLASTIC SHEET IS PLACED ABOVE THE MOULD AND CLAMPED SECURELY
4. THE ELECTRIC HEATER IS TURNED ON TO WARM THE PLASTIC SHEET
5. THE PLASTIC BECOMES FLEXIBLE WHEN HEATED
6. THE AIR IS PUMPED OUT OF THE AREA BELOW THE PLASTIC AND MOULD.

Thermoplastic Polymers

Type	Properties	Uses
HDPE *High Density Polyethylene*	Strong and stiff	Pipes, buckets, bowls
PET *Polyethylene Terephthalate*	High strength and good toughness. Heat resistant	Drinks bottles and food packaging
HIPS *High Impact Polystyrene*	Reasonable strength and good toughness	Packaging
Acrylic	Can be transparent Hard wearing and tough	Plastic windows, bath tubs

Thermosetting Polymers

Type	Properties	Uses
Epoxy Resin	High strength, stiff and brittle Excellent temperature resistance	Printed circuit boards, cast electrical insulators
Melamine Formaldehyde	Strong, stiff and hard Resistant to many chemicals and stains	Laminate coverings for kitchen worktops
Urea Formaldehyde	Good strength, rigid and hard Warm to the touch	Plugs and plug sockets

8 Tips for Eating Well

To grow and be healthy we need to eat a variety of foods. We should choose more of some and less of others:

1. **Base your meals on starchy foods**

2. **Eat lots of fruit and vegetables**

3. **Eat more fish:** Including 1 portion of oily fish / week

4. **Cut down on saturated fat and sugar**

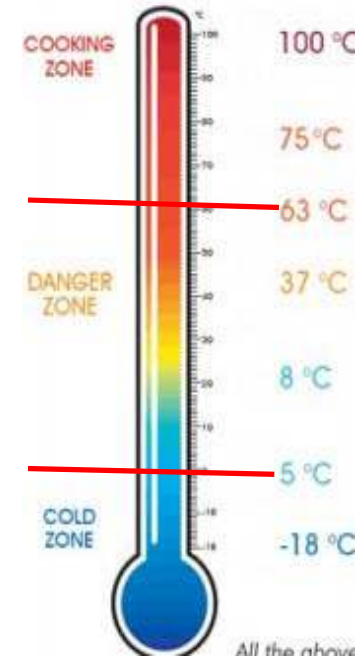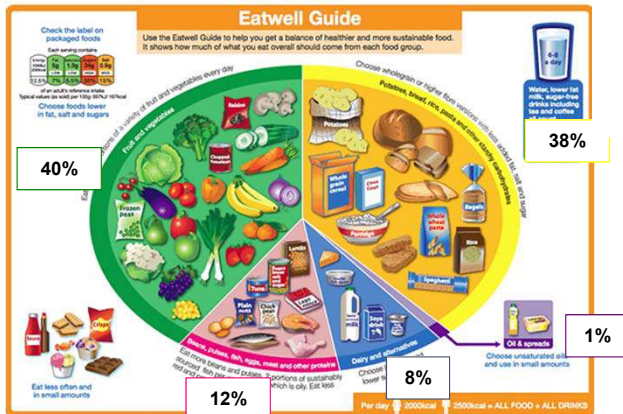5. **Try to eat less salt:** no more than 6g a day for adults

6. **Get active and try to be a healthy weight**

7. **Drink plenty of water**

8. **Don't skip breakfast**

Eatwell Guide

Check the label on packaged foods

Use the Eatwell Guide to help you get a balance of healthier and more sustainable food. It shows how much of what you eat overall should come from each food group.

40%

38%

1%

8%

12%

COOKING ZONE — 100 °C — 75 °C — 63 °C

DANGER ZONE — 37 °C — 8 °C — 5 °C

COLD ZONE — -18 °C

Danger zone: because microorganisms multiply quickly at this temperature 5◦C to 63◦C

Fridge :0◦C to 4◦C

Freezer:
-18◦C to -23◦C
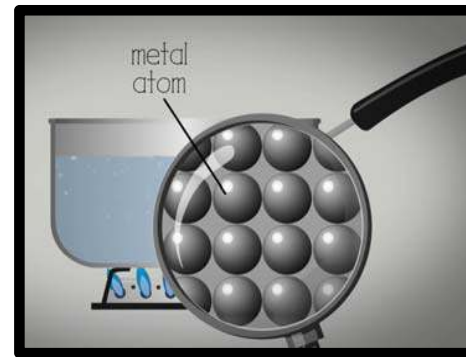
Microorganisms are dormant below 5◦C.

