SPRING KNOWLEDGE ORGANISER

YEAR 9

CONTENTS PAGE

Art &Design

Literacy/keywords

WatercolourGradient–A smoothtransitionbetween differentshadesorcoloursin awatercolourpainting,often createdbyvaryingthe amountofwaterused, resultinginsoftandflowing colourchanges.
ColourTheory–Thestudyof howcoloursinteract, complement,orcontrastwith each other. Jason Scarpace uses avivid understanding of colour theorytocreate dynamicandimpactful compositions in his artwork.

Calligram–Avisual representationwherethetext orwordsarearrangedtoform apictureorshaperelatedto themeaningofthewords. Calligramscombinelanguage andimageryforartistic expression.

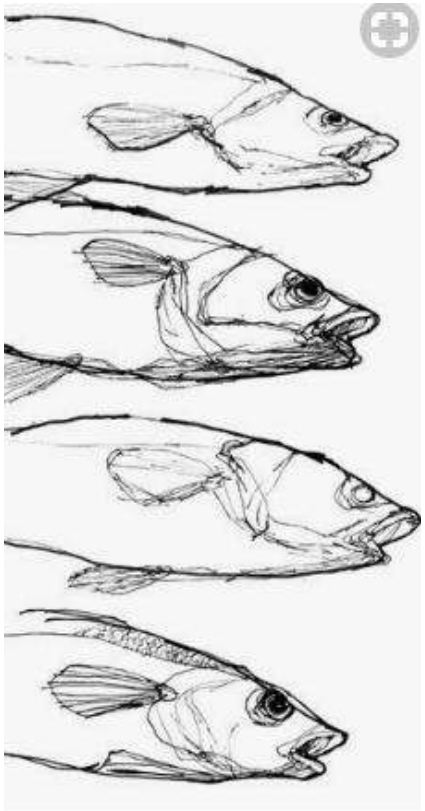
Extra-Read/watch/do

Line drawing-

A line drawing is a form of artwork created using only lines to define shapes, forms, and details, without the use of shading or colour. It's a simple yet powerful technique that focuses on the outlines or contours of a subject, often emphasising its structure and composition. Lines can vary in thickness, length, and texture to convey different emotions, movements, or depths in the drawing.

Continuous line drawing-

Continuous line drawing is a technique where an image is created using a single, unbroken line. The goal is to capture the essence or form of the subject without lifting the pen or pencil off the paper. This technique encourages fluidity and spontaneity, as the artist focuses on following the contours and shapes in a continuous, uninterrupted motion. While a continuous line drawing captures the essential shapes and structure of a subject, it often leaves out intricate details, relying on simplicity and flow. It often results in a more abstract or stylised representation of the subject.



YEAR 9 Spring Term- Sealife and Street Art

Street Art of Graffiti?

Key Differences:
Style: Graffiti is often about lettering and tags, while street art can involve a broader range of visual elements, including images and even installations.
Legality: Graffiti is usually illegal, done without permission, while street art can be either legal or illegal, with some artists having commissions or public projects.
Message: Graffiti tends to focus on personal expression or social rebellion, while street art may
also carry political, cultural, or artistic messages, often aiming to engage or provoke thought in
the public.

- Streetart-https://www.tate.org.uk/art/art-terms/s/street-art
- Listofstreetartists-https://www.streetartbio.com/artists/
- NexttimeyouareinManchester, take some photos of the street art you

ROA
ROA is primarily known for his strong obsession for animals and rodents. The street artist's preferred forms of methods to paint are by using spray paint or acrylic paint.

Art &Design

Message and meaning: Street art is more than just visual expression—it carries powerful messages

that reflect political, social, or cultural themes. Because it exists in public spaces, it has the ability to reach a wide audience and provoke thought, inspire change, or challenge societal norms.

Common Themes in Street Art Messages:

1. **Political Protest & Social Commentary-**

Many artists use
street art to criticise governments, capitalism, war, or corruption.

2. **Identity & Cultural Expression** – Street art can celebrate heritage and reclaim public space.

3. **Environmental Awareness** – Murals and installations highlighting climate change, deforestation, and pollution

4. **Hope & Inspiration** – Some street artists focus on positivity, resilience, and community unity, offering uplifting messages.

Charcoal: Charcoal is a dry, black drawing
medium made from burnt wood or organic materials. It is widely used in art for its rich, deep blacks and its ability to create both bold and delicate marks. Charcoal is highly versatile and allows for expressive, dramatic, and realistic drawings.

Acrylic paint: Acrylic paint is a fast-drying, water-based paint known for its versatility, vibrant colours, and ability to be used on various surfaces, including canvas, wood, and paper. While wet, it can be thinned with water, but once dry, it becomes water-resistant.

Mono printing:

Mono printing is a type of printmaking where you create a one-of-a-kind print, meaning each print is unique and cannot be exactly repeated. It is a fun and experimental technique that allows for creative textures, marks, and layering of colours. Roll or paint a thin layer of ink or water-based paint onto the surface. Use tools like brushes, cotton buds, or even your fingers to draw patterns, textures, or images into the ink. You can also place paper over the ink and draw on the back to transfer the design. Carefully press a sheet of paper onto the inked surface and smooth it down evenly.

What techniques will I learn?

Activism:
Activism in Street Art refers to the use of public art as a tool for protest and awareness. Many street artists create powerful visual messages to challenge authority, highlight injustices, or inspire change. Since street art is accessible to everyone, it has become a popular medium for

Shepard Fairey:
Shepard Faireyisan American streetartist, graphic designer,and activist known for hisbold, politically charged artwork.His style blends streetart,propaganda aesthetics, andgraphic design, oftenusing a limited colour paletteofred, black, and white.

You will be assessed on

- **Term 1** – Observational drawing (tonal shading)
- **Term 2** – Biropen drawing (Artist copy)
- **Term 3** – Mixed media piece (Shepard Fairey inspired)

Links to curriculum

English and Science (biology) - In our lessons, we will look at environmental issues such as pollution, plastic in the ocean and marine life.

Frantic Assembly

BACKGROUND INFORMATION	
Artistic Director	Scott Graham
Formed	1994
AIM OF WORK	Frantic Assembly creates thrilling, energetic and unforgettable theatre. The company attracts new and young audiences with work that reflects contemporary culture. Vivid and dynamic, Frantic Assembly's unique physical style combines movement, design, music and text. Fanatic's beliefs are built on the notion of collaboration. There is a great sense of ensemble work evident in all that they do.

Physical Theatre - The use of the body, rather than dialogue, as a method of storytelling.

Elements of Physical Theatre:

1. mime
2. gesture
3. proxemics
4. stance
5. stillness
6. motif (a repeated moment pattern which has a meaning and links to a theme)
7. facial expressions

SCAN ME
Examples of the Frantic method

SCAN ME
Frantic Assembly Masterclass

SCAN ME
Showreel

Chair Duets	This is one of Frantic Assembly's simple and accessible devising exercises used to create new material. In this, you sit next to a partner and create contact improvisation whilst seated. Chair duets require a call/response style of working. Its restrictive nature forces the performer to explore and experiment with different types of movement.
Hymn Hands	The idea of Hand Hymns is to physically interact with a partner using only each other's hands. The complexity of the movements is developed through an improvisational process – each person takes it in turns to manipulate the other person.
Round – By- Through	A movement sequence performed with a partner – although the number of people involved can be extended. 'Round' means literally moving around a partner, 'By' consists of being parallel to your partner and 'Through' is when you physically go through their body.

WHO WAS HE?

Bertolt Brecht (1898-1956) was a German theatre practitioner, playwright, and poer..

WHAT IS EPIC THEATRE?

Epic Theatre encourages the audience not to forget they are watching a play, to think about its message. It avoids illusion and naturalism.

BRECHT'S BIG IDEAS

- Narration
- Direct Address
- Multi-Roling
- Gestus

WHY IS BRECHT IMPORTANT?

Brecht changed the way directors and actors thought about making theatre. Today, his ideas continue to influence creative people around the world.

FAMOUS PLAYS

- The Caucasian Chalk Circle
- Mother Courage and Her Children
- The Good Person of Szechwan
- The Resistible Rise of Arturo Ui

KEY VOCABULARY

Alienation — Distancing the Audience

Verframdung — Another word for alienation

BERTOLT BRECHT

NARRATION

When the story is told directly to the audience

PLACARDS

Signs used to give information or messages

FOURTH WALL

The invisible wall between actors and the audience

MULTI-ROLING

One actor plays more than one character

VERFREMDUNGSEFFEKT (V-EFFECT)

Reminds the audience they are watching a play

Background

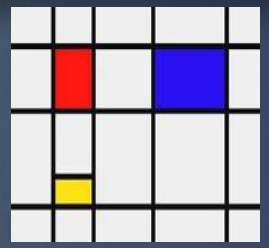
- Emerged inAmerica 1960's
- Famous composers include Steve Reich, Terry Riley and Philip Glass
- Was completely different in that it was experimental – using unusual sounds and very limited musical material.

Key Vocabulary Minimalism Ostinati Phasing Diatonic Synchronisation Looping Transformation Counterpoint Motif/cell Static Harmony Polyrhythms

Steve Reich Terry Riley

Minimalist Music

Year 9: Term 2



"The idea of minimalism is much larger than many people realize. It includes, by definition, any music that works with limited or minimal materials: pieces that use only a few notes, pieces that use only a few words of text, or pieces written for very limited instruments, such as antique cymbals, bicycle wheels, or whiskey glasses. It includes pieces that sustain one basic electronic rumble for a long time. It includes pieces made exclusively from recordings of rivers and streams. It includes pieces that move in endless circles. It includes pieces that set up an unmoving wall of saxophone sound. It includes pieces that take a very long time to move gradually from one kind of music to another kind. It includes pieces that permit all possible pitches, as long as they fall between C and D. It includes pieces that slow the tempo down to two or three notes per minute."
Tom Johnson – Minimalist Composer

Key principles of Minimalist Music:

- Based around a small idea –cell/ motif
- Constantly repeated elements – Ostinati
- Slight changes over time to become more complex (changes in dynamics, rhythms, adding notes to a melody etc.
- Building layers of sounds to create a thicker texture
- Using multiple rhythms at the same time

Listening Examples Steve Reich 'Clapping Music' - https://www.youtube.com/watch?v=QNZQzpWCTIA Philip Glass 'Music for 18 Musicians' - https://www.youtube.com/watch?v=PMsYuFrKUQ8 Daniel Bernard Roumain 'Metamorphosis' - https://www.youtube.com/watch?v=m3KDUCfAeHE&list=PLpTG9WYImrmVzxzJlkPUbQtPFyCfSOS9P Videos BBC 'Tones, Drones and Arpeggios' An interview with Philip Glass - https://www.bbc.co.uk/programmes/p05zf7xn

KEY WORDS AND MEANINGS (Tier 2 words in ORANGE, Tier 3 words in BLUE)	
Ostinati	Musical repetition
Counterpoint	Melodies that are against other melodies (played t the same time)
Polyrhythms	Many rhythms played at the same time
Looping	When referring to old fashioned tape recorders – you literally loop a piece of tape so it repeats the music over and over
Phasing	When two melodies or rhythms go out of synch and back in synch again
Minimalism	A style in music that is repetitive, has gradual changes and is hypnotic
Static Harmony	Groups of notes that do not change much
Synchronisation	Bringing sounds together at the correct time
Motif/cell	A short melody / musical idea
Metric Displacement	Moving a melody to another part of the beat

Dystopianfiction - Stories set in a futuristic, unjust and nightmarish version of our own world or society.

Conventions of dystopian texts:

- Set in the future
- One unelected person in charge
- Deprivation – not having basic necessities
- Oppression – lack of rights
- Ruled by fear
- An aspect of current society exaggerated to the point of dystopia

Key skills writers use to create a dystopian world:

- Expanded noun phrases – including adjectives, prepositional phrases and subordinate clauses, e.g. [the fires], [the encroaching seas that swallowed up much of the land], [the brutal war for what little sustenance remained].
- A varied range of synonyms, e.g. terrifying, chilling, petrifying.
- Thoughtful use of verb choices, e.g. lunged, swaggered.
- Carefully thought out words and phrases for a particular effect, e.g. words of power, 'must', 'demand'.
- Descriptive Language features (check the next page for examples!)
- Building a clear timeline/back story.

When using dialogue, you must:

- Start a new paragraph each time a different person speaks
- Use speech marks around the words spoken
- Include punctuation before the closing speech marks

"I only noticed it after I'd had the bug out for a couple of weeks."
"How did your parents know you needed a new one?" Asked Joel inquisitively.
"I didn't need one."
"How did they know I was gone?"
Vary your sentence openings:

- Use an =ing verb (Running through the obliterated city, she...)
- Use an –ly adverb (Valiantly, she rose from the dingy basement floor...)
- Use two or more adjectives (Malevolent and vindictive, the Leader...)

Use a variety of different sentence types for different effects:
Minor – very short and not actually grammatically correct – 'Stop!', 'Go now!'
Simple – one main clause – 'You need to leave.', 'She's killing us.'
Compound – two main clauses, linked with either a semi-colon or a connective – 'The mayor was so evil; she had killed everyone.', 'The people were dying because the bombing was overhead.'
Complex – one main clause with one or more subordinate clauses – 'Slowly, the man rose to his feet - staggered slightly - then tumbled down the stairs, his bones crunching beneath him.'
Different sentence types have different effects:

- Minor/simple sentences = slower pace and more tension
- Compound/complex sentences = faster pace, quick action, detailed description

Use discourse markers to link paragraphs together so your work flows:

It all began when...
Moments later...
From around the corner I could see...
While this was all happening...

WAGOLL

Connor peeped over his tattered teddy's head, smiling shyly as he took the chocolate and began nibbling it. Maya nodded approvingly and then turned back to the ancient map she had dug out. She was so absorbed in plotting out a route along the faded roads that she did not notice her brother wandering over to the riverbank. Behind it, the skyline was shrouded in thick fog, only small pockets of light seeped through before being quickly strangled.

It was an odd experience to be out in even some semblance of daylight. Connor couldn't remember the last time he had felt sun; his thin face was bleached bone-white like a vampire's. Tiptoeing giddily along the bank, he hugged Teddy close, kicking gravel into the muddy water with a giggle, as ripples spread across the surface.

He did not notice at first that the ripples had kept spreading. Suddenly, the water erupted. Connor stumbled back, eyes widening in horror. The – thing – slowly turned to him, grey water running off its skeletal face.

Its sightless eyes were corpse white. Skin peeled in rotting strips off its skull. Translucent tendrils stabbed through its skin where the parasite's infection had spread. Its jaws cranked open monstrously wide, revealing rows of needle teeth and a long flicking tongue as it scented its prey.

Connor was petrified with terror. He trembled, rooted to the spot as it waded towards him.

Then, abruptly, his sister's voice exploded in his ear, bellowing "Run Connor! Run!"

Punctuation Reminder

Commas ,- Separate clauses orindicate a pause.
Apostrophes '- Indicate possession or ownership or to show omission in contractions.
Quotation (speech) marks " "- Used to quote from texts or mark out speech.
Semicolon ;- Used to separate two main clauses that are closely related, often replacing a connective.
Colon : - Used to introduce an idea or start a list, *e.g. She packed her hunting kit: gun, pepper spray, smoke bombs.*
Brackets ( )- Used to add additional or non-essential information. The sentence must make sense on its own without the writing in brackets. **Dashes - -** can be used in the same way.
Ellipsis … - Represents a pause or that something has been intentionally left out. Can be used to build tension, *e.g. He tried towriggle free from his bindings, but then his world suddenly wentblack…*

Language Techniques (Descriptive)

Simile– A phrase comparing one thing to another, using asor like, *e.g. He felt like an elastic band pulled taut.*
Metaphor– A phrase comparing one thing to another, without using as or like, instead saying it **is** something else, *e.g. He was an elastic band, fully extended, taut and ready to snap.*
Personification– A phrase giving human characteristics to a non-human object, *e.g. Poison ivy climbed up the sides of the once-glorious skyscrapers, reaching towards the sun.*
Imagery– Words or phrases that create visual images, *e.g. The desolate, barren wasteland glared back at her. She was truly alone. All she could see was scorching sand and sun-bleached bones.*
Repetition– A word or phrase that is repeated for emphasis, *e.g. The room was empty. The building was empty. The city was empty.*
Zoomorphism- A phrase giving animal characteristics to something that is not an animal, *e.g. The teacher roared at the class to be quiet immediately!*
Sibilance– Words close together that begin with an 's' sound, *e.g. The air suffused with a sudden, sinister sound.*
Juxtaposition– Two concepts, themes, ideas or characters that are contrasting or opposite, *e.g. love and hate.*
Semantic/Lexical Field– A group of words that follow the same theme, *e.g. ranch, cow, farm, haybale.*
Oxymoron– A phrase using contradictory words, e.g. *The silence deafened her.*

Literacy[Key Words]

- Ranch: a large farm.
- Migrant workers: people who moved around to find jobs.
- Exploitation: abuse of somebody, particularly when they are in need.
- Marginalisation: excluding somebody from a group or from society.
- Segregation: separating people based on the colour of their skin.
- Scapegoat: a group that are blamed for things that are not their fault.
- Bindle: a bag or sack to carry belongings.
- Bucking Barley: to pick up grain, bag it and load it onto a truck.
- Ostracism/ostracise:

Historical Context [AO3]:

- Of Mice and Men is set in California, Americainthe 1930s.
- An estimated 1.3 million people moved to California during this time in the hopes of finding work resulting in a lack of jobs for everyone.
- The Great Depression 1929 – 1939: a global economic crash which led to the loss of millions of jobs, people were homeless, starving to death and being exploited.
- The Dust Bowl 1930-1940: droughts and dust storms swept across America, the lack of water led to farmers being unable to grow enough crops and their land deteriorating. Farmers were unable to feed even their own families and often ended up in debt trying to grow crops for the country.
- Life for African-Americans in the 1930s: racism increased in America again during this time as people were looking for a scapegoat for their problems. Violence and hatred towards African-Americans rose with organisations like the KKK growing in number.
- Racial segregation remained and black Americans were forced to attend different schools, use different transport, restaurants, toilets, drinking fountains and public places. These were maintained by the Jim Crow Laws.
- Around 50% of all African-Americans were unemployed by 1932 due to racism and the Great Depression.
- The American Dream: the idea that America was a place where all your dreams could come true and you would be successful and prosperous.
- Disability: disabled people lived a hard life, they were often marginalised and excluded from society – people didn't understand learning disabilities and therefore shunned those with these illnesses.

Extra - Read/watch/do:

- Watch the Of Mice and Men (1992) film.
- Revise using BBC Bitesize.

You will be assessed on:

- A QTA response to an extract studied previously in class.

Links to curriculum:

- History(A03):The Great Depression, Feminism/Sexism, Workers' Rights, and Disability.
- Religious Studies: Ethics and Morality.

Geography: Year 9 – Climate

Keyterms / Literacy:

Climate – the average atmospheric conditions over a long period of time (30 years)

Latitude – the angular distance of a place relative to the equator
Altitude – height from sea level

Air Pressure – the force exerted on the surface of the earth from the air above

Temperature – the degree or intensity of heat
Precipitation – water falling from clouds as rain, snow, hair or sleet etc.

Ice Age – a period of intense cold when large portions of the Earth were covered in ice
Interglacial – extended periods of warmth in between Ice Ages

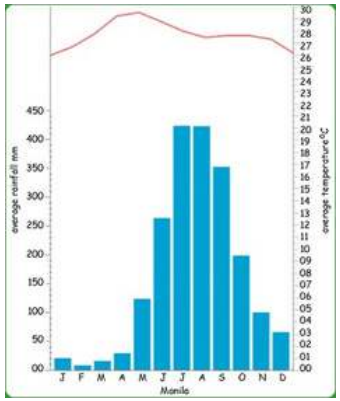
Obliquity – the degree to which the Earth is tilted on its axis
Deforestation – the mass clearance of large areas of forest

Factors affecting climate

Latitude – it gets hotter the closer to the equator you are. As you move further from the equator the curvature of the Earth causes the sun's energy to be spread out, making the climate colder closer to the poles

Altitude – it gets colder the higher up from sea level you are.

Air pressure – this causes air to rise or sink. In regions where air is usually rising (like the UK), moisture in the air cools and condenses to form rain clouds. In regions which usually have sinking air, for example the desert regions, clouds do not form, so it is dry.



Climate Graphs

Climate graphs show temperature and rainfall on one graph. The rainfall is displayed as blue bars, which are read off the left-hand y axis. The temperature is displayed as a red line, which is read off the right-hand y axis.

Climate Zones

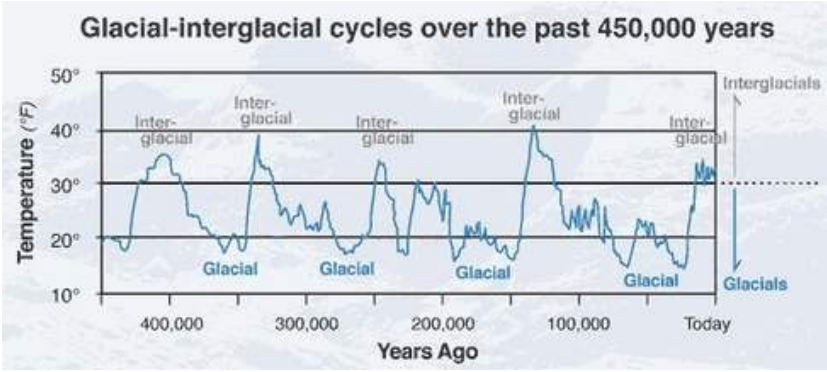
Different parts of the world have different climates, depending on the factors of latitude, altitude, air pressure and others. This makes climate graphs different depending which region of the world the data is from.

The UK has a temperate climate, giving us mild temperatures and wet conditions. Parts of Russia have a sub-polar climate, which is cold and dry, while north Africa has an arid climate that is hot and dry.

Climate change throughout history

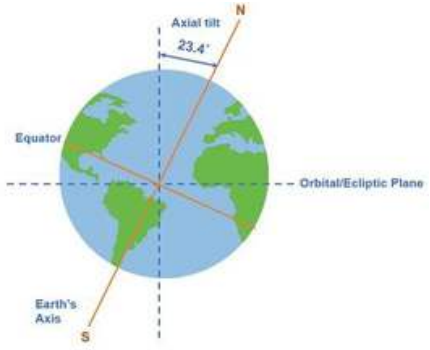
The Earth's average temperature has changed over the last 500,000 years. There are times when the global climate is warmer (interglacial phases) and times when it has been cooler (glacial phases), when there have been Ice Ages.

CO2 has risen more than 40% in just the past 200 years, contributing to human alteration of the Earth's temperature by about 1 °C. This speed of warming is more than ten times that at the end of an Ice Age, the fastest known natural sustained change on a global scale.



Geography: Year 9 – Climate

Physical causes of climate change The Earth is tilted on its axis. But the extent of tilting changes over the course of 41,000 years. When the Earth is more tilted the winters are far colder and the summers far warmer, which allows build-ups of ice to melt. However, when it is straighter, there is less seasonality with mild winters and summers that do not get as warm, this means that any ice that has built up over the winter does not melt, and it leads to Ice Ages.



Human causes of climate change

Human causes of climate change: Deforestation is the mass clearance of forested areas. Globally, we destroy around ten million hectares of forest every year. The respiration of trees involves absorbing carbon dioxide and releasing oxygen. Therefore, we describe forests as a 'carbon sink'. When we remove forested areas less carbon can be absorbed and more remains in our atmosphere, trapping heat and causing global temperatures to rise.

The impacts of climate change

More people likely to die from heat exhaustion e.g. UK 2022 over 4,500 deaths attributed to heatwave. Rising sea levels will cause low-lying coastal areas to become inhabitable e.g. Tuvalu which is expected to be the first nation to be completely submerged within the next 50-100 years, leading to poverty, overcrowding on the island and increased emigration.

Melting land ice will lead to increased volume of water in the oceans as well as leading to increased global heating due to a loss of reflection of solar radiation from the ice. It is also leading to difficult living conditions for many species e.g. polar bears in the Arctic and could lead to extinction.

Extra: Read / Watch / Do:
Read: News articles or scientific journals relating to climate change.
Watch: An Inconvenient Truth, a documentary film made in 2006 about the realities of climate change – how much of it has come true since its release?
Do: investigate the climates of different parts of the world, how dothey differ and why?

Curriculum Links:
The content from this unit ties in with previous work in KS3 relating to weather and the factors affecting weather patterns. WE study climate again at GCSE, as well as biomes and how they relate to climate zones.

Assessment Skill - Writing to analyse:
Explain the importance of one thing over another, or make a decision based on an issue. You should:
1. Make an opening statement to set out your key decision, e.g. the main factor responsible for climate change is...
2. Give evidence for your argument e.g. deforestation removes forests which are a carbon sink...
3. Explain thoroughly how this evidence proves your point e.g. This is because... Therefore... As a result...
4. Give evidence and an explanation that opposed your argument e.g. Some people may feel that physical factors have a greater influence on climate change, such as... because... Therefore... As a result...
5. Conclude to give the main reason why you came to your final decision.

Geography: Year 9 – Resources

Keyterms / Literacy:
Food miles – The number of miles our food has travelled to get 'from farm to plate'
Carbon footprint – A measurement of all the greenhouse gases we individually produce, through burning fossil fuels for electricity, transport etc.
Inequality – The existence of vast differences between things e.g. one place having plentiful resources while another place is without
Conflict – Disputes between different regions or countries, often caused by disagreements about access to resources
Irrigation – The artificial watering of crops
Biotechnology – The manipulation (through genetic engineering) of living organisms to produce useful commercial products (such as pest resistant crops and new bacterial strains)
Renewable – A resource which is not diminished when it is used; it recurs and cannot be exhausted, such as wind and tidal energy
Fossil fuel – A natural fuel such as coal or gas, formed in the geological past from the remains of living organisms
Biomass – Renewable organic materials, such as wood, agricultural crops or wastes, especially when used as a source of fuel or energy. Biomass can be burned directly or processed into biofuels
such as ethanol and methane
Sustainable Development – Development that meets the needs of the present without limiting the ability of future generations to meet their own needs

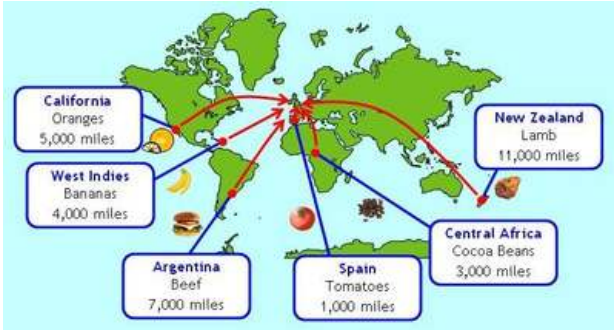
Where does our food come from?

Some of our food is grown in the UK and some is grown in other countries.
Advantages of eating British food:

- Shorter food miles,
- Fresher,
- Supports British farmers

Advantage of eating food from other countries:

- Adds variety to our diets
- Access to out-of-season produce all year round
- Cheaper



Why are there global inequalities in food?

- Climate – warm and wet conditions are needed for crops to grow. Drying climates in lead to difficulties in growing crops, so there is not enough food to eat.
- Technology – the ability for a country to afford large machines leads to improved food supply.

Conflict – War can lead to destruction of food supply and transportation of food being disrupted.
Pests – locusts are flying insects which eat through tonnes of vegetation each day. Warming climates leads to such pests spreading into new locations.

How can we feed ten billion people?

- Irrigation – the artificial watering of the land, from small scale to large scale projects across national borders to improve water supply during dry seasons and extent growing seasons.
- Biotechnology – Uses living organisms to make or modify products or processes e.g. GM foods. Produce higher yields without chemicals and reduce CO2. Increase in productivity by over 800mill tonnes and lifted 65mill people out of poverty.
- Reduce food waste – tonnes of food are thrown away every day. If people ate the food they bought, and did not overeat, this would mean there would be enough food to supply far more people in the world.

Geography: Year 9 – Resources

Whyis energy important?

Energy insecurity affects people in various ways, including:

- Increased living costs: Higher energy prices lead to a rise in the cost of living, making it more expensive to run homes, purchase food, manufacture goods, and travel.
- Job risks: Reduced sales of goods and services due to higher prices may result in job losses as businesses cut staff to manage declining revenues.
- Disruptions from power cuts: Power outages cause inconvenience by depriving people of essential services like lighting, heating, and electrical appliances. If industries cannot function in one country due to persistent power-cuts they will move operations to countries where the supply is better, impacting the economy.

Whatare our energy options?

Non-renewable energy:

For example, coal, oil and gas are highly polluting and lead to climate change. However, they produce a lot of energy which can be stored easily. The technology for creating this type of energy is available and cheap to produce.

Renewable energy:

For example, wind, biomass and HEP will never run out and they have less of an impact on climate change compared to burning fossil fuels, however, they are expensive due to the advanced technology needed to use them, and they are not very good at storing energy for peaks in demand.

Should wind farms be used to create energy?

An onshore wind farm is being proposed for the Isle of Lewis in northern Scotland, but should it be built? It will have both positive and negative impacts which will affect people, the environment and the economy:

- Jobs in the energy sector will be created, which are much needed.
- Tourists may be put off visiting the Island, which is
- known for its natural beauty.
  The turbines will create enough energy for the islands, as well as any additional energy being available for use in mainland Scotland.
- Promises that some of the profits made from the energy company will be invested into the local community.
- The land is currently used for grazing animals.
- There are fears that eagles will be damaged by the turbines.

Extra:
Watch: 'Explained – World Water Crisis' on YouTube to see what happens when our world's most important resources are threatened.
Do: Complete a survey of the amount of time in a day or week that you spend using electricity.

Curriculum Links:
The content from this unit ties in with the Resources unit that we study at GCSE. It also builds on prior knowledge about Industry from Year 8 and Development from earlier in Year 9.