Above 63◦C they are killed.
Reheat foods :75◦C

Key Words

Microorganisms- Mould, Yeast. Bacteria
Fermentation-Yeast+FATTOM= Carbon dioxide and Alcohol
Pathogens: Bad bacteria
Salmonella-raw meat, poultry, eggs, unpasteurized milk
Listeria- Soft cheeses, ready meals, pates , deli meats
Campylobacter-raw meats, unpasteurised milk and contaminated water

The Purpose of Basic Baking Ingredients from the spruce

Functional and chemical properties of ingredients in cake and bread making

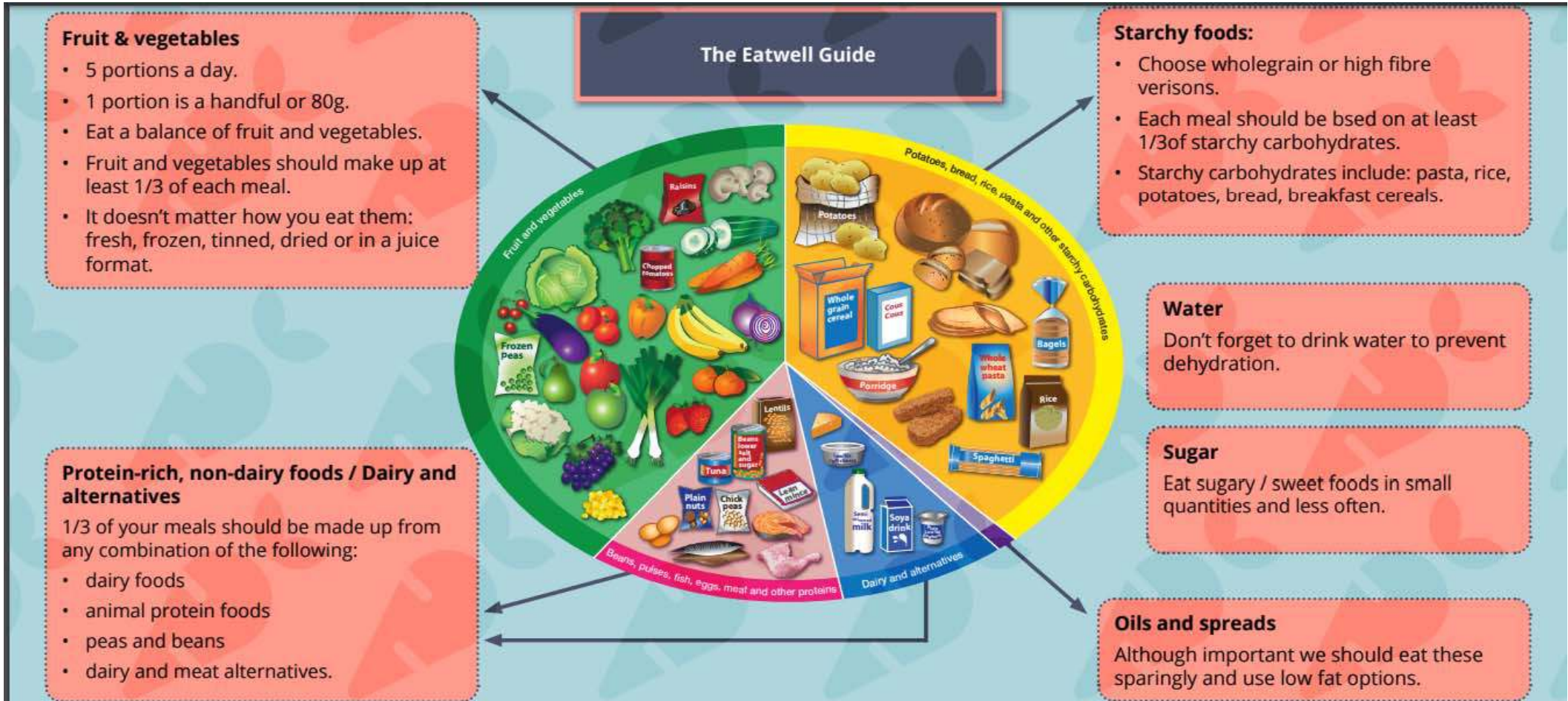| Cupcakes	
Self raising flour	Make the cake rise, Structure, dextrinises –add colour
Caster sugar	Sweetness, aeration
Margarine	Makes the cake moist, aeration
Egg	Binds mixture

Bread	
Strong flour	Structure, Gluten stretches helps bread rise and sets shape
Yeast	Produce CO_2 when all conditions provided so makes bread rise.
Water	Binds ingredients, provides moisture for yeast.

metal atom

Why food is cooked:

1. To make it safe to eat
2. To improve the shelf life
3. To develop flavour
4. To improve texture
5. To give variety

Methods of heat transfer

Convection - when the environment (air, water or oil) is heated up.
e.g. - baking a cake
- boiling an egg

Conduction - when heat is transferred directly.
e.g. - frying an egg

Radiation - when heat radiates
e.g. - toast

Effect of cooking on protein

Protein denaturation: the process of altering a protein's molecular characteristics or properties

Proteins: Coagulation The process of turning a liquid into a solid
Example: Egg

Fruit & vegetables

- 5 portions a day.
- 1 portion is a handful or 80g.
- Eat a balance of fruit and vegetables.
- Fruit and vegetables should make up at least 1/3 of each meal.
- It doesn't matter how you eat them: fresh, frozen, tinned, dried or in a juice format.