Assessment – Writing to Analyse
Explain the importance of one thing over another, or make a decision based on an issue. You should:

1. Make an opening statement to set out your key decision, e.g. the waste incineration plant should / should not be built.
2. Give evidence for your argument e.g. one reason for building it is…
3. Explain thoroughly how this evidence proves your point e.g. This is because… Therefore… As a result…
4. Give evidence and an explanation that opposed your argument e.g. Some people may feel that the waste incineration plant should/should not be built because… Therefore… As a result…
5. Conclude to give the main reason why you came to your final decision.

Topic 3 – WWII

Key Word	Definition (Y8 Friendly)
Allies	Countries fighting against Germany, including **Britain**, **France**, the **USA**, and the **USSR**.
Axis Powers	Germany, Italy and Japan, who fought against the Allies.
Invasion of Poland	Germany's attack on **1 September 1939**, which started WWII.
The Phoney War	The period (Sept 1939–April 1940) when war had been declared but little fighting happened.
Dunkirk Evacuation	The rescue of **over 330,000** British and French soldiers from France in **1940**.
"Dunkirk Spirit"	The idea of working together and not giving up, inspired by the Dunkirk evacuation.
Home Front	Life for civilians at home during the war, supporting the war effort.
Rationing	Limiting food, clothes and fuel so everyone got a fair share. Started in **1940**.
Blackout	Covering windows at night to stop German bombers seeing towns and cities.
The Blitz	German bombing of British cities from **1940–41**, especially London, Coventry and Liverpool.
Make Do and Mend	A campaign encouraging people to repair clothes instead of buying new ones.
Land Girls	Women who worked in farming to replace male workers who went to fight.
War Effort	Everything people did to help win the war, fighting, working, saving materials.
Civil Defence	Volunteers who helped protect civilians during air raids (e.g., **ARP Wardens**).
Luftwaffe	The German air force responsible for bombing Britain.
Refugees	People forced to leave their homes because of war or danger.
Empire and Commonwealth Forces	Soldiers from countries such as India, Canada, Australia, New Zealand, Africa and the Caribbean who fought for Britain.
Home Fronts Around the World	The different ways ordinary people supported the war in countries like Britain, the USA, the USSR, India and Japan.

Why did WWII begin?

- Germany invaded Poland on 1 September 1939.
- Britain and France declared war on 3 September 1939.
- Hitler wanted to expand German land and power (Lebensraum).

What was the Phoney War? (Sept 1939 – April 1940)

- Althoughwarwasdeclared,verylittlefightinghappened.
- Britain preparedfor war: gas mask issue, blackout,
- rationing plans.

Somepeoplethoughtthewarmightnotreallyhappen.

Dunkirk: Defeat or Victory?

In May–June1940,Germanforces trapped British and French soldiers at Dunkirk, France.

The RoyalNavyandhundredsof "little ships" rescued over 330,000soldiers

Why was it seen as a victory?

- A huge number of men escaped when defeat seemed certain.
- Newspapers talked about the "Dunkirk Spirit" – bravery and teamwork.

Why was it seen as a defeat?

- Almost all heavy weapons were abandoned.
- France fell to Germany shortly afterwards.

Life on the Home Front: Social Changes

Rationing

- Introduced in January 1940 to ensure fair shares for everyone.
- Items rationed: meat, butter, sugar, eggs, fuel, clothing.
- Everyone had a ration book.
- Led to campaigns like "Dig for Victory" and "Make Do and Mend".
-

Clothing Changes

- Clothes were expensive and hard to buy.
- Government introduced Utility Clothing – simple, durable, used less fabric.
- People altered old clothes instead of buying new ones
-

The Blitz and the Blackout

The Blitz (September 1940 – May 1941) vv

German air raids targeted major British cities.

London was bombed for 57 nights in a row.

Other heavily hit cities: Coventry, Liverpool, Manchester, Birmingham.

43,000 civilians killed; over 2 million homes destroyed or damaged.

Blackout

Windows covered at night so German bombers couldn't see city lights.

Streetlamps and headlights were blacked out.

ARP Wardens patrolled streets to check households followed rules.

Air Raid Shelters

Anderson shelters (in gardens) or Morrison shelters (inside homes).

Tube stations used as shelters during London raids.

Topic4 – The Holocaust

Literacy / key words

Holocaust Term first used in the late 1950s to describe the systematic torture and murder of approximately six million European Jews and millions of other "undesirables"

Genocide deliberate destruction of a national, ethnic, racial, religious, or tribal group, in whole or in part.

Antisemitism Dislike or hatred of the Jews.

Arbeit Macht Frei "Work makes you free" is emblazoned on the gates at Auschwitz and was intended to deceive prisoners about the camp's function.

Aryan Term used by the Nazis to describe northern European physical characteristics (such as blonde hair and blue eyes) as racially "superior".

Concentration Camp Camps in which Jews were imprisoned by the Nazis. There were three different kinds of camps: transit, labour and extermination.

Final Solution Term used by the Nazis to describe their plan to annihilate the entire Jewish population of Europe.

Pogrom An organized attack on a group of people.

1933

- The SA organised a boycott of Jewish shops and businesses.
- Books by Jewish authors were publicly burnt.
- Jewish civil servants, lawyers and teachers were sacked, and Jewish doctors and
- dentists could not treat Aryans.

Science lessons about race were introduced which taught that Jews were subhuman.

1934

- Jewish shops were marked with a yellow star.
- Jews had to sit on separate seats on buses and trains. Many councils banned them from public spaces.

1935

- The Nuremberg Laws stripped Jews of German citizenship, outlawed marriage and sexual relations between Jews and Germans, and removed all the civil and political rights of the Jews. These laws were to be the foundation for much of the extreme persecution which took place later.

1938

- Jews were ordered to register all wealth and property.
- Jews were forced to change their first names: males would be known as Israel, females as Sarah.
- Kristallnacht - 9 November (The Night of Broken Glass). The SS organised attacks on Jewish homes, businesses and synagogues in retaliation for the assassination of the German ambassador to France by a Jew. During Kristallnacht, 400 synagogues and 7,500 shops were destroyed. Jews were then made to clear up the destruction on their hands and knees and pay a fine of one billion marks to the government. The remaining Jewish property was then confiscated.

1939

- The Nazis, who had been encouraging Jews to emigrate from 1933 onwards, now started "forced" emigration.

Who were the key figures in the Holocaust?

Adolf Hitler leader of the Nazi Party. He was a great orator (public speaker) who hypnotised his audiences. In his writings and speeches talked of destroying the Jewish race and passed laws against Jewish people. His anti-Semitic beliefs and policies were implemented soon after the Nazis came to power. He believed the Aryan race to be superior.

Heinrich Himmler was the Head of the SS. He was in overall charge of the 'Final Solution' and believed that he was carrying out Hitler's instructions to exterminate the Jews. He made sure news about camps were secret; and had propaganda films made showing how well Jews were being treated.

German people of all jobs and backgrounds saw the Jews were being treated differently and did not protest. Many had even stopped buying goods at Jewish stores. Only a small number of German people stood up for the Jews.

Extra - Read/watch/do

The Holocaust extended vocabulary list: https://hmh.org/education/resources/vocabulary-terms-related-holocaust/

What is genocide?: https://w w w.hmd.org .uk/learn-about-the-holocaust-and-genocides/what-is-genocide/

You will be assessed on:

Social changes due to the war, Dunkirk

Jewish life before the Nazis, Persecution in Germany, the Nuremberg Laws, Kristallnacht, the Final Solution

Links to curriculum

RE

English

Geography

Math

KPI 9.01 Decimals Manipulation

1) Multiplying decimals	1) Remove the decimal points. 2) Multiply. 3) Insert the same number of decimal points in the answer as in the question. 0.5 x 0.3 5 x 3 = 15 0.5 x 0.3 = 0.15	**2) Dividing a decimal by an integer**	0.72÷6 0.12 6 | 0.72 0.972÷8 0.1215 8 | 0.9720
		3) Dividing an integer by a decimal	1) Write as a fraction. 2) Form an equivalent fraction. 3) Divide.

KPI 9.02 Estimation and Limits of Accuracy

1) ≈	"approximately equal to"	**2) Truncation**	Ignoring all decimal places past a certain point without rounding.
3) Significant figures	The total number of digits in a number, not counting the zeros at the beginning of a number or at the end of a decimal number. 345 000 has 6 significant figures. 0.3047 has 4 significant figures.	**4) Estimate**	Find approximate answer by calculating with numbers rounded to one significant figure.
5) Error Intervals	The range of values (between the upper and lower bounds) in which the precise value could be. **least possible value ≤ x < greatest possible value**		

KPI 9.03 Related Calculations

19 x 18 = 342	108 ÷ 9 = 12
19 x 180 = 3420	1080 ÷ 9 = 120
190 x 18 = 3420	108 ÷ 90 = 1.2
190 x 180 = 34200	108 ÷ 0.9 = 120
1900 x 180 = 342000	108 ÷ 0.09 = 1200

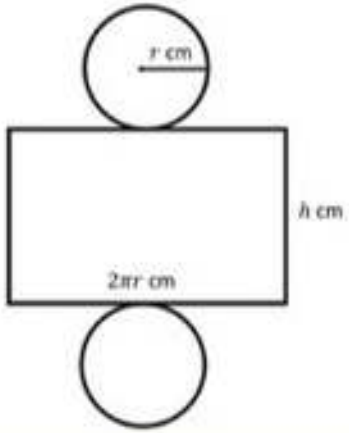
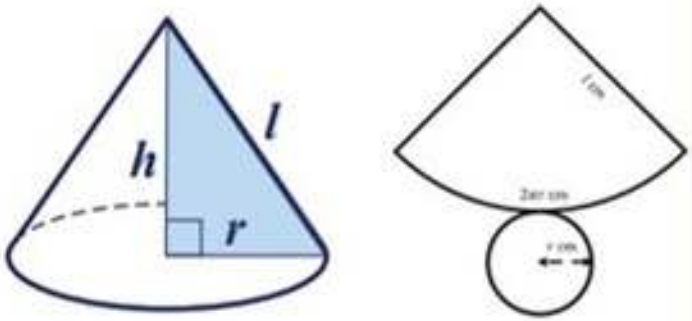
Math

KPI 9.05 Fraction Calculations

1) Writing one number as a fraction of another	Write £15 as a fraction of £25. $\frac{15}{25} = \frac{3}{5}$	**2) Reciprocal**	*Reciprocal of* $7 \rightarrow \frac{1}{7}$ *Reciprocal of* $\frac{2}{3} \rightarrow \frac{3}{2}$
3) Fractions of an amount	Divide the amount by the denominator and then multiply the result by the numerator.		
4) Add/Subtract fractions	Make the denominators the same (find the LCM). Use equivalent fractions to change each fraction to the common denominator. Add/subtract the numerators only.	$\frac{2}{7} + \frac{2}{5} = \frac{10}{35} + \frac{14}{35} = \frac{24}{35}$	
5) Multiplying fractions	Multiply the numerators. Multiply the denominators. Simplify where possible.	$\frac{4}{5} \times \frac{3}{8} = \frac{12}{40} = \frac{3}{10}$	
6) Dividing fractions	Keep the first fraction the same. Change the second to its reciprocal. Multiply the fractions. Simplify/convert to mixed number where possible.	$\frac{4}{5} \div \frac{3}{8} = \frac{4}{5} \times \frac{8}{3} = \frac{32}{15} = 2\frac{2}{15}$	

Math

KPI 9.22 Surface Area

1) Surface Area	The total area of the surface of a three-dimensional object. For example, the surface area of a cube is the area of all 6 faces added together. It is measured in square units. E.g. square centimetres (cm^2), square metres (m^2).		
2) Cylinder	Surface Area = $2\pi r^2 + 2\pi rh$ 	**3) Cone**	Surface Area = $\pi r^2 + \pi rl$ 
4) Sphere	Surface Area = $4\pi r^2$	**5) Hemi-sphere**	Surface Area of a Hemi-sphere = $3\pi r^2$

Math

KPI 9.06 Algebraic Manipulation

1) 2a	2 x a	**2) ab**	a x b
3) a^2	a x a	**4) $3a^2$**	3 x a x a
5) a subtracted from b	b - a	**6) a less than b**	b - a
7) a divided by b	$\frac{a}{b}$	**8) b divided by a**	$\frac{b}{a}$
9) 4 times smaller than a	$\frac{a}{4}$ or $a \div 4$	**10) 4 times larger than a**	4 x a → 4a
11) 5th power of a	a^5	**12) Variable**	A letter used to represent any number.
13) Coefficient	The number to the left of the variable. This is the value that we multiply the variable by. $4x$ → The coefficient of x is 4. x → The coefficient of x is 1.	**14) Term**	A single number, variable or numbers and variables multiplied together.
15) Simplifying	An expression can be simplified by grouping like terms. E.g. $2a + b^2 - 4b + 7a = 9a + b^2 - 4b$	**16) Identity**	An identity is an equation which is always true no matter what value of the unknown is substituted. E.g. $3x - 15 = 3(x - 5)$

KPI 9.07 Index Laws

1) Multiplication law	$a^m \times a^n = a^{m+n}$ Same base numbers, ADD the powers.	**2) Division law**	$a^m \div a^n = a^{m-n}$ Same base numbers, SUBTRACT the powers.
3) Power to a power	$(a^m)^n = a^{m \times n}$ MULTIPLY the powers.	**4) Raising a fraction by a power**	$(ab)^n = a^n \times b^n$ Raise each number or variable to the same power.
5) Power of 0	$a^0 = 1.$ Any number or variable to the power of zero equals 1.	**6) Negative powers (integers)**	$a^{-1} = \frac{1}{a}$ $a^{-2} = \frac{1}{a^2}$ $a^{-n} = \frac{1}{a^n}$ A negative power represents the reciprocal.
7) Positive unit fractions	$a^{\frac{1}{2}} = \sqrt{a}$ $a^{\frac{1}{3}} = \sqrt[3]{a}$ $a^{\frac{1}{n}} = \sqrt[n]{a}$	**8) Negative unit fractions**	$a^{-\frac{1}{2}} = \frac{1}{\sqrt{a}}$ $a^{-\frac{1}{3}} = \frac{1}{\sqrt[3]{a}}$ $a^{-\frac{1}{n}} = \frac{1}{\sqrt[n]{a}}$
9) Positive non-unit fractions	$a^{\frac{m}{n}} = (\sqrt[n]{a})^m$	**10) Negative non-unit factions**	$(a)^{-\frac{m}{n}} = \left(\frac{1}{a}\right)^{\frac{m}{n}} = \left(\sqrt[n]{\frac{1}{a}}\right)^m$

Math

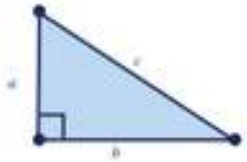
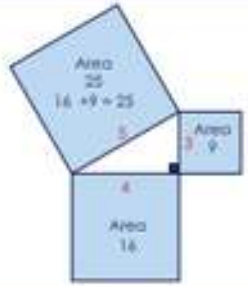
KPI 9.13 Solving Equations 2

1) Solve	Use inverse operations to find the solution of an equation.	**2) Linear equation**	Contains an equals sign (=) and has one unknown. E.g. $5x - 2 = 2x + 7$
3) Equation	An equation is a statement with an equal sign, starting that two expressions are equal in value.		

KPI 9.14 Inequalities 1

1) Representing an inequality on a number line– closed circle	A closed circle is used to show greater than or equal to (or less than or equal to) the number. $x \geq 3$ 	**2) Representing an inequality on a number line – open circle**	An open circle is used to show greater than (or less than) the number. $x > 3$ 
3) Reversing the inequality	Multiplying or dividing both sides by a negative number reverses the inequality	E.g. $-3x < 6$ $x > -2$	

KPI 9.16 Pythagoras

1) Right-angled triangle	A triangle that contains a right-angle (90 degrees).	**2) Hypotenuse**	The longest side – opposite the right-angle.
3) Pythagoras' Theorem	For any right-angled triangle, the area of the square of the longer length (the hypotenuse) is equal to the area of the squares of the shorter lengths added together.  $c^2 = a^2 + b^2$ $a^2 = c^2 - b^2$ $b^2 = c^2 - a^2$		

Math

KPI 9.17 Interior and Exterior Angles			
1) Polygon	A polygon is a two-dimensional shape with 3 or more straight sides. A polygon is either regular or irregular: Regular – side lengths are equal, and all angles are equal. Irregular – side lengths are unequal, and angles are unequal.		
2) 3 sides	Triangle	**3) 4 sides**	Quadrilateral
4) 5 sides	Pentagon	**5) 6 sides**	Hexagon
6) 7 sides	Heptagon	**7) 8 sides**	Octagon
8) 9 sides	Nonagon	**9) 10 sides**	Decagon
10) 11 sides	Hendecagon	**11) 12 sides**	Dodecagon
12) Exterior Angles	Exterior angles of polygons sum to 360°. An exterior angle of a regular polygon is found by calculating $\frac{360}{n}$ n is the number of sides.	**13) Interior Angles**	In a regular polygon. Interior Angle + Exterior Angle = 180°
14) Tessellation	A pattern created with identical shapes that fit together with no gaps.		

Literacy / key words

Human Rights: The basic rights and freedoms that every person is entitled to, such as the right to life, freedom, and equality.

Social Justice: The idea of creating a society where everyone is treated fairly.

Discrimination: Treating someone unfairly because of characteristics (age, gender, sex, race, etc.)

Prejudice: Holding unfair and biased opinions based on appearance, background or belief.

Poverty: The state of having little or no money/resources, making it difficult to meet basic needs.

Activism: Taking action and campaigning to make a positive change in society, especially for human rights or social justice.

Human Rights and Social Justice

Human rights and social justice focus on ensuring **dignity, equality, and freedom** for all individuals, with key principles outlined in the **Universal Declaration of Human Rights (UDHR)**, adopted by the United Nations in 1948. The UDHR advocates for rights such as the right to life, liberty, education, and non-

YEAR 9 – What are the issues of Equality?

What are the issues of equality?

Religious Freedom

Religious freedom is the right to practice, change, or express one's religion **without persecution**. However, in many parts of the world, people face restrictions or discrimination due to their beliefs. The UDHR upholds this freedom, but individuals in some countries experience severe limitations.

Christian Responses to Human Rights

Christian responses to human rights emphasise compassion, justice, and human dignity, based on the belief that all are made in the image of God (Imago Dei). The parable of the Sheep and Goats (Matthew 25:31-46) teaches that helping the marginalised is a way to serve Christ. Similarly, the story of the Rich Man and Lazarus (Luke 16:19-31) highlights the moral responsibility of the wealthy to care for

Muslim Responses to Human Rights

Muslim responses to human rights are rooted in the principles of justice, equality, and compassion, as outlined in the Qur'an and Hadith. Zakat, one of the Five Pillars of Islam, emphasises the duty of Muslims to give to those in need, promoting social welfare and reducing inequality. The concept of khalifah (stewardship) outlines the responsibility of humans to care for others and the world, ensuring justice and the protection of rights, as Islam teaches that all people are equal in the eyes of God.

Sikh Responses to Human Rights

Sikh responses to human rights are grounded in the principles of equality, justice, and selfless service. The concept of sewa (selfless service) encourages Sikhs to support others without expectation of reward. Langar, the free community kitchen, embodies this commitment by offering meals to all, regardless of background or status, reinforcing the belief in equality. The Khalsa, established by Guru Gobind Singh, are called to protect human rights and fight against injustice.

Religious Charities

Muslim Aid – Serving Humanity

christian aid

CAFOD

Extra - Read/watch/do

What is Equality & Social Justice: https://www.bbc.co.uk/bitesize/articles/z42khbk

Human Rights and Responsibilities: https://www.bbc.co.uk/bitesize/articles/zdv646f#zt83239

YEAR 9 – Thoughts that have changed the world

What makes a good argument?

When we study Philosophy, we will be studying a range of arguments, so it is important that we know how to recognise a 'good' argument.

A good argument is valid and effective. It uses evidence and logic and avoids using fallacies.

Some of the common fallacies are:

Ad Hominem – Critiquing the person, not the argument.

Tu Quoque – The 'you too' argument.

Appeal to Authority – Using someone of authority to back your argument, instead of evidence.

Appeal to Emotion – Manipulating the emotions of the other.

What does Plato say about the nature of our existence?

Plato was an ancient Greek philosopher who considered the nature of our existence and argued that there are two realms:

The Realm of Appearances: we can only see mere shadows or reflections of true reality (our reality) The Realm of Forms: A realm where one can experience the true form of objects

What does Descartes say about the nature of our existence?

René Descartes was a French philosopher, mathematician and scientist who believed that it is impossible to gain knowledge through empiricism. This means that we cannot trust our senses because it could be an illusion and it could trick us.

Descartes also says that there is a possibility that we are being tricked by an Evil Demon! This means that we can't even use rationalism!

Descartes concludes that we can only know one thing for sure: that I exist. This is where the famous quote "cogito ergo sum" ("I think, therefore I am") comes from.

What does Marx say about our society?

Karl Marx was a German-born philosopher, political theorist, economist, sociologist, journalist and socialist – a busy man! He is most famous for the theory of Communism.

Marx believed that the capitalist system led to workers becoming disconnected and alienated from four things: The product, The process, The self. Others

Marx argued that we should adopt a communist system where everyone works together and shares resources equally so that everyone's needs are met. It sounds good! But does it work in practice? There are lots of pros and cons to consider.

What is worth discussing?

The Verification Principle claims that, "A statement only makes sense if you can prove it's true or false".

The Falsification Principle claims that, "A statement only makes sense if there is a way to prove it false". For example, "it will rain tomorrow" is meaningful because if it doesn't rain, it is false.

Eschatological Verification claims that "Some things can only be proven true or false after we die or at 'the end of time'". For example, a statement like "Heaven exists" can't be tested now, but if you die and find out, it can be proven to be true.

Key words

Empiricism: The theory that all knowledge is based on experience and information gathered through the senses.

Rationalism: The theory that reason (thinking things through) rather than experience is how we gain knowledge.

Fallacy: A mistaken belief, especially one based on unsound arguments

Communism: A type of government as well as an economic system in which the government or the whole community owns property and land, and everyone is supposed to share the wealth that they create.

Verification: An idea used in philosophy to help us decide if something is meaningful or not

Falsification: It suggests that for a theory to be considered scientific, it must be able to be tested and conceivably proven false.

Eschatological Verification: a process whereby a proposition can be verified after death.

Tenses

PRESENT TENSE	bailar – to dance	comer – to eat	vivir – to live
I	bailo	como	vivo
you	bailas	Comes	vives
he/she/it	baila	Come	Vive
we	bailamos	Comemos	vivimos
you (pl)	Bailáis	Coméis	vivís
they	bailan	comen	viven

PAST preterite	AR	ER/ IR
I (yo)	é	í
You (tú)	aste	iste
He/she (él /ella)	ó	ió
We (nosotros)	amos	imos
You (pl) vosotros	asteis	isteis

Opinions & Pronouns

prefiero

me chifla

me interesa

Me hace feliz *(itmakesme happy)*

Mealegra (cheers me up)

Medivierte (amuses me)

me irrita

me molesta

me aburre

Me hacetriste *(it makes me sad)*

Me enfada (angersme)

Meenoja (angers me)

For other's opinion use 'le'

Connectives

además	furthermore
sin embargo	however
que	which
donde	where
cuando	when
Luego	**SEQUENCING** then
Después	after that
Más tarde	later

Adjectives

Útil	useful
Inútil	useless
Fácil	easy
Difícil	difficult
Rápido	fast
Lento	slow
Práctico	practical
Peligroso	dangerous
Seguro	safe
Adicto	adictive
G ratis	Free (of charge)
Caro	expensive
Barato	cheap
Gracioso	funny

La red es **másútilque** un libro=*the internet is more useful than a book* El ordenadores **menosprácticoque** mi móvil = *the computer is less practical than my phone* **Lo bueno/mejor**es jugarjuegosenlinea= *the good/best thing is playing games on line.* **Lo malo/peor**es hacerlas comparas–*the bad/worst thing is doing shopping*

They (ellos/ellas)	aron	ieron

Verbos

1 usar la tecnología

usar/ utilizar	To use
uso/ utilizo	I use
chatear con amigos	chat with friends
hacer los deberes	to do homework
investigar	to do research
navegar por internet	to surf the internet
comprar en línea	to shop online
enviar mensajes de texto	to send texts
enviar correos electrónicos	to send emails
leer los periódicos	to read newspapers
leer libros	to read books
expresar una opinión	to express an opinion
sacar fotos	to take photos
compartir fotos	to share photos
ver una película	to watch a film
descargar música	to download music
jugar juegos	To play games
puedes comunicarte con todos tus contactos	you can communicate with all your contacts
es gratis si tienes conexión a internet	It's free if you have an internet connection

2 Los aparatos

el ordenador	a computer
el portátil	a laptop
el móvil	a mobile phone
la tableta	a tablet
lector de libros electrónicos	an eBook reader
los medios sociales	social media
las redes sociales	social media
los mensajes de texto	text messages
las aplicaciones	apps
el iPad/ iPod	iPad / iPod
la revista (digital)	(digital) magazine
el correo	E-mail

3 Vocabulario importante

ser adicto/a	to be addicted
el hecho	fact
el acoso	bullying
el correo basura	spam / junk mail
los usuarios	users
la conexión inalámbrica	wireless connection
la pantalla	screen
el buscador	search engine
la contraseña	password

Complexity

Tengo que + Infinitive = I have got to
Tuve que + inf = I HAD to

Suelo + Inf = I tend to..

quiero + infinitive = I want to ..
Quise + inf = I wanted to

Puedo + inf = to be able to
Pude + inf = I could

4 Los verbos

encender	to switch on
apagar	to switch off
hablar	to speak
chatear	to chat
comunicarse	to communicate
descargar	to download
borrar	to delete
crear	to create
enviar	to send
mandar	to send
guardar	to save
quitar/eliminar	to remove
comprar	to buy
vender	to sell
compartir	to share

Tenses

PRESENT	-ar verbs	-er verbs	-ir verbs
I	-o	-o	-o
you	-as	-es	-es
he/she/it	-a	-e	-e
we	-amos	-emos	-imos
you (pl)	-áis	-éis	-ís
they	-an	-en	-en

FUTURE Saying what you are going to do

Voy	a	INFINITIVE *Ir*
vas		
va		*Tocar* *jugar* *nadar*
vamos		
vais		*leer* *Ver*
van		

PAST preterit	AR	ER/ IR
I (yo)	é	í
You (tú)	aste	iste
He/she (él /ella)	ó	ió
We (nosotros)	amos	imos
You (pl) vosotros	asteis	isteis
They (ellos/ellas)	aron	ieron

IR-to go
Fui *I went*
Fuiste
Fue
Fuimos
Fuisteis
fueron

Opinions & Pronouns

Lo que más me gusta es... =the thing I most like is
Creo que../pienso que= I think that

Me chifla

Me alegra

(itmakes me happy)

Me enfada (angers)

Me duele(n)

Me irrita(n)

Indirect object pronouns
Me te le nos os les

Connectives

SEQUENCING

En primero	firstly
En Segundo	secondly
Finalmente	finally
Luego	then
Después	after that
Más tarde	later

Complexity

quiero + infinitive = I want to ..
Quise + inf = I wanted to

Tengo que + Infinitive = I have got to
Tuve que + inf = I HAD to

Puedo + inf = to be able to
Pude + inf = I could

Adjectives

Doloroso(a)	painful
Cansado(a)	tiring
Peligroso(a)	dangerous
Sano(a)	healthy
saludable	healthy
Intenso(a)	intense
Agotador(a)	exhausting
Estimulante	exhilerating

Cansado(a)	tiring
Peligroso(a)	dangerous
Sano(a)	healthy
saludable	healthy
Sanamente	healthily
Malsano	unhealthy
Estresante	stressful
Agotador(a)	exhausting
Estimulante	exhilerating

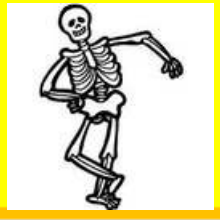
Y9 Spanish – la salud

TOPIC VOCABULARY TRANSLATED

A

El **Cuerpo** **body**

a.	la cabeza	la	head
b.	garganta	la	throat
c.	espalda	la	back hand
d.	mano	la	leg knee
e.	pierna	la	back teeth
f.	rodilla	las	stomach
g.	muelas	el	arm foot
h.	estómago	el	finger/toe
i.	brazo	el pie	the ears
j.	el dedo	los	
k.	oídos		
l.			



B

Me siento mal I don't feel well

a. ¿Qué te pasa? b. What's wrong?

¿Qué te duele? c. What hurts?

¿Qué le duele? What hurts him/her?

d. Me duele(n) ...My ... hurts.

e. Le duele(n) his/her ... hurts.

f. Tengo dolor de cabeza. I have a headache.

g. Tengo una insolación. I have sunstroke.

h. Tengo la pierna rota. I have a broken leg.

i. Tengo tos. I have a cough.

j. Tengo fiebre. I have a temperature.

k. Tengo una picadura. I've been bitten.

l. Tengo catarro. I have a cold.

m. Tengo gripe. I have the flu.

n. Estoy enfermo/a. I'm ill.

o. Estoy m areado/a. I feel sick/dizzy.

p. Estoy c onstipado/a. I've got a cold.