Protein-rich, non-dairy foods / Dairy and alternatives

1/3 of your meals should be made up from any combination of the following:

- dairy foods
- animal protein foods
- peas and beans
- dairy and meat alternatives.

The Eatwell Guide

Starchy foods:

- Choose wholegrain or high fibre verisons.
- Each meal should be bsed on at least 1/3of starchy carbohydrates.
- Starchy carbohydrates include: pasta, rice, potatoes, bread, breakfast cereals.

Water

Don't forget to drink water to prevent dehydration.

Sugar

Eat sugary / sweet foods in small quantities and less often.

Oils and spreads

Although important we should eat these sparingly and use low fat options.

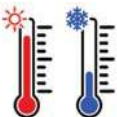| Nutrient	Functions	Sources	
Protein	Growth – known as the body's building blocks.	Animal products – meat, fish, dairy; plants – lentils, nuts, seeds	
Carbohydrates	Source of energy. Divided into: simple carbohydrates – sugars and complex carbohydrates – starches and dietary fibre. Starches provide slow releasing energy and add bulk	complex – bread, pasta, rice, potatoes (chose wholemeal versions for fibre and potato with the skin	
Fats	Source of energy. Four types: monounsaturated, polyunsaturated (omega 3 and 6), saturated and trans fats. Fats are stored under the skin and are essential for health. Too much fat can cause health problems	Monounsaturated – olive oil, avocados; polyunsaturated – oily fish, nuts, sunflower oil, soya beans; saturated – full-fat dairy, fatty meats; and trans fats – many snack foods	
Vitamin	Essential for many processes, eg bone growth, metabolic rate, immune system, vision, nervous system. Need small amounts only.	A – dairy, oily fish, yellow fruit; B – vegetables, wholegrain cereals; C – citrus fruit, broccoli, sprouts; D – oily fish, eggs, fortified cereals	
Minerals-Calcium	Essential for many processes, eg bone growth/strength, nervous system, red blood cells, immune system. Need small amounts only	Calcium – milk, canned fish, broccoli; iron – watercress, brown rice, meat; zinc – shellfish, cheese, wheatgerm; potassium – fruit, pulses, white meat	

Conditions for Microorganism growth (FATTOM)

F	**F**ood-Food provides energy and nutrients for bacteria to grow. High risk foods particularly protein foods such as chicken and dairy products are rich in nutrients and moisture and so promote bacterial growth.
A	**A**cid-Most bacteria reproduce best at a neutral pH level of 7. Acidic foods with a pH below 7, or alkaline foods with a pH above 7, may stop or slow down the rate of bacterial growth.
T	**T**ime- If provided with the optimum conditions for growth, bacteria can multiply to millions over a small period of time via binary fission. This is when a bacterium divides in two every 20 minutes.
T	**T**emperature-Bacteria need warmth to grow. The temperature a food is stored, prepared and cooked at is crucial. If this is not followed correctly then the food will not be safe to eat. The optimum temperature range for bacterial growth is between 5-63℃. This is known as the **danger zone** as it is dangerous for some foods to be in this temperature range for prolonged periods of time**.**
O	**Ox**ygen-Microorganisms that that require oxygen to grow are called aerobic such as most yeast.
M	**M**oisture-Bacteria need moisture in order to grow. This is why they grow on foods with high moisture content such as chicken. Foods that are dehydrated or freeze-dried can be stored for much longer as the moisture has been removed.

Yeast, Mould, Bacteria (Bad bacteria are known as Pathogens

Some Pathogens that causes Food Poisoning:
*Campylobacter-Raw or undercooked meat, particularly raw poultry
Unpasteurised milk
Untreated water.
*E. coli-Raw or undercooked meat and poultry or related products (eg gravy)
Raw seafood products
Unpasteurised milk or products made from it (eg cheese)
Contaminated water
*Listeria-Unpasteurised milk or products made from it
Soft cheeses (eg camembert, brie)
Ready-to-eat foods (eg pre-packed sandwiches, pâté, deli meats)
Unwashed vegetables contaminated with soil
*Staphylococcus aureus-humans carry this in their nose and throat and can be transmitted by coughing or sneezing. Ready-to-eat foods that are hand-made (eg sandwiches)
Cooked meats, Unpasteurised milk and related products.
*Salmonella-raw or undercooked poultry and meat, eggs and unpasteurised milk