C

Se debe + INF - one must

Hay que + INF - one has to

Tienes que + INF - you have to

Los verbos

a.	montar en bicicleta	go cycling
b.	correr	run
c.	beber mucha agua	drink a lot of water
d.	comer frutas	eat fruit
e.	descansar	relax
f.	levantarme temprano	get up early
g.	levantarme tarde	get up late
h.	entrenar muchas horas	train for hours
i.	tener tiempo libre	have free time
j.	hacer deporte	do sports
k.	dormir ocho horas al día	sleep eight hours day
l.	cenar muy tarde	have dinner very late
m.	comer cinco raciones de fruta y verduraso	to eat 5aday
n.	lavarte los dientes	clean your teeth

D

Key vocab
El alcohol
El consumo – the consumption
Bebidas alcohólicas alcoholic drinks
El cannabis
El tabaco
Drogas blandas – soft drugs
Drogas duras – hard drugs
Bebidas azucaradas / refrescos – sugary/fizzy drinks
Comida basura/rápida – junk/fast food
Borracho - drunk
Un porro – a joint
Peligroso – dangerous

E

Negative words
Fumo – No fumo - No goes before the VERB
Nada – nothing
nadie -nobody
nunca – never
Ninguno – none , not....any
In Spanish we use a double negative.
No fumo nunca
No como nada la comida rápida
No había nadie
No comí ninguno
Also tampoco – neither
demasiado – too
poco – Little or few

F

Expressing agreement and disagreement
Estoy de acuerdo con – I agree with
Estoy a favor de – I'm in favour of
Estoy en contra de – I am against
Tienes razón – You are right
Estás equivocado – you're wrong
Es cierto – it's true
Es verdad – it's true

Se debe + INF - one must
Hay que + INF - one has to
Tienes que + INF - you have to

Los verbos

G

Advertir – to warn
Fumar – to smoke
Drogarse –to take drugs
Emborracharse – to get drunk
Prohibir – to forbid/prohibit
Mantenerse en forma – to stay in shape
Estar a dieta – to be on a diet
Pasar hambre – to starve
Llevar una dieta sana – to have (wear) a healthy diet
Acostarse tarde - to go to bed late
Intentar comer bien – to try to eat well
Dormir ocho horas – to sleep 8 hours
Evitar el estrés – to avoid stress
Hacer ejercicio físico – to do physical exercise

Key Words – GCSE Biology unit1 cells

Active Transport	The movement of particles against a concentration gradient, using energy from respiration
Chloroplasts	Where photosynthesis takes place in plant cells
Cytoplasm	Where the chemical reactions that keep the cell alive take place
Diffusion	The movement of particles from a high concentration to a low concentration across the cell membrane.
Nucleus	The control centre of the cell, where the genes are found
Membrane	Controls what passes in and out of a cell
Meristem	Source of stem cells in plants found in the growing parts of the plant.
Mitochondria	Where energy is released during respiration
Osmosis	The movement of water from a dilute solution to a less dilute solution (e.g. from a high water concentration to a low one)
Respiration	Chemical reaction that takes place in living cells, releasing energy for the cell
Ribosomes	Where proteins are made in a cell
Stem cell	Unspecialised cells that can develop into any other type of cell
Vacuole	Where the cell sap is found in plant cells

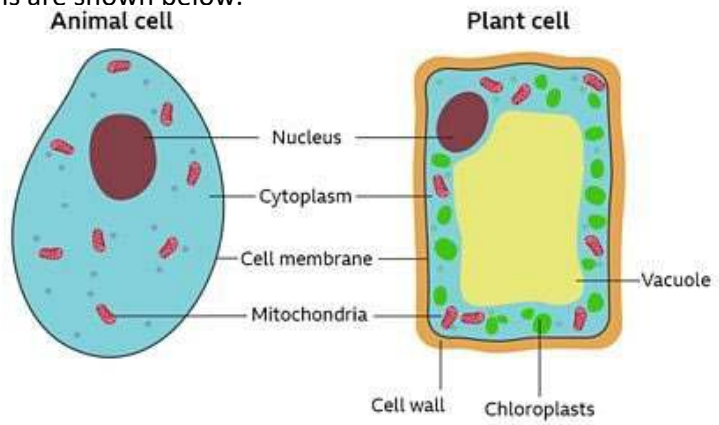
<u>Numeracy:</u>

Total Microscope magnification = eyepiece lens x objective lens

B1 – Cell Biology

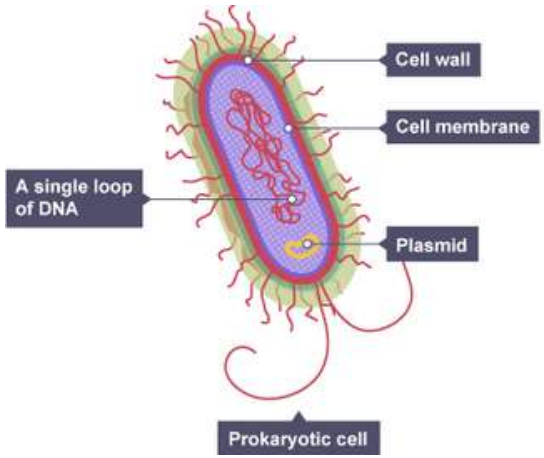
Eukaryotic Cells

They have anucleus to contain the chromosomes. These can be animal, plant or fungus or protist cells. Animal and plant cells are shown below.



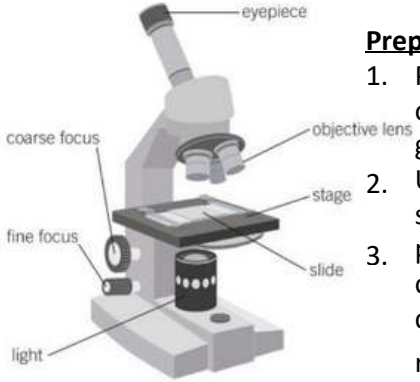
Prokaryotic Cells

Theydonot havea nucleus, they are usually a lot smaller and may contain plasmids.



Cell		Features
Animal	Sperm	High number of mitochondria Ribosomes that makeenzymes in the head
	Nerve	Long Lots of branches (dendrites)
	Muscle	High number of mitochondria High Number of ribosomes Store glycogen
Plant	Xylem	Walls thickened with lignin to strength the cells into a tube
	Phloem	Sections between cells called sieves to help transport substances like dissolved sugars
	Root hair	Large surface area Lack of chloroplasts Large vacuole

RP1 – Microscopy; Observing Plant Cells



Preparing the slide:

1. Place a thin layer of onion membrane on a glass slide with forceps.
2. Use a drop of iodine to stain the cells. Gently
3. place a glass cover slip over the same and tap carefully to remove air bubbles.

Viewing the slide:

1. Place the slide on the stage and turn on the light.
2. Select the lowest magnification objective lens.
3. Look through the eyepiece and turn the coarse focus until the image can be seen.
4. Turn the fine focus until a clear image is formed.
5. Change the objective lens to another with a higher magnification and turn the fine focus re-focus the image.

Microscopes

Thedevelopment of microscopes of the last 200 years has allowed us to study cells and the structures inside them in more and more detail.

Light Microscope	Electron Microscope
Low resolution Low magnification Cheap	High resolution High magnification Expensive

Calculating Magnification

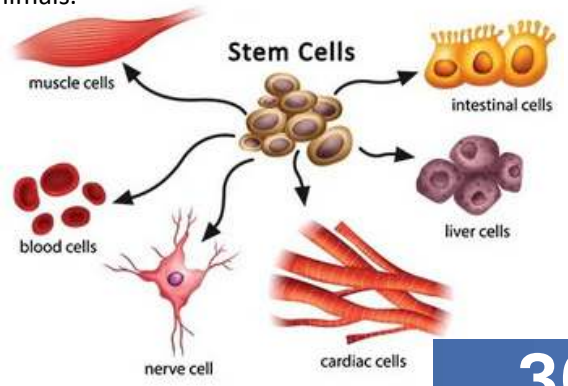
Unitsforimageandactual sizemay need to be converted before using the equation below.

$$\text{Magnification} = \frac{\text{Image Size}}{\text{Actual Size}}$$

mm → µm **x 1000**
µm → mm **÷1000**

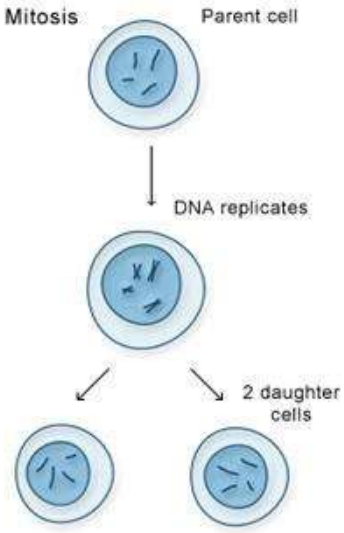
Cell Differentiation

Asanorganism develops,cells differentiate to form different types of cells. This is an example in animals.



B1 – Cell Biology

Mitosis

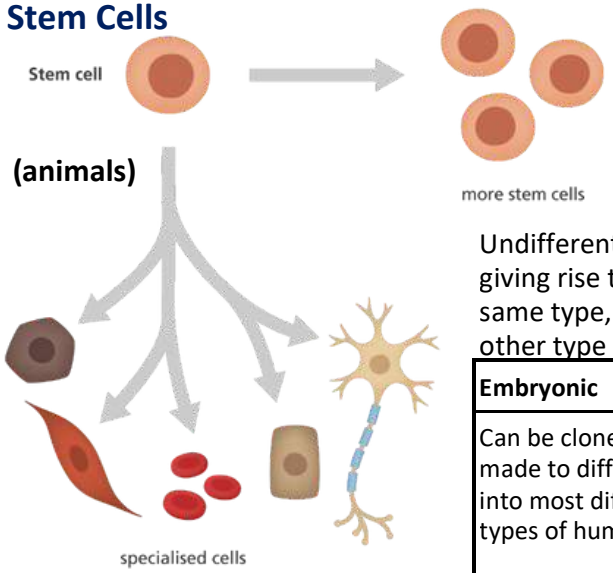


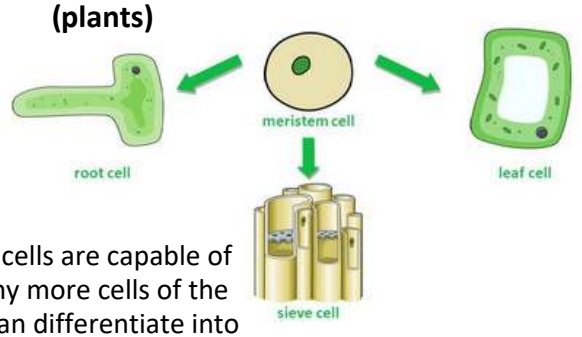
Before a cell can divide it needs to grow and increase the number of sub-cellular structures such as ribosomes and mitochondria. **The DNA replicates** to form two copies of each chromosome.

In mitosis one set of chromosomes is pulled to each end of the cell and the **nucleus divides**.

Finally the **cytoplasm and cell membranes divide** to form <u>two identical cells</u>.

Stem Cells

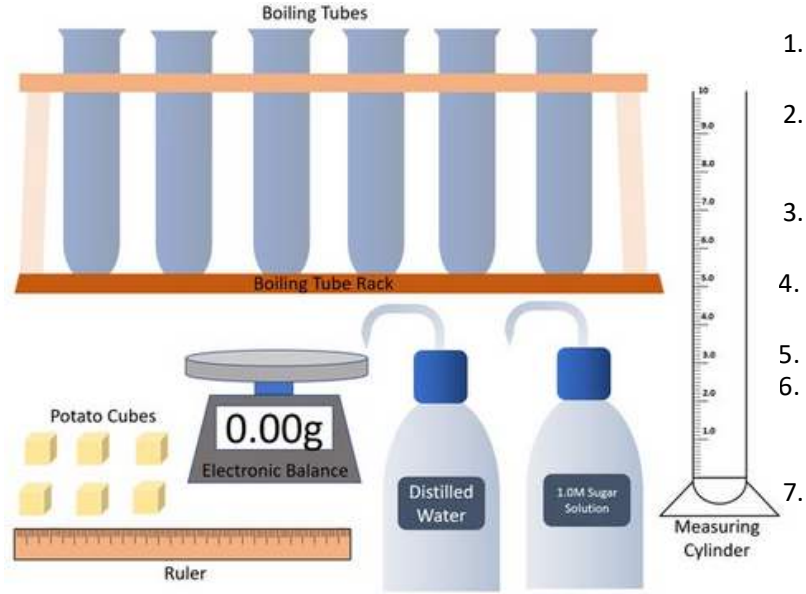




Undifferentiated cells are capable of giving rise to many more cells of the same type, and can differentiate into other type of cells.

Embryonic	Adult	Meristems
Can be cloned and made to differentiate into most different types of human cells	Bone marrow stem cells can form many types of cells including blood cells.	Can differentiate into any type of plant cell, throughout the life of the plant.

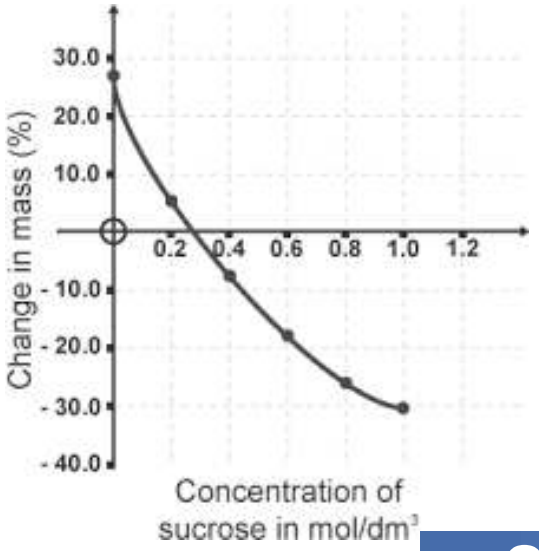
RP2 – Osmosis: The concentration of surrounding solution affects mass of plant tissue



1. Use a cork borer to create 5 cylinders of plant tissue (usually potato) and cut them all to the same length.
2. Measure the mass of each piece using a top pan balance and the length of each piece with a ruler. Record in a table.
3. Measure out 100cm3 of each concentration of salt/sugar solution into labelled boiling tubes.
4. Place each piece of potato into a boiling tube for 24 hours.
5. Remove the pieces and blot with a paper towel.
6. Measure the mass of each piece using a top pan balance and the length of each piece with a ruler. Record in a table.
7. Calculate the percentage change in mass.

$$\% \text{ Change in mass} = \frac{\text{Change in mass (g)}}{\text{Initial mass of potato (g)}}$$

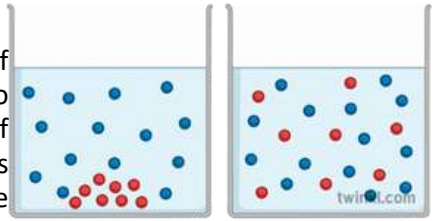
<u>Results Graph</u>

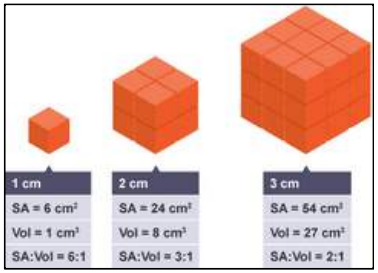


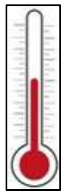
B1 – Cell Biology

Diffusion

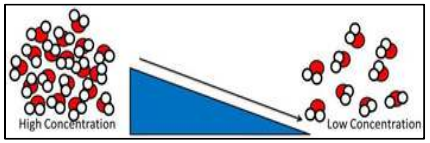
- Substances move a higher concentration of that substance (red particles pictured) to where there is a lower concentration of that substance. (High→ Low) This happens
- because of the random movement of the particles in a fluid (liquid or gas).







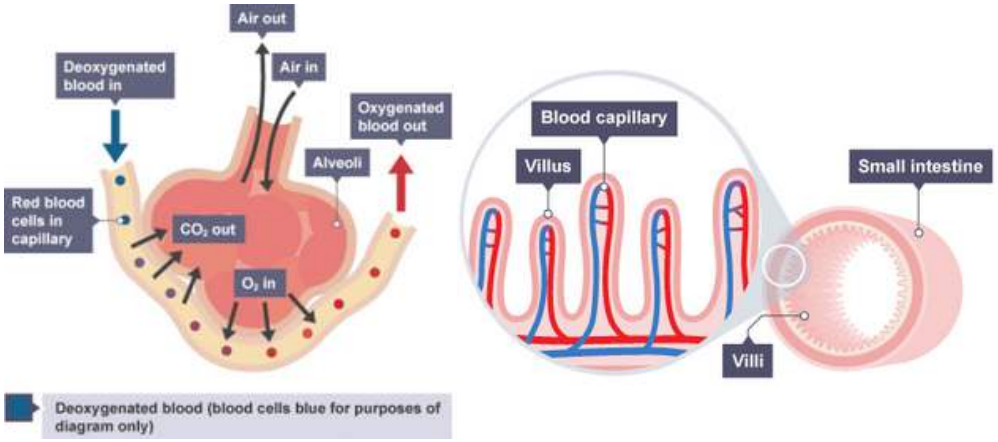
- There are ways the rate of diffusion can be changed:
  - the difference in concentrations
  - (concentration gradient)
  - the temperature
  - the surface area of the membrane



Examples

Alveoli in the lungs and villi in the small intestine are both structured in similar ways so diffusion can happen at a high rate (fast).

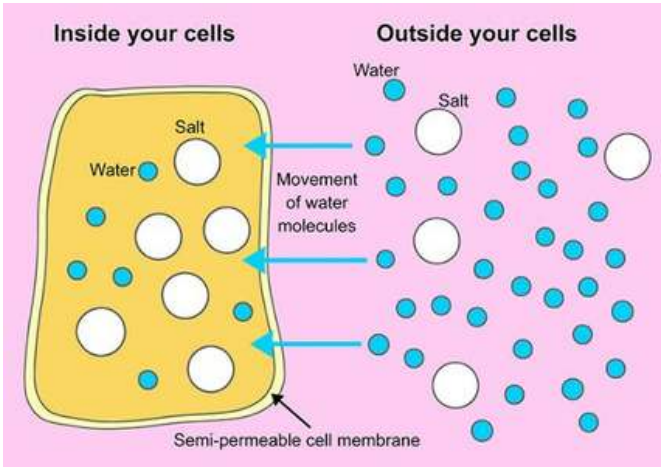
- having a large surface area
- a membrane that is thin, to provide a short diffusion path
- (in animals) having an efficient blood supply



Osmosis

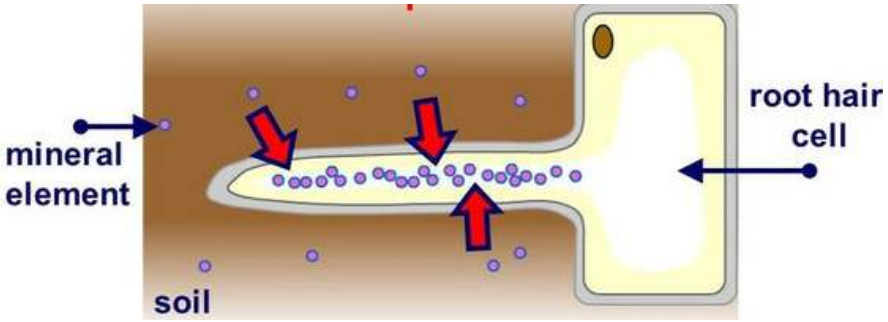
Watermay move across cell membranes via osmosis.

Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane (H→L).



Partially permeable means small molecules can move through but large molecules cannot.

Active Transport

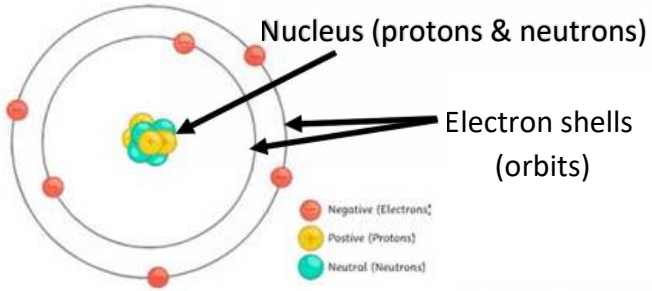


- Active transport is moving substances against the concentration gradient (L→H) so requires energy. This energy comes from respiration.
- This means that cells that carry out a lot of active transport (root hair cells, epithelial cells on villi in the small intestine) contain a lot of mitochondria.

C1 – Atomic Structure and The Periodic Table

Atoms

- Madeup of **protons, electrons** and **neutrons**.



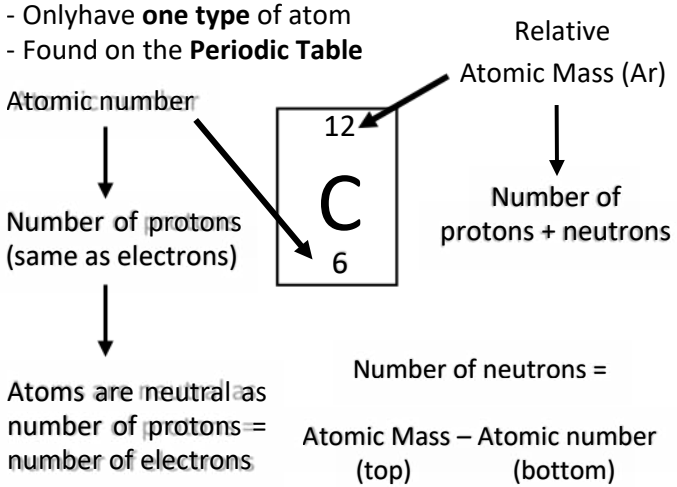
Subatomic particle	Relative Mass	Charge
Proton	1	Positive
Neutron	1	Neutral
Electron	Very small	Negative

Atoms have a radius of about 0.1nm (1x10-10 m)

Radius of nucleus = about 1x10-14 m

Elements

- Onlyhave **one type** of atom
- Found on the **Periodic Table**

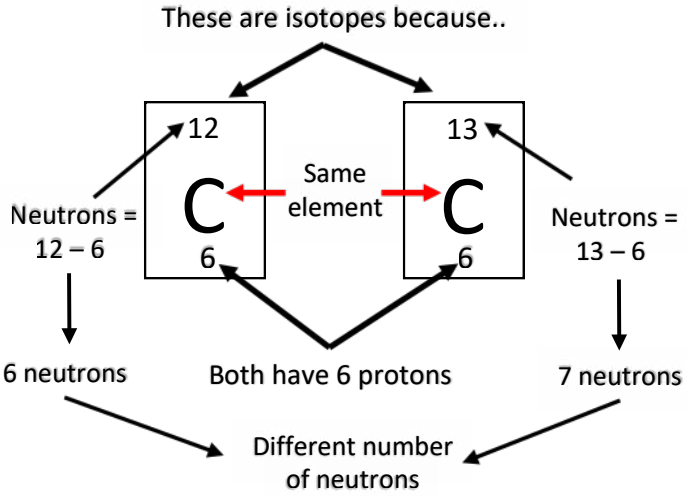


Compounds

- Two or more elements **chemically combined**.
- Formed by chemical reactions
- For example: CO2 H2O CH4 HCl NaCl

Isotopes

Isotope = atoms of the **same element** which have the **same number of protons**, but **a different number of neutrons**.



Chemical Equations

-Shown by using a **word equation**.
e.g. magnesium + oxygen magnesium oxide

Left of the arrow = **reactants**

Right of the arrow = **products.**

- Also can be shown by a **symbol equation**

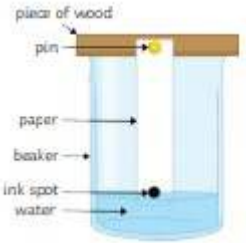
e.g. 2Mg + O2 2MgO

Mixtures and Separation

Mixtures– two ormore elementsor compounds **not** chemically joined.
This means the different components of the mixture can be separated by physical methods (below)
E.g. air is a mixture mainly made of nitrogen, oxygen and carbon dioxide.

Chromatography

to separate out mixtures (usually liquids) (e.g. colours in ink)



Filtration

To separate insoluble solids from liquids (e.g. sand and water)

Evaporation

To quickly separate soluble solids from a solution.
(e.g. salt and water)

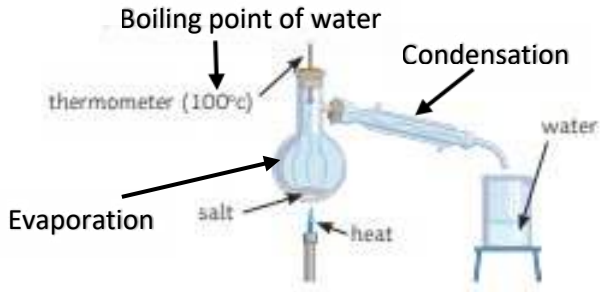
Crystallisation

To slowly separate a soluble salt from a solution.
(e.g. copper sulfate crystals)

C1 – Atomic Structure and The Periodic Table

Distillation

Simple distillation – separating a liquid from a solution.



- Liquid is heated to boiling point and evaporates
- Vapours travel up into the condenser
- Condenser has cold water around it.
- Vapours cool and condense (turn back into a liquid).

Electronic Structure

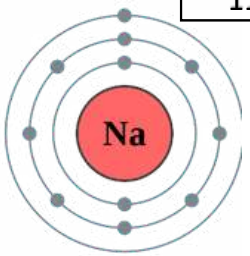
- Electrons arefound onshells (orbits) orbiting the nucleus.
- There is a maximum number of electrons allowed on each shell:

First shell = 2 electrons
Second shell = 8 electrons
Third shell = 8 electrons.

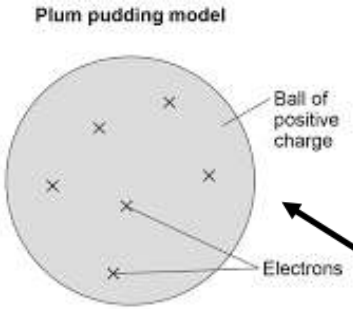
11 electrons

$^{23}_{11}Na$

1st shell = 2
2nd shell = 8
3rd shell = 1



Total = 11 electrons



History of the atom

Scientist	Time	Discovery
John Dalton	Start of the 19th century	Atoms were first described as solid spheres.
JJ Thomson	1897	Plum pudding model – atom is a ball of + charge with electrons scattered
Ernest Rutherford	1909	Alpha scattering experiment - mass concentrated at the centre, only the nucleus is + charged. Most of the atoms is empty space.
Niels Bohr	Around 1911	Electrons are in shells orbiting the nucleus
James Chadwick	Around 1940	Discovered that there are neutrons in the nucleus.

Differences to nuclear model
- Ball of positive charge (no protons)
- No nucleus
- No neutrons
- Evenly distributed mass

Rutherford tested the plum pudding model

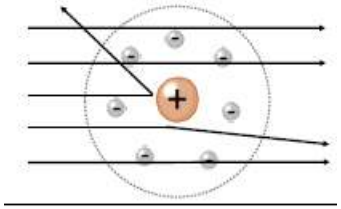
Rutherford's scattering experiment

alpha particles are positively charged

Fired at gold foil

some alpha particles are deflected/ repelled

most alpha particles passed straight through



Conclusions made What happened ?

Observation	Conclusion
Most of the particles passed straight through	Most of the atom is empty space
Some were deflected to the sides	The particles had passed close by a positive charge
A very small number were repelled straight back	The alpha particles had approached the nucleus straight on. the tiny number told him that the positive charge is in a very small dense core

C1 – Atomic Structure and The Periodic Table

Developmentof thePeriodicTable

John Newlands – Law of Octaves

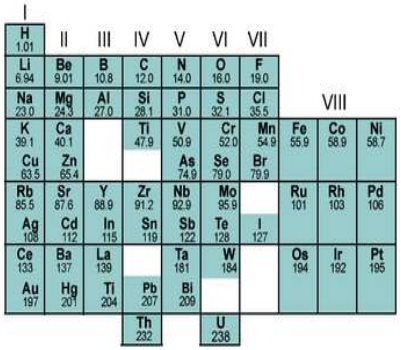
- Elements ordered by**atomic weight**.
- Noticed a pattern with every eighth element.
- Some elements placed inappropriately – metals and non-metals grouped together.
- Rejected by other scientists.

H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe
Co, Ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce, La	Zr	Di, Mo	Ro, Ru

John Newlands' Law of Octaves

Dimitri Mendeleev

- Still ordered byatomicweight
- Left gaps for **undiscovered elements**
- Could predict properties of undiscovered elements.
- Some elements didn't fit pattern – switched them to keep pattern of **similar properties**.



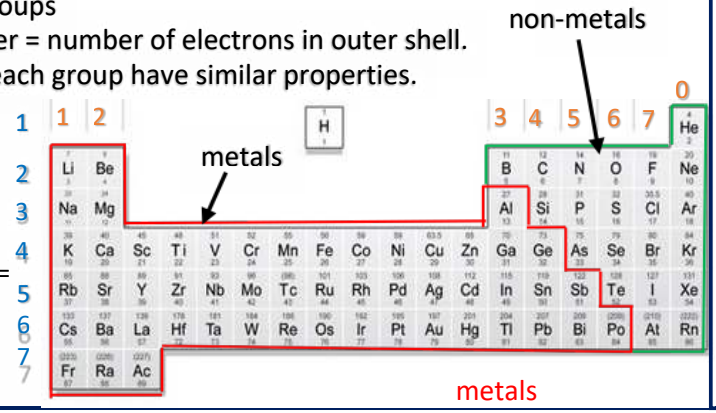
Dimitri Mendeleev left gaps for undiscovered elements

Eventually, knowledge of isotopes explained why elements could not be ordered by atomic weight.

The Modern Periodic Table

-Ordered by **atomic(proton) number**.

Columns = groups
Group number = number of electrons in outer shell.
Elements in each group have similar properties.



Group 0 (Noble Gases)

-Full outer shell – unreactive as they don't need to lose or gain any electrons

He
Ne
Ar
Kr
Xe
Rn

As you go down…
- Boiling point increases
- More electron shells
- Bigger atoms
- More intermolecular forces
- More energy needed to break forces.

Group 1 (alkali metals)

- Similar properties as all have1 electron in outer shell.
- All lose one electron in reactions to form 1+ ions
- Soft, grey, shiny metals
- Stored in oil as would react with oxygen in air.
- When placed in water they produce an alkali (hence alkali metals) and hydrogen gas

E.g Lithium + water lithium hydroxide + hydrogen

Reactivity of Group 1

Li
Na
K
Rb
Cs
Fr

Asyou go down the group…
- Elements are more reactive because:
- More electron shells
- Outer electron = further from nucleus and more shielded by the other shells
- The electrostatic force of attraction between outer electron and nucleus is weaker
- Easier for outer electron to be lost

Group 7 (Halogens)

- 7 electrons in outer shell – all react similarly
- All gain one electron when they react to form 1- ions
  - Form molecules (e.g. Cl2, F2)
  - Non-metals.
  - A more reactive halogen can replace a less reactive halogen in a reaction **(displacement)**

Reactivity of Group 7

F
Cl
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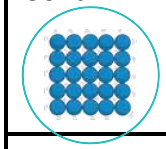
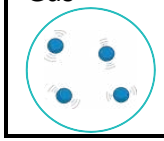
As you go down the group…
- Elements **are less** reactive because:
- More electron shells
- Outer shell is further from nucleus and is **more shielded** by the other shells
- The electrostatic force of attraction between free electron and nucleus is **weaker**
- Harder to attract an electron into the outer shell.

Particle model of matter

State	Pattern	Energy and movement	Forces between particles
Solid 	Ordered and all touching	Vibrate around fixed positions	Strong forces between particles
Liquid 	Random and touching	Move around randomly	Weaker than in a solid
Gas 	Random and far apart	Move around randomly	Weak forces of attraction

Models	+	-
Particle diagrams	Easy to see/draw arrangement	• Can't see the forces between particles • Particles look like flat circles rather than 3D spheres • Movement isn't shown
Kinetic models (eg marbles or animations)	Easy to see particle arrangement Can see the movement of particles	Can't see forces between particles

Density

Density is mass per cm3

It can be calculated using:

Density = mass ÷ volume

ρ = m ÷ V

Required practical – measuring the density of different materials.

For regular solids :

Mass measured by **top pan balance**

Volume measured by measuring **length x breadth x height**

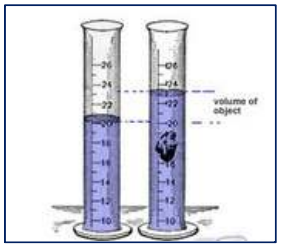
For irregular solids:

Mass measured by **top pan balance**

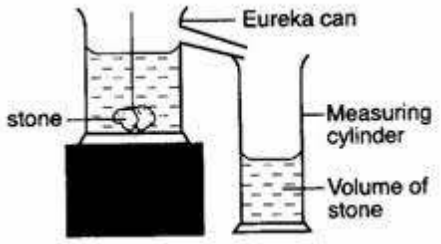
Volume measured by **displacement of water**

This means putting the object into water and measuring the volume of water 'pushed out'

Measure the volume of small objects by putting them into a measuring cylinder with 100cm3 water in

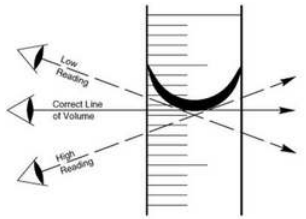


Measure the volume of larger objects by putting them into a full eureka can and catching and measuring the water that is displaced



Zero error

Read the meniscus!



Required practical continued : Density of liquids

1. Find the mass of an empty measuring cylinder using a top pan balance.
2. Pour a known volume (100ml) of liquid into the measuring cylinder.
3. Use the meniscus to measure the volume of the liquid accurately. This is the volume.
4. Now measure the mass of the measuring cylinder + the liquid combined.
5. Subtract the mass of the empty measuring cylinder and this is the mass of the liquid.

Density = mass ÷ volume.

CYBERSECURITY

	Key words
adware	adverts for products a user may be interested in, based on internet history
authentication	verifying the identity of a user or process
biometrics	'password' created from the user fingerprint, iris, retina, facial, voice
blagging	inventing a scenario to obtaining personal information
CAPTCHA	Completely Automated Public Turing Test To Tell Computers and Humans Apart
DoS/DDoS	Denial of Service attack/Distributed Denial of Service
encryption	mathematically converts data into a form that is unreadable without a key
	checks incoming and outgoing network traffic for threats
firewall	gaining **unauthorised**access to or control of a computer system'
hacking	a variety of forms of hostile or intrusive software
malware	testing a network/program for vulnerabilities
penetration testing	redirecting web traffic to fake websites designed to gain personal information
pharming	messages designed to steal personal details/money/identity
phishing	virus which locks a computer and encrypts files until a "ransom" is paid
ransomware	hackers with no technical hacking knowledge using downloaded software
script kiddies	directly observing someone enter personal details e.g. PIN number, password.
shouldering	manipulating people so they give up personal/confidential information
social engineering	gathers information about a person or organisation without their knowledge
spyware	masquerades as having a legitimate purpose but actually has malicious intent
trojans	self-replicating software attached to another program/file
viruses worms	Replicate and spread through the network

Cybersecurity lookingatcommonattacks andmethodstoprotect ourselves and our networks against these attacks.

Hackinginthecontextofcyber security is gaining **unauthorised** access to or control of a computer system .
Unethical versus ethical hacking
Penetration testers (pen testers) are people who are paid to legally hack into computer systems with the sole purpose of helping a company identify weaknesses in their system.

It is the law

Data Protection Act 2018:
All organisations and people using and storing personal data must abide by the DPA principles . It states how data should be stored/accessed and what rights a data subject has for the protection of their data.
Computer Misuse Act 1990: It is an offence to:
1.have unauthorised access to computer material
2.have unauthorised access with intent to commit or facilitate the commission of further offences
3.commit unauthorised acts with intent to impair, or with recklessness as to impairing, the operation of a computer.

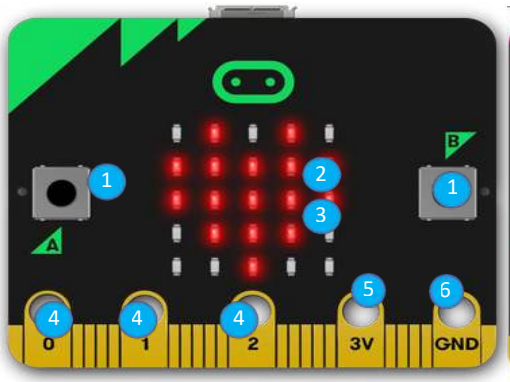
Network and System **security measures** include:

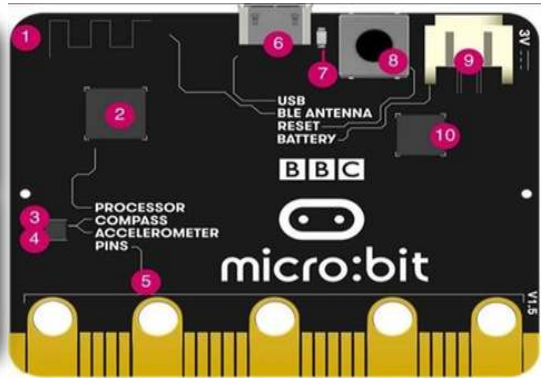
Anti-malware
passwords
User permissions
firewall
biometrics
User authentication
encryption
Auto updates
Penetration testing

MICRO-BITS

The micro: bitisapocket-sizedcomputerthatintroducesyou tohowsoftwareand hardwarework together. IthasanLED light display, buttons, sensors and many input/output features that you can program and physically interact with.

Keywords	
Micro:bit	Asmallcomputerwithamicroprocessorthatcanexecuteasingleprogramatatime.
Buttons	Capture user input and makes things happen
LED display (Light Emitting Diodes)	5x5 LED matrix output used to display information.
Light Sensor	Input,measureshowmuchlightisfallingonthemicro:bit.
GPIO (General-Purpose InputOutput) pins	Inputandoutputconnectsheadphone,sensetouchandaddotherelectronics.
Temperature sensor	Input measures how warm the environment is.
Compass	Input,findsmagnetic north ormeasures magnetic field strength
Accelerometer	Input detects gestures and measures movement in 3 dimensions.
Radio	Communication inputandoutput allowscommunication with other devices
Algorithm	A set of instructions to be followed to complete a given task or solve a problem.
Program	A sequence of instructions used by a computer.
Sequence	The order which the computer willruncodein,one line ata time.
Selection	A decision made by acomputer, choosing what codeshould berun only when certain conditionsare met.
Condition	Checking to see whether a statement or sum is true or false.
Iteration	When a section of code is repeated several times – also known as looping.
Variable	Something which can be changed in a computer. Made up of a name and some data to be saved.





1. **Buttons: input**
2. **LED display: output**
3. **Light sensor: input**
4. **Pins –GPIO: input/output**
5. **Pin -3 volt power**
6. **Pin -Ground**

1. **Radio & Bluetooth antenna**
2. **Processor & temperature sensor**
3. **Compass**
4. **Accelerometer**
5. **Pins**
6. **Micro USB socket**
7. **Single LED**
8. **Reset button**
9. **Battery socket**
10. **USB interface chip**

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**.
Translatingthe 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.

Python with data

IT AND THE WORLD OF WORK

Keywords	
~~Local software~~	• Needs time to beinstalledonallcomputers • Licences may be bought for staff who do not use all of the • availablesoftware in the package • Has tobemaintained andupdated bymaintenance people Users must be using the computer on which the software is installed
Cloud storage	• Files are stored on remote servers • When you want to access the file or media, they are downloaded or streamed to your device • Files or media can also be uploaded to the cloud for storage (useful for backups) • Files or media can be synchronised on more than one device so that each device has the same content • The amount of storage can be increased or decreased as needed (it's scaleable)
Ad hoc network	Created with a temporary device-to-device connection without the need for a connection to a Wi-Fi access point or router
VPN	A VPN will route your data traffic via the virtual server. This will hide/cloak your data from potential hackers
Mental well-being	Mental well-being describes your mental health, how well you cope with day-to-day life, how you feel, and how confident you are (good self-esteem).

Accessibility tools

Technologyistransforming the way individuals with a disability access the world around them. This increases the opportunity for these individuals to successfully develop a career of their choice.

- Voice recognition that converts spoken word to digital text
- Screen readers that read screen text out loud
- Closed captioning or subtitles
- Motion or eye tracking
- Switch devices, which take the place of mice or keyboards

Reader pen

The impact of Technology

Positive

- Apps can encourage physical activity
- Enhances access to learning
- Wearable technology can track heart rate
- Diabetics can track blood sugar levels and receive warnings if it is high or low, helping them to manage their well-being
- Allows flexibility in choosing a working style

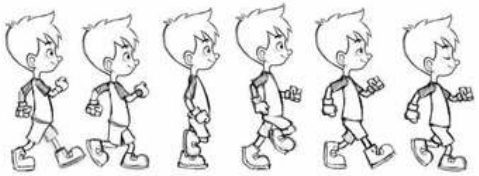
Negative

- Can reduce sleep quality
- Eye strain/poor vision
- Repetitive strain injuries
- Physical inactivity can lead to weaker muscles
- Overuse can lead to: Loneliness, Depression, Anxiety

Traditional vs modern workplace

Traditional	Modern
Takes time to travel to and from the workplace	Use of technology allows flexibility
Formal work wear	Teams can be local, national, or global
Desks/workstations	Communication can be immediate
Labour-intensive tasks	Data/information is sent digitally and quickly
Slow communication	Increased productivity
Sociable	Can be isolating
9-to-5 hours	

BLENDER - MEDIA ANIMATIONS



Stop motion-manually animate every frame of the animation e.g. Shaun the Sheep ● **slower to make animations** ● **More difficult to edit**	**Keyframe animation**-pick the important locations, the keyframes and the computer works out the rest (called tweening) e.g. Pixar films ● Faster to make animations ● Easier to edit ● Smoother animations ● Repeatable

Key words		
add	colour	cut
edge	knife tool	extrude
face	keyframe	focus
edit	vertex	location
loop	tweening	object
organic	proportional	rotate
render	ray tracing	scale
timeline	subdivision	mode

Definitions	
Face:	A surface made up of three or more sides. **Faces** are often referred to as **polygons.**
Vertex:	A point where one or more edges meet
Edge:	A line connecting two vertices
Objects:	Scenes are made up of geometric, control, lamp and camera objects
Keyframes:	Used for tracking change, a key is a marker in time
Ray tracing:	Rendering that involves tracing the path of a ray of light through the scene
Rendering:	The process of computationally generating a 2D image from 3D geometry
Subdivision:	Creating smooth higher poly surfaces which can take a low polygon mesh as input.
Proportional editing:	Transforming selected elements
Extrude:	Extend an object

Literacy / key words

Kosher: Prepared food that follows the requirement of Jewish dietary laws.

Halal: Slaughtered or prepared using a method that follows Islamic dietary laws.

Vegetarian: Someone who chooses to not eat any meat.

Lacto-ovo Vegetarian: someone who doesn't eat any meat or fish, but consumes milk, eggs and other animal products.

Vegan: Someone who doesn't eat any products derived from animals, e.g. meat, eggs and cheese.

Lacto-Vegetarian: Someone who doesn't eat any meat, fish or eggs, but consumes milk and other dairy products.

Ethical eating or food ethics: refers to the moral consequences of food choices.

Coeliac disease: where the digestive system is sensitive to gluten and can't digest it.

Gluten: a protein found in wheat flour, that makes dough stretchy.

Proteins: are made up of chemical 'building blocks' called amino acids.

Malnutrition: a physical condition resulting from either a faulty or inadequate diet or from a physical inability to absorb or metabolize nutrients.

Lactose Intolerance: a digestive problem where the body can't digest lactose (milk sugars).

Allergy: an immune system response to a certain substance (an allergen), e.g. fish, nuts or eggs.

What makes us choose?
Special Occasions
Culture
Likes and dislikes
Time of Day
Morals
Health Conditions
Age
Cost
Religion

Religious Beliefs **Hinduism**: most avoid beef & related products; some vegetarians; some avoid eggs **Judaism**: kosher; avoid pork & shellfish; **Islam:** halal; avoid pork & related products; no alcohol **Buddhism**: most are vegetarian or vegan; avoid alcohol.

Type of vegetarian	Meat	Fish	Dairy	Eggs
Vegan	✗	✗	✗	✗
Pescetarian	✗	✓	✓	✓
Lacto	✗	✗	✓	✗
Lacto-ovo	✗	✗	✓	✓

Vegetarian alternatives to meat

Quorn- cultured fungus

Soya- soya bean

TVP- Textured vegetable protein

Tofu-soya bean curd

What is a Vegan diet	eat no animal flesh /meat/fish and poultry and no animal products
What is a lacto vegetarian diet	eat animal produce (Dairy) but not eggs or the flesh of animals/meat/fish/poultry
What is a lacto- ovo vegetarian diet	eat animal produce (Dairy and eggs) but not the flesh of animals/meat/fish/poultry
Why might someone choose to be a vegetarian?	Religious beliefs /Moral beliefs – cruel to kill animals/ Do not like the flavour, texture of meat / Land growing crops can feed many more people than land raising animals / Food scares – BSE, food poisoning, salmonella / Family influence/habits /Peer pressure
What foods can vegetarians get protein from?	Good vegetarian sources are Quorn, Tofu, Soya, Cereals, Pulses, Nuts & Lentils (some may also get this from diary and eggs)
What foods can vegetarians get non- haem Iron from?	Found in pulses, nuts, dried fruit, dark green leafy veg, dark chocolate, cocoa powder, black treacle, curry powder.
What foods can vegetarians get Vitamin B12	Found in yeast extract, marmite and fortified breakfast cereals
Vitamin B12 is needed to:	Needed for energy production, formation of red cells

Extra - Read/watch/do

https://www.youtube.com/watch?v=D6eor1wkNFY

Youwillbeassessedon: Factors influencing food choices; Health ConditionsandFat; Macro-nutrients, energy and nutritional analysis; Life stages and nutritional needs; Food Science investigation Starch and sugars; Nutritional analysis of one dish.

Linkstocurriculum: Recognise the factors influencing food choice, including such as preference, ethical belief, availability, season, need, cost, packaging, food provenance, culture, religion, allergy/intolerance, advertising, body image and peer pressure;.

Diet Related Health conditions

Cardiovascular Disease (CVD) This is the general term that describes disease of the heart or its blood vessels. The term includes coronary heart disease and stroke in which arteries carrying blood around the body become blocked with fatty deposits (cholesterol) and consequently blood flow is reduced. CVD is linked to poor diet and lifestyle traits such as obesity, high blood pressure, a diet high in cholesterol and lack of exercise. To reduce the outcome of CVD it is important to follow dietary guidelines and eat a diet that is low in saturated fat and instead eat foods higher in unsaturated fat such as oily fish, nuts and seeds, olive oil and the recommended 5-a-day of fruit and vegetables.

Diabetes: Type 2

~~The body may~~ produce too little insulin, or the body has become insulin resistant and cannot utilise the glucose produced by carbohydrates. To help prevent this condition, people should follow the healthy eating guidelines, exercise and maintain a healthy weight. This kind of diabetes usually affects people who are overweight or older. If a person is overweight, they are twice as likely to get type 2 diabetes. Therefore, a high-sugar diet and high-fat diet should be avoided.

Iron Deficiency Anaemia

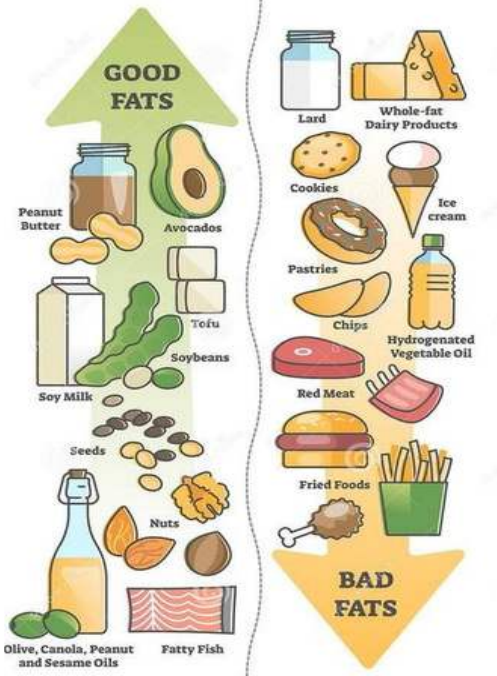
Iron is important in making red blood cells, which carry oxygen around the body. Iron deficiency anaemia results in the person affected feeling tired and lethargic because organs and tissues will not get as much oxygen as they need.

Good sources of iron include liver (avoid during pregnancy), eggs, red meat and dried fruit e.g. dried apricots and most dark green leafy vegetables.

Obesity This is the term to describe a person who is very overweight, with a lot of body fat. It is a common problem in Western society. The method to determine if a person is overweight is to measure their BMI.

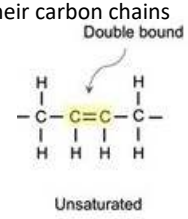
Nutrient Needs for Teenagers

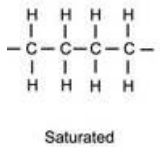
Nutrient	Reason	Examples of Foods
Protein	Cope with growth spurts. Boys muscular tissue development.	Omelettes chicken
Iron	Girls loose iron during menstruation and could become anaemic if not replaced.	Spinach, beef
Vitamin C	Vitamin C helps absorb iron	Peppers, strawberries
Calcium	Skeleton grows rapidly.	Milk, yogurt, kale , tofu
Vitamin D	These nutrients help reach peak size and bone density	Tuna, Salmon, Mackerel



Unsaturated fatty acids contain at least one C=C bonds in their carbon chains

Saturated fatty acids only have single C-C bonds





Literacy / key words Gelatinisation: When starch particles swell and burst, thickening a liquid.

Viscosity: a measure of a food's resistance to flow, indicating how thick or thin it is.

Consistency: refers to the texture and form of food, which can range from liquid to solid.

Dextrinization: occurs when starch is exposed to dry heat. Starch in bread, biscuits and cakes with dry heat (toasting/baking) causes the starch molecules to break down to dextrin (brown colour)

Caramelisation: Sugar molecules break down when they reach a high temperature causing the sugar to turn brown and change flavour.

Roux: a sauce base made from plain flour and melted butter.

Carbohydrates: aresugar molecules. Along with proteins and fats, carbohydrates are one of three main nutrients found in foods and drinks. Your body breaks down carbohydrates into glucose. Sugars, starches and dietary fibre are carbohydrates.

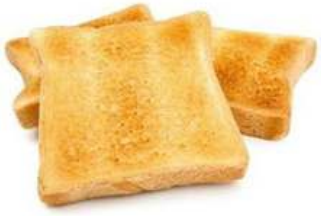
Glucose: or blood sugar, is the main source of energy for your body's cells, tissues, and organs.

Sugars:

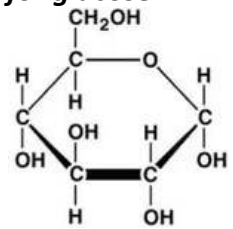
- Monosaccharide are the simplest form of
- carbohydrate and can't be broken down.
- Disaccharide is thesugar formed when two monosaccharides are joined by glycosidic linkage. Polysaccharides are macromolecules made up of more than ten monosaccharides joined by glycosidic bonds.

Gelatinisation: making a Roux Sauce

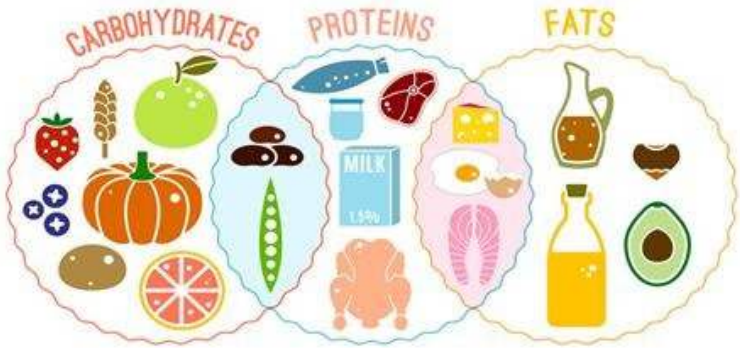
Dextrinization

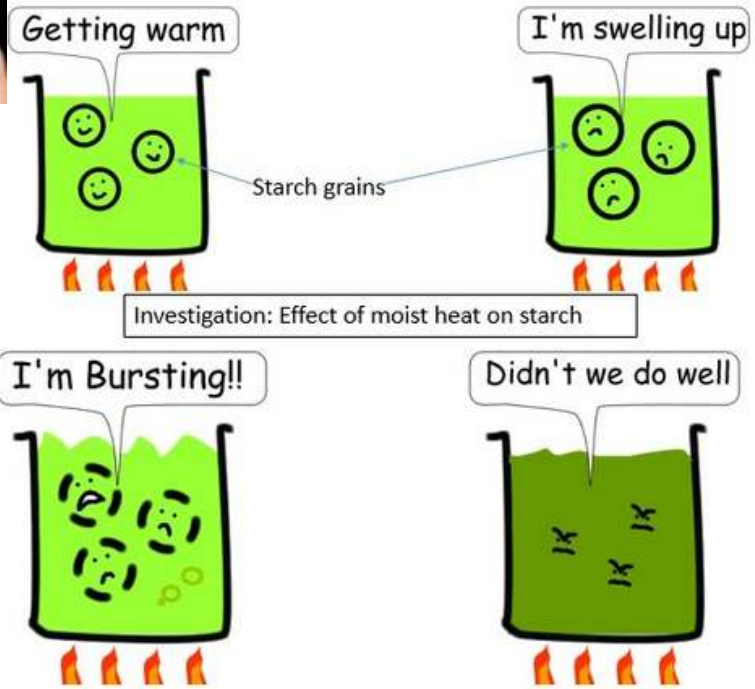


Chemical formula for glucose



a. The starch grains when **heated** between 62◦C and 80◦ C with the liquid **absorbs the liquid.**
b. As it does so it **swells/expands.**
c. When it is no longer able to hold any more liquid the **starch grains burst** to release starch causing the **sauce to thicken.**





Gelatinisation occurs when the starch grains absorb water and ruptures to thicken a sauce or in the cooking of rice and pasta.

Key Terms **BMR:** Basal Metabolic Rate is the amount of energy we need to keep our body alive.

Energy balance: The amount of energy we get from food each day is the same as the amount of energy we use each day.

BMI: This is a measure that adults and children can use to see if they are a healthy weight for their height.

Energy Dense: foods containing high amounts of fat and carbohydrates (especially sugar) e.g. pizza, pastry, chocolate cakes, pastries, cookies, meat products i.e. sausages, burgers).

Kilocalorie (Kcal)/ kilojoule (Kj): units used to measure energy.

PAL: (Physical Activity Level): the amount of energy we use for movement and physical activity every day.

Functions in the body:
Everyone needs energy to survive. It allows the body to:

- Move muscles and be physically active
- Produce heat to keep warm
- Send messages to the brain to make nerves work
- Allow the body to grow and develop

Amount of energy needed daily by each nutrient: Carbohydrate: 50%. Most of which should come from starch, intrinsic and milk sugars.
No more than 5% of the energy from carbohydrate should come from free sugars, intrinsic sugar found in fruit and vegetables.
Fat: 35% or less eat less saturated fats.
Protein: 15%

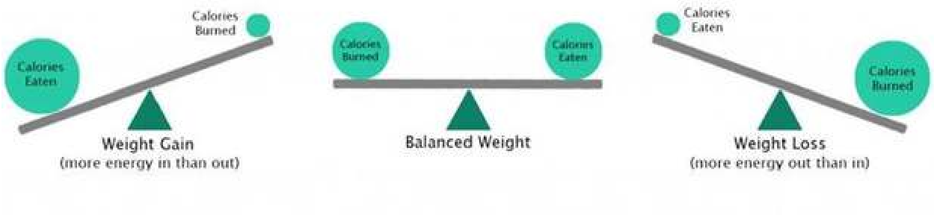
Sources:

Carbohydrate: foods containing sugar and starch

(1g of carbohydrates = 3.75 /4 kcals of energy)

Fat: foods containing visible and invisible fats and oils. (1g of fat = 9 kcals of energy)

Protein: (1g of protein = 4 kcals of energy)



Physical Activity Level: Regular exercise is an important part of a healthy lifestyle.

Physical activity :

- Reduces risk of developing heart disease, obesity and some cancers.
- Improves health of muscles and skeleton
- Keeps the brain alert and working
- Makes people feel good about themselves.
- Health experts are concerned about the sedentary (inactive) lifestyles due to too much sitting for long periods of time e.g. working at a desk, watching television, using the internet or playing computer games.

The recommended physical activity needed daily is suggested to be:

- 5-18 years: aim for an average of at least 60 minutes of moderate intensity physical activity a day across the week
- 19-64years: aim to do at least 150 minutes of moderate intensity activity a week or 75 minutes of vigorous intensity activity a week.

Energy Balance: The amount of energy we take in from food must be used up by our Basal Metabolic Rate and Physical Activity Level.

If we take in more energy from the food we use every day , the energy we do not use will be stored as fat and the body will gain weight.

If we take in less energy from food than we use every day, the energy stored in body fat will need to be used and the body will gradually lose weight.

This is the basis of weight reducing diets.

https://www.youtube.com/watch?v=D6eor1wkNFY

Design and Technology . CAD CAM

Literacy / key words

CAD and CAM
Computer Aided Design (CAD)
drawing allows products s to be manufactured using
Computer Aided Manufacture (CAM)
Computer aided manufacture is very fast and accurate and requires less human intervention

One-off production: Making a single, unique product, often by hand, like a custom-made item or prototype.

Batch production: Making a set number of identical products in groups, like baking50cookiesatonce.

Mass production: Making thousands of identical products quickly using machines and assembly lines, like in a car factory.

CAD Computer Aided Design

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

CAD Computer Aided Manufacture

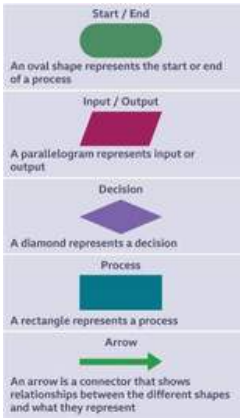
This is using computer software to control machine tools to make products.

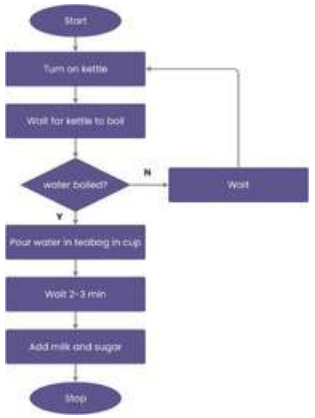
Examples:
Laser Cutter, 3D printer

Advantages:
- Faster
- Complicated shapes are easily produced
- Exact copied are easily made
- Machines can run 24/7

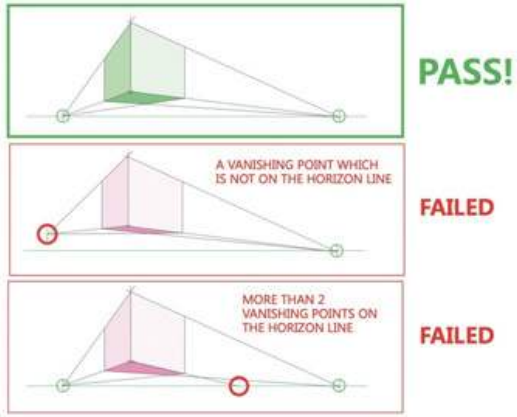
Disadvantages:
- High initial set up costs as CAM machines are expensive

Flow charts





2 point perspective



Extra-Read/watch/do

Watch and read
Who was Zaha Hadid

https://www.bbc.co.uk/bitesize/articles/zd48239#zqtsg2p

Youwillbeassessedon
- Your knowledge of CAD CAM Your ability to write a specification
- Your completed product (cad and physical prototypes)

Links to curriculum

Make
select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture