AUTUMN KNOWLEDGE ORGANISER

YEAR 7

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Literacy / key words

Portrait - a picture that shows a person's face.

Self-Portrait - a picture an artist makes of themselves.

Proportion - making parts of a drawing the right size compared to each other.

Simplicity - simplicity means not adding too many details.

Abstract - using shapes, colours and lines instead of realistic images.

Expressions - the different lines, dots, or textures an artist creates to build up a drawing or painting.

Likeness - the recognisable appearance and features of a person.

Features - the eyes, nose, mouth, ears, and eyebrows.

Portraiture

Portraiture is a type of art that focuses on showing a person's face, whether through paintings, drawings, photographs or sculptures. The main goal is to capture a person's personality and emotions. Self-portraits are artworks where artists show themselves. These works allow artists to explore their own emotions and thoughts. Both portraiture and self-portraits help express identity and emotions, offering a look into the people, places and cultures that they come from.

YEAR 7 What is Portraiture?

Proportion

Artists use guidelines to divide the face into sections, helping to position the eyes, nose, and mouth correctly. Understanding these proportions is crucial for creating realistic portraits, as they ensure that features are in harmony with one another.

Facial Proportions

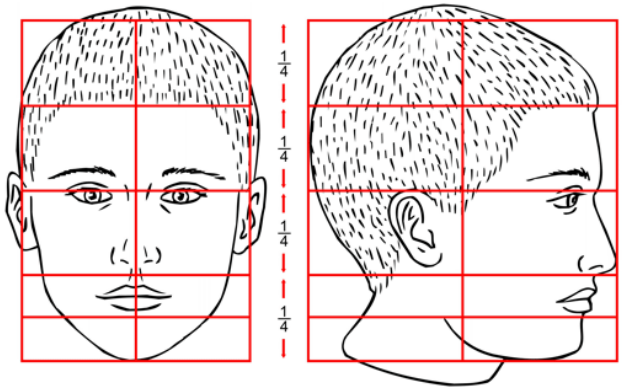
1. The face is 5 eyes wide, with 1 eye's width between the eyes.
2. The eyes are positioned halfway down the head, dividing the face into equal upper and lower halves.
3. The width of the nose is the same as the distance between the inner corners of the eyes.
4. The mouth is generally positioned one-third of the way down from the bottom of the nose to the chin.
5. While no face is perfectly symmetrical, each side of the face should have a similar overall shape and size, helping to create a balanced appearance.

Julian Opie

Julian Opie is a portrait artist famous for his unique style. He transforms realistic portraits into simple, abstract characters using bold lines and flat colours. The facial features are bold and simple yet they still create an accurate portrait with a key likeness.

Florian Nicolle

Florian Nicolle is known for his striking illustrations. He combines traditional, realistic drawing in neutral colours with abstract and bold marks. His work often features strong lines and vibrant colours, capturing the facial expressions in an interesting way.



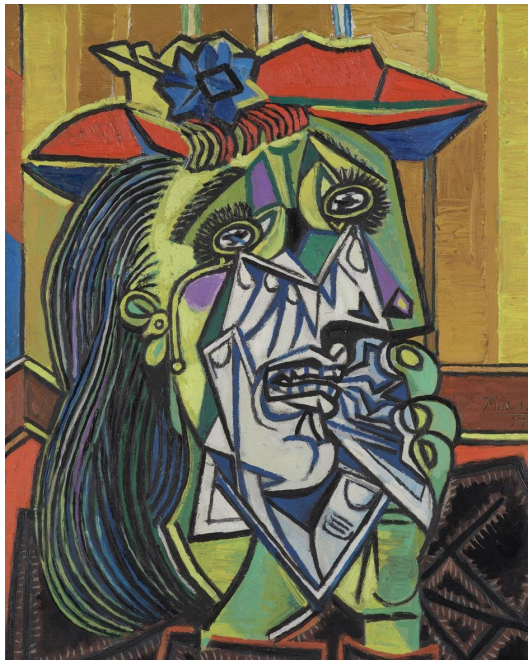
Extra - Read/watch/do

- https://www.bbc.co.uk/teach/class-clips-video/articles/zk28qp3 - BBC bitesize 'How to Draw a Portrait'
- https://www.bbc.co.uk/bitesize/guides/z3dthv4/revision/1 - BBC Bitesize 'Portrait Painting Styles'
- https://www.youtube.com/watch?v=wfosxuah1uk – 'How To Draw a Quick, Simple, and Easy Self-Portrait'

Art & Design

Pablo Picasso

Picasso was a Spanish artist known for creating new art styles, like cubism, where he painted people and objects with broken-up shapes and angles. He also used bold colours, unusual shapes, and experimented with different textures in his work. Besides cubism, Picasso worked in many styles, including realism, surrealism, and abstract art. His creativity changed how people see art, making it more imaginative and expressive.



Collage

A collage is an art technique where you glue different materials like paper, fabric, or photos onto a surface to create a new image. It's a way to mix colours, textures, and shapes for unique effects.

Watercolour

Watercolour is a painting method using water to spread colour smoothly and lightly across the paper. It's great for creating soft, transparent layers and blending colours easily.

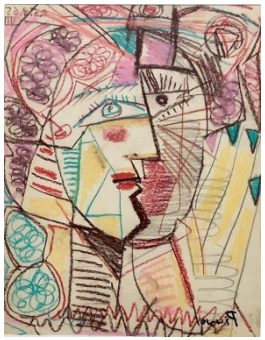
Sgraffito

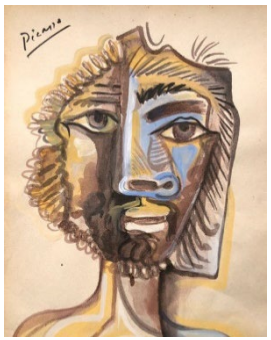
Sgraffito is an art technique where you scratch through a top layer of paint or clay to reveal a different colour underneath. It creates interesting textures and patterns by showing the contrast between the layers. It is often used in pottery.

What techniques will I learn?

Oil Pastel Transfer

Oil pastel transfer as a printing method involving colouring an area with oil pastels, placing a clean sheet of paper on top, and then drawing or pressing over it to transfer the pastel onto the new sheet.





Relief Printing

Relief print is a method where you carve a design into a surface, cover the raised areas with ink, and press it onto paper to make a print. This technique creates bold, textured designs and is commonly used with wood or linoleum.

You will be assessed on

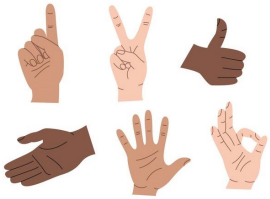
- Term 1 - Self-Portrait (tonal shading)
- Term 2 - Negative space (oil pastel transfer)
- Term 3 - Picasso portrait (watercolour)

Links to curriculum

English and History - In our lessons, we will look at a different artist each time and talk about their artwork, helping you learn to describe and discuss what you see.

Body Language - Body language is communication by movement or position, particularly facial expressions and gestures.

Facial Expressions - A facial expression conveys an emotion that tells us about the character and the way they react to the situation



Gesture - A movement of part of a hand or the arm, to express an idea or meaning.

Tableau - In a tableau, participants make still images with their bodies to represent a scene

Levels - The use of different heights e.g. stood up or sat down to show how powerful a character is.

Proxemics - The distance between character/actors and what that means about their relationship/feelings/situation.

AUDIENCE

The people who watch a performance.

PERFORMANCE

A piece that is presented to an audience.

Mime

Success criteria for using this technique:

Exaggerated movement

Remember to show the weight and size of the object

Pitch

High or low

Volume

Loud or quiet

Pace

Slow or fast

Tone

The emotion in the voice

3 EXAMPLES OF VOCAL TONE:

Angry, happy, shocked

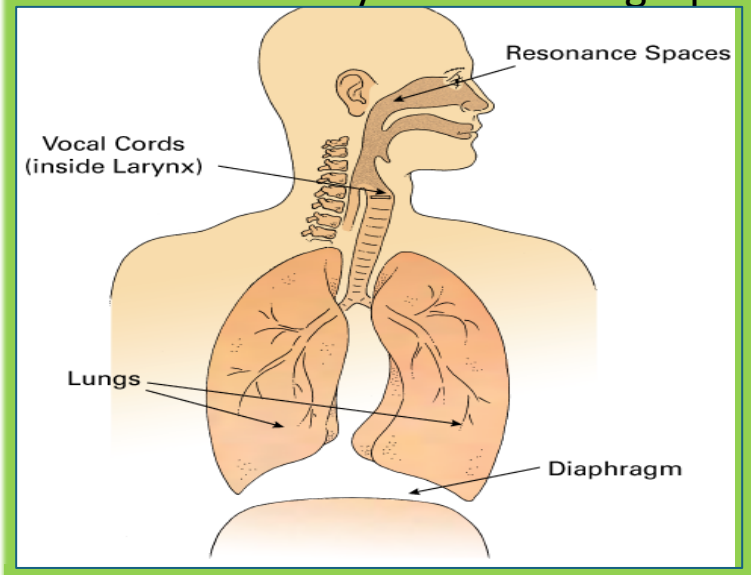
THE THREE C's OF DRAMA

Concentration
Cooperation
Communication

Upstage right	Upstage Centre	Upstage left
Stage right	Centre stage	Stage left
Downstage right	Downstage centre	Downstage left

Audience

The Anatomy and Warming Up



How to warm up the three areas

Mouth:

- Tongue twister
- Chew the toffee
- 'My Mum'
- Mouth stretches 'A, E, I, O, U'

Vocal cords/ Larynx:

- Rollercoaster
- Humming/ Singing exercises

Diaphragm and Lungs:

- Controlled breathing exercises/ square breathing

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

Larynx Vocal chords Enunciation Vocal range Pitch
Intonation Major Minor Diaphragm
Voice Projection Dynamics Crescendo Diminuendo

SINGING SKILLS

Year 7 Autumn Term

DYNAMIC MARKINGS

Term	Symbol:	Effect:
pianissimo	*pp*	very soft
piano	*p*	soft
mezzo piano	*mp*	moderately soft
mezzo forte	*mf*	slightly loud
forte	*f*	loud
fortissimo	*ff*	very loud
fortepiano	*fp*	loud then soft
sforzando	*sfz*	sudden accent
crescendo	<	gradually louder
diminuendo	>	gradually softer

Stage Presence:

When performing a piece of music to an audience it is very important you sound good and present yourself well. Besides knowing your words and singing in tune there are some basic elements you need to consider:

- ENUNCIATE your words clearly
- PROJECT your voice by engaging your diaphragm
- Face the AUDIENCE
- ENGAGE with the music – appropriate facial expressions
- WATCH the conductor/ group leader
- Don't fidget
- Stand up straight – GOOD POSTURE gives the impression of confidence
- Look smart
- Enter and leave the performance area in a professional manner

KEY WORDS AND MEANINGS:

Vocal Range	The range of pitches that an individual human voice can reach.
Intonation	The variation in the pitch level of the voice (the ups and downs). **Intonation** can be very expressive and demonstrate surprise, anger, wariness etc.
Diaphragm	A thin muscle that sits at the base of the chest and separates the abdomen from the chest. It contracts when you inhale - which pulls air into the lungs. When you exhale, the **diaphragm** relaxes and the air is pushed out of lungs.
Larynx	Otherwise known as the voice box, it is an organ in the top of the neck involved in breathing, **producing sound** and protecting the trachea against food aspiration.
Voice Projection	The strength of speaking or singing whereby the voice is used powerfully and clearly, even when singing quietly or whispering.
Enunciation	The act of pronouncing words clearly.
Pitch	How high/low a sound is
Major tonality	A ‘happy’ sounding collection of notes.
Minor tonality	An ‘unhappy’ sounding collection of notes.
Dynamics	Volume.
Crescendo	Gradually getting louder.
Diminuendo	Gradually getting quieter.

Treasure Island

Autumn 1:

Key Terminology

1	explicit characterisation	Something the author tells us directly about a character e.g. their age, appearance, job, address, likes, dislikes.
2	implicit characterisation	Something we have to infer about a character through their actions, their dialogue, what others say about them.
3	exposition	Refers to part of the story used to introduce background information about events, settings, characters etc. to the reader.
4	hero	A main character in a literary work who, in the face of danger, combats adversity through feats of resourcefulness, bravery or strength.
5	protagonist	The central character or leading figure in a poem, narrative, novel or any other story.
6	antagonist	The character who opposes the protagonist.
7	exposition	Refers to part of the story used to introduce background information about events, settings, characters etc. to the reader.
8	quest narrative	The main character, goes on a journey in search of something. The quest usually involves several hurdles and challenges, which the character must overcome
9	Bildungsroman	A novel that concerns itself primarily with the educational, emotional and moral development of the main character, usually from youth into adulthood.
10	verb	Usually has a tense. It can be an action but can also name states or feelings.
11	adjective	Used to modify a noun
12	expanded noun phrase	A group of words made up of a noun and words to describe that noun (such as adjectives and prepositional phrases).
13	first person narrative	A narrative or mode of storytelling in which the narrator appears as the 'I', recollecting his or her own part in the events which occur, either as a witness to the action or as an important participant in it.
14	setting	The time and place of the story, including the physical location, weather and cultural surroundings.

Vocabulary

A	pirate	A person who robs or commits illegal violence at sea or on the shores of the sea.
B	colonialism	A practice by which one country controls people or areas in another country, often by establishing colonies.
C	archetype	Something that a perfect or typical example of a particular kind of person or thing, because it has all their most important characteristics.
D	trait	A trait is a particular characteristic, quality, or tendency that someone or something has.

Literacy (spellings)

1. **Rebellion** – going against established order
2. **Resistance** – fighting against something/ someone
3. **Oppression** – being treated as lesser/ having rights taken away
4. **Illiterate** – being unable to read/write
5. **Systemic** – an idea or problem built into an organisation or society that is greater than individuals
6. **Verse** – story told in poetry
7. **Exploit** – take advantage of
8. **Coercion** – manipulate or control
9. **Aspiration** – having dreams/ ambitions
10. **Techniques** – in English language features used to describe e.g. 'simile'

Autumn 2: Run Rebel

Purpose of Non-Fiction

Adjectives - character (Q)

- Rebellious
- Cruel/ callous
- Loving/ kind
- Bitter/ disappointed
- Abusive/ controlling
- Traumatised
- Paranoid
- Ambitious/Determined
- Stubborn/ defiant
- Naïve/ ignorant
- Brave
- Obedient/ disobedient

- ***Language Techniques***
- **Direct address** (using 'I' to speak directly to the audience)
- **Alliteration** (repeating same sound e.g. 'Amazing Amber')
- **Rhetorical question**
- **Repetition**
- **Emotive language** (language with strong emotion e.g. 'scream/shout' rather than 'say')
- **Superlative** (showing highest degree e.g. 'most/ fastest)
- **Triplet** (list of 3)
- **Simile (**compare with link/as**)**
- **Hyperbole** (exaggeration for effect)
- **Metaphor** (comparing directly, without like or as)
- **Personification** (describing the non-human as human)
- **Modal verb** (shows possibility or obligation e.g. may, must, should, have to etc)

Key characters:

Amber Rai – British-Punjabi teenager protagonist (main character). Wants to be a runner, but faces resistance from her family

Tara – one of Amber's best friends.

David – one of her best friends

Mum – Amber's mum. She is illiterate and works in a sweatshop

Dad- An abusive alcoholic who is also illiterate

Ruby – Amber's older sister who was forced into an arrange marriage

Tiya – Ruby's young daughter (Amber's niece)

Jas – Ruby's husband

Miss Sutton – Amber's running coach and PE teacher

Gemma Griffin – a classmate Amber often bullies; were once friends

Mr Jones – Amber's history teacher

Harpreet – an older girl in Amber's community who ran away for a 'love' marriage

Beena – David's mum who run a domestic violence refuge

The Man – a neighbour who was rumoured to have killed his disobedient daughter

Analytical paragraphs: QTA

Q (WHAT) – Make a clear point and link to a quotation to prove it

T (HOW) – Prove your point by exploring how techniques and words make the reader think/feel a certain way

A (WHY)- Explain why the writer chose to write in that way, linking to their message and/or context

QTA Sentence Starters: *Try to include at least one sentence of each colour!*

- (***Writer's name***) presents **(topic)** as… because… This is shown in the quotation "…".
- The (***word/technique***) suggests… because…
- Also, the (***word/technique***) emphasises… because…
- The reader will ***think/feel***… because…
- The writer intended to… because…/ The writer's message to the reader is… because…
- This links to the context of… because…

Paragraph rules

TIF: Poetic structure techniques

- **Rhyme scheme –** a pattern of rhyme in a text e.g. A/B/A/B means lines A rhyme and lines B rhyme
- **Free verse –** poem that doesn't follow a consistent rhyme/ rhythm pattern
- **Stanza –** verse or section of poem, like a paragraph in writing
- **Enjambment –** sentence that continues over the end of a line without punctuation; usually feels 'flowing' and increases pace
- **End stopped line –** sentence in poem that ends with a full stop as in prose writing (non-poetry)
- **Caesura –** pause with punctuation in the middle of a line; usually feels abrupt and shocking
- **Mis-en-page –** how a text looks on the page
- **Acrostic poem –** poem where specific letters, usually the first letter of each line, spell out a word or phrase when read vertically
- **Shape poem –** poem that looks like a specific object

High tier punctuation:

! = shows strong emotion

? shows a question

; (connects two main clauses/ 'replaces and/but' or full stop)

: (introduces list, separate subordinate clause, 'replaces because')

( ) (introduces extra information, subordinate clause)

– … – (introduces extra information, subordinate clause)

– (one dash shows a pause)

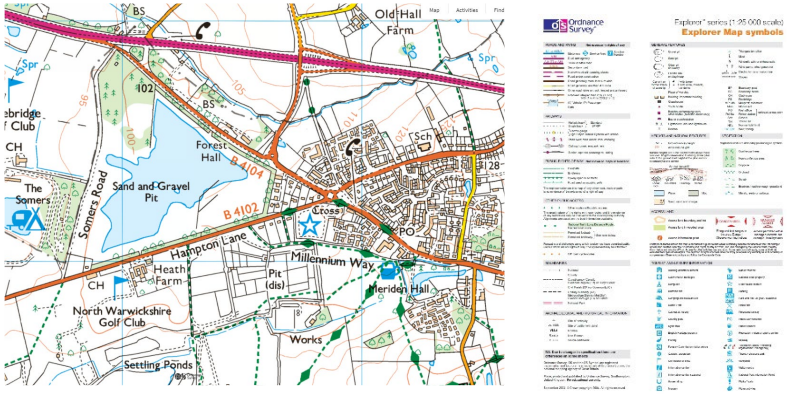
… ellipsis, showing an idea trailing off, building suspense

GEOGRAPHY: Year 7 - Skills and Climate

Literacy / key words

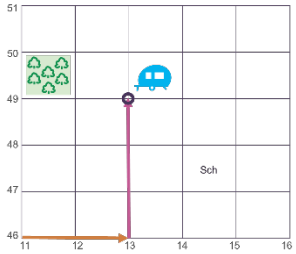
- **Continent** – One of the seven large land masses on Earth
- **Longitude** – The lines down the earth showing east or west
- **Latitude** – The lines across the earth showing north and south
- **Eastings** – The grid reference along the bottom
- **Northings** – The grid reference up the side
- **Contour lines** – Brown lines on a map that show height
- **Relief** – The height of the land
- **Topography** - The shape and physical features of an area
- **Altitude** - Height above sea level (measured in metres).
- **OS map** – Ordnance Survey is a map of areas of the UK

Maps and Symbols: OS maps use symbols to show human and physical features. Maps have a **title, labels,** a **compass rose,** a **scale** and a **key.**



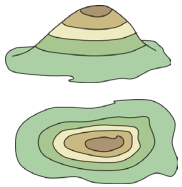
Four-figure grid references: These are used to describe locations on an OS map.

1. Look at the bottom-left corner of the square.
2. Find the **easting.**
3. Find the **northing.**
4. Write down the four-figure grid reference.

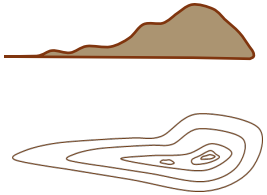


Relief: Height and slope on a 2D map can be shown using three methods:

Spot heights – a dot giving the exact height of a specific point.



Colour layering - different heights are shown by bands of different colours.



Contour lines – brown lines connecting areas of the same height.

Extra - Read/watch/do

- Investigate maps by going into online maps, getting an atlas from the library to buying your own. Use them to find out more about the human and physical features of different parts of the world.
- Watch documentaries about other parts of the world. Recommended ones include Planet Earth and Human Planet.

You will be assessed on

The key assessment skill in Year 7 is to describe. You should show an ability to:

- Say what the place is like – physical and/or human features
- Use key terms
- Give specific facts
- TIF: Explain why these features exist in that place

Links to curriculum

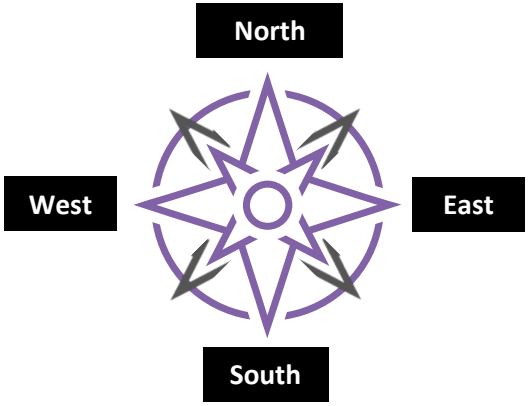
We will continue to use maps skills throughout every unit in KS3 and KS4. The characteristics of climate affect many different aspects of Geography, from ecosystems to development, so we will draw on our knowledge from this unit throughout KS3 and KS4.

GEOGRAPHY: Year 7 - Skills and Climate

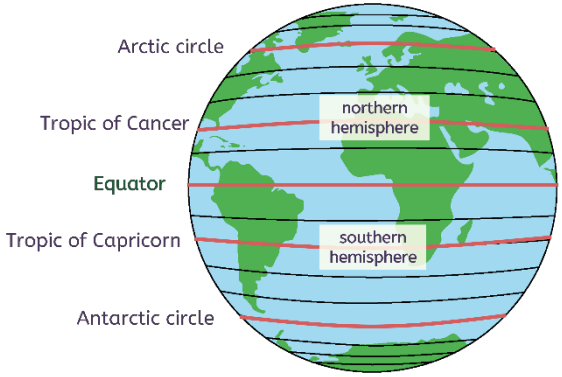
Continents and Oceans:

Countries in the UK:

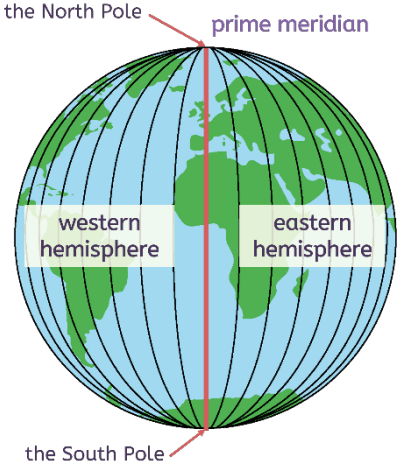
Compass rose:



Latitude:



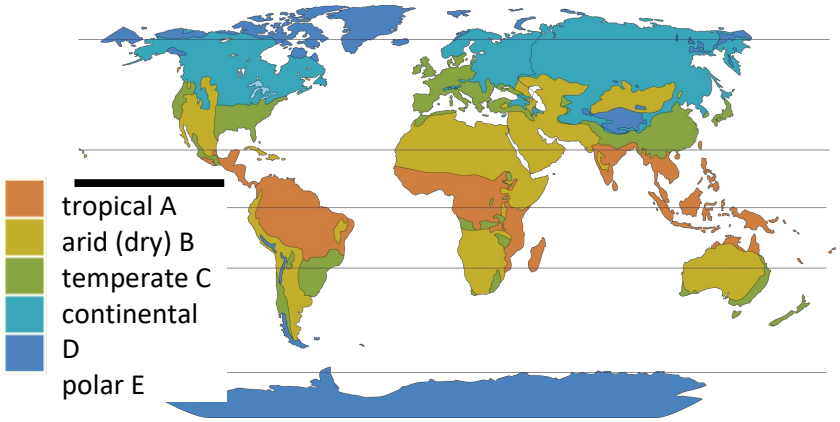
Longitude:



GEOGRAPHY: Year 7 - Skills and Climate

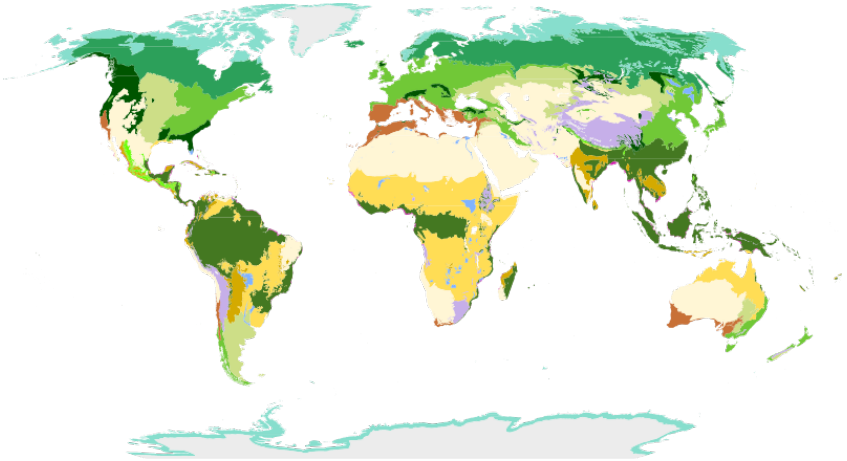
Literacy / Key Terms:

- **greenhouse gases** – gases such as carbon dioxide that trap heat within the atmosphere
- **the greenhouse effect** – the natural warming of the planet to its habitable temperature, caused by trapping heat in the Earth's atmosphere
- **the enhanced greenhouse effect –** the unnatural warming of the Earth due to increased greenhouse gases in the atmosphere
- **global warming** – the increase of average temperatures on Earth; this happens naturally but happens faster due to the enhanced greenhouse effect
- **climate change** – the change in the Earth's long-term weather patterns, including precipitation, wind and temperature
- **fossil fuel** – a (chemical) store of energy formed over millions of years from dead plants and animals.

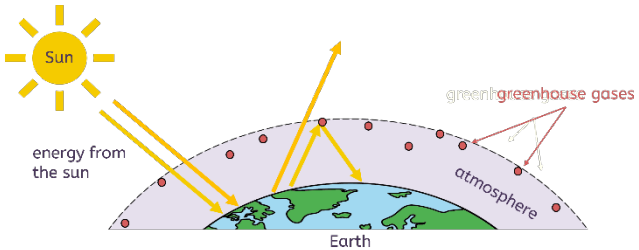


Climate Zones: Climate zones are areas in the world that have a similar climate. There are several major climate zones in the world, and the main six are shown on this map. The climate zones generally group together horizontally, following lines of latitude.

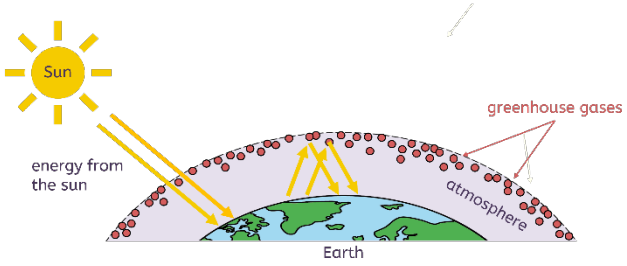
Biomes: Biomes are areas of the world that, because of similar climates, have similar landscapes and wildlife. Biomes are shown on the map.



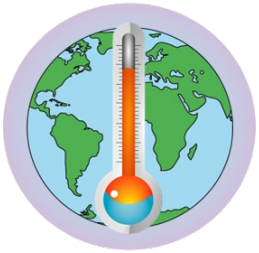
Greenhouse Effect:



The **greenhouse effect** is the **natural process, which** has always taken place, that keeps the Earth warm. Without it, the Earth would be too cold to live on. The light and heat energy are trapped in the atmosphere by greenhouse gases, such as carbon dioxide. This warms the Earth.



The **enhanced greenhouse effect** causes an **unnatural increase in temperature**. Human activities (such as burning fossil fuels, transport, waste, agriculture, deforestation) increase the amount of greenhouse gases in the atmosphere. The Earth warms more quickly, and global warming increases.

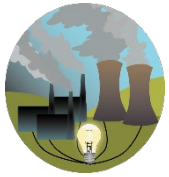


Accelerated global warming can also lead to other changes in the Earth's long-term weather patterns, such as precipitation, wind and storms. The changes to the Earth's wider climate – not just temperature – are called **climate change**.

Human causes of climate change:

Climate change is caused by:

- burning fossil fuels for transport and electricity generation, which releases greenhouse gases
- deforestation, which reduces the absorption of greenhouse gases
- agriculture and waste disposal, which release greenhouse gases



electricity generation

transport

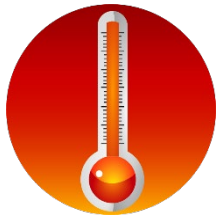
deforestation

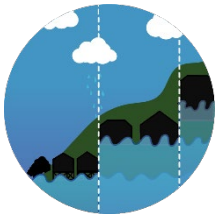
agriculture

The effects of climate change:

Climate change can cause:

- more extreme weather events, such as heatwaves
- melting sea ice and ice caps
- rising sea levels and flooding of coastal areas





GEOGRAPHY: Year 7 - Development

Background

Across the world, the standard of living and quality of life can be very different.

A	Countries therefore have different classifications based on the quality of life within them.
B	How developed a country is can be measured in different ways.
C	Development levels can vary within and between countries. There are many reasons why some countries are more developed than others.
D,E	Countries can become more developed in many ways, including through economic growth from tourism, top-down development projects and bottom-up development projects.

A) Country Classification

1	developed	(n) countries with high standards of living, advanced infrastructure and strong economies.
2	emerging	(n) countries transitioning between developing and developed, showing rapid improvements in infrastructure.
3	developing	(n) countries with lower standards of living, less advanced infrastructure and economies that are growing but not yet strong.

B) Measuring Development

1	GNI per capita	(n) the average income of a country's citizens.
2	infant mortality rate	(n) the number of babies that do not survive to one year old per 1,000 births.
3	life expectancy	(n) the average number of years a person is expected to live.
4	literacy rate	(n) the percentage of people in a specific age group, typically aged 15 and above, who can read and write.
5	average years of schooling	(n) the average number of years of education that individuals aged 25 and older have completed.
6	Human Development Index (HDI)	(n) a composite measure of development that is used to categorise the development of countries using GNI per capita, life expectancy and average years of schooling.

C) Factors that hinder development

Human	Physical
uneven distribution of income	challenging relief
corruption	extreme climate
conflict	lack of natural resources
low-value goods and services for trade	landlocked
high levels of debt	tectonic hazards
poor education systems	extreme weather
poor healthcare systems	lack of water resources

D and E) Examples of Development Projects

D) Top-down project: The Grand Inga Dam DRC

Advantages	Disadvantages
It provides a reliable source of renewable energy for the DRC.	It would flood 22,000 hectares of land in the Bundi Valley.
It provides electricity for Kinshasa at a lost cost.	Natural habitats will be destroyed by the reservoir.
It produces electricity that the DRC can sell the other countries.	35,000 people would be displaced from their homes by the dam reservoir.
It produces electricity to power more coltan and copper mines.	Electricity will be sold to other countries, and many people in rural DRC will still be without electricity.

E) Bottom-up project: WECAN DRC

Advantages	Disadvantages
It protects the habitats of 100,000 species of animals and plants.	It is small scale, so it has limited reach.
It empowers indigenous women.	It does not stop illegal logging.
Women earn money from selling fruit and herbs from the trees planted.	The project currently supports only 700 women.
It reduces the impact of climate change through reforestation.	It takes a long time for the full benefits to be achieved.

Topic 1 – Empires East and West c.1000

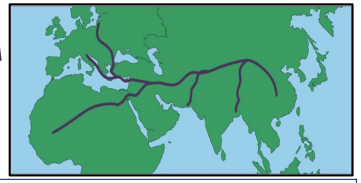
1	dynasty	(n) a sequence of rulers from the same family.
2	innovation	(n) the process of improving something or creating something that is a new technology.
3	empire	(n) a group of countries ruled by a single ruler.
4	caliph	(n) the ruler of the Islamic Empire.
5	astronomy	(n) the study of space, including stars and planets.
6	madrasa	(n) Muslim school or college.
7	pilgrim	(n) a person who makes a journey, often a long and difficult one, to a special place for religious reasons.
8	apothecary	(n) a person who in the past made and sold medicines.
9	monarch	(n) king or queen.
10	inference	(n) a conclusion drawn from evidence based on what is seen and what is already known.

Topic 2 – Norman Conquest

1	migration	(n) the movement of people from one place to another.
2	invade	(v) to enter an area by force to take control.
3	succession	(n) the order of taking over an official title or position.
4	inherit	(n) to receive something from a person who has died.
5	claimant	(n) a person who believes they have a right to something.
6	oath	(n) a promise witnessed by God.
7	illegitimate	(n) a child born to parents who are not married.
8	conquer	(v) to take control of a place or people by force.
9	cavalry	(n) a group of soldiers who fight on horses.
10	archer	(n) a person who shoots with a bow and arrow
11	infantry	(n) Soldiers who fight on foot.
12	coronation	(n) a ceremony where the new monarch is crowned.
13	Motte and Bailey Castle	(n) a simple castle with a man-made hill surrounded by a clear defensive area.
14	Harrying	(v) to repeatedly attack somewhere or something.
15	feudal system	(n) system where someone who held land gave land to others on the condition that they serve them.
16	primogeniture	(n) being the first-born child.
17	source	(n) Things that people made or wrote during the time in history you are studying.
18	interpretation	(n) This is an opinion about what the past was like.

Place

The **Silk Road** was an important trading route for spices, silk and knowledge. The Silk Road connected China with European countries.



Holy Roman Empire:
Emerged in 800 AD with Charlemagne's coronation and lasted until 1806.
A loose collection of Central European states ruled by an emperor, not a single unified nation.
Religion and the Pope played a key role in its legitimacy and politics.
Frequently involved in power struggles between emperors and local rulers (princes, bishops).

Byzantine Empire:
Eastern half of the Roman Empire that survived after the fall of Rome (476 AD).
Capital: **Constantinople** – a major centre of trade, learning, and Christianity.
Preserved Roman laws and culture through the **Justinian Code**.
Famous for religious art and architecture (e.g. Hagia Sophia) and the continuation of Orthodox Christianity.

Chinese Dynasties (focus on Tang and Song):
Tang Dynasty (618–907): A golden age of Chinese art, literature, and expansion.
Song Dynasty (960–1279): Known for innovation (printing, gunpowder, compass) and strong government structure.
Civil service exams promoted merit-based leadership.
Dynastic rule was shaped by the **Mandate of Heaven** – the belief that emperors ruled with divine approval.

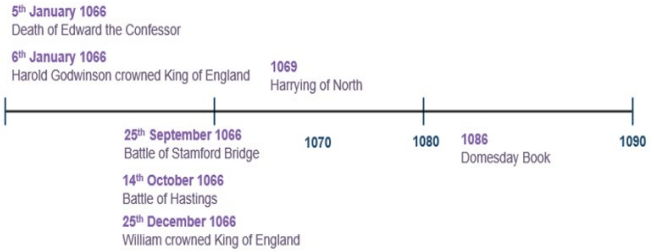
Islamic Empire (Umayyad and Abbasid Caliphates):
Spread rapidly after the death of Muhammad in 632 AD across the Middle East, North Africa, and Spain.
Umayyad Caliphate (661–750): Expanded the empire and moved the capital to Damascus. **Abbasid Caliphate** (750–1258): Capital in **Baghdad**, which became a center of learning and culture.
Major contributions in science, medicine, mathematics, architecture, and literature (e.g. House of Wisdom).

Chronology

A	chronology	(n) the arrangement of events, or dates, in the order of occurrence.
B	millennium	(n) a period of 1,000 years.
C	century	(n) a period of 100 years.
D	decade	(n) a period of 10 years.

Place

This unit will focus on **England**. The UK was formed in 1801 under the Act of Union

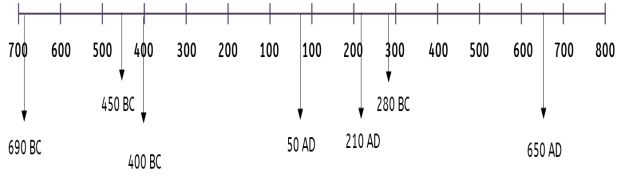


Succession Crisis (1066):
King Edward the Confessor died without a clear heir.
Three main claimants: **Harold Godwinson**, **William of Normandy**, and **Harald Hardrada**.
Harold crowned king, but William believed he had been promised the throne.

Norman Conquest:
William invaded England and defeated Harold at the **Battle of Hastings (1066)**.
William became **King of England** and began to establish Norman rule.

Controlling England:
Built **castles** (e.g. motte and bailey) across England to show power and suppress rebellion.
Introduced the **feudal system**: land was granted to loyal nobles in exchange for military service.
Used violence and fear to maintain control (e.g. **Harrying of the North**).

Changes to Society:
Castles: New stone castles dominated the landscape and acted as military strongholds.
Feudal System: Society was organised by strict hierarchy – king, barons, knights, peasants.
Domesday Book (1086): A detailed survey of land, people, and resources used to tax and control the population



Topic 3 – Medieval Religion

1	chivalry	(n) the qualities expected of an ideal knight including courage, honour, and being prepared to help those in need.
2	Church	(n) the institution of the Christian Church, including all the people who ran it and all the individual churches.
3	church	(n) a Christian place of worship.
4	clergy	(n) officials of the Church led by the pope.
5	crusade	(n) wars between European Christians and Middle Eastern Muslims that occurred 1095-1291.
6	excommunication	(n) power of the pope to expel someone from the Church.
7	laity	(n) ordinary people who attend church but do not hold official religious positions.
8	martyr	(n) a person who suffers or is killed because of their religious or political beliefs.
9	mass	(n) religious service on a Sunday that worshippers were expected to attend.
10	monastery	(n) a building in which monks live and worship.
11	persecution	(n) unfair or cruel treatment over a long period of time because of race, religion or beliefs.
12	pilgrimage	(n) a journey typically taken to a site of religious importance.
13	purgatory	(n) a place where an individual's soul stayed until all their sins had been forgiven. .
14	relic	(n) part of a saint's body or something they owned which was believed to have the power to perform miracles.

The Power of the Church

The Church owned large amounts of land and collected the **tithe** (10% tax on income).

Church leaders advised kings and had great political influence.

The Church could **excommunicate** people (expel them from the Church), including kings.


Religious Beliefs and Practices

People attended **Mass** regularly, believed in **Heaven, Hell, and Purgatory**.

The Seven Sacraments (especially baptism, confession, and communion) were essential to salvation.

Pilgrimage was a common religious duty (e.g. Canterbury, Rome, Santiago de Compostela). People believed in **miracles**, **saints**, and **relics**.

Monasteries and Monastic Life

Monasteries were places of prayer, learning, and care for the sick and poor. Monks and nuns followed strict rules (e.g. the **Rule of St Benedict**). They preserved knowledge by copying books and maintained education and charity.

The Importance of the Church

The Church was central to everyday life – almost everyone was Christian.

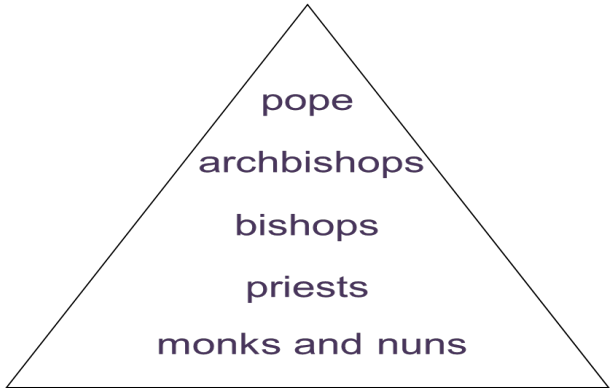
People believed the Church held the key to **heaven and hell**.

Churches were found in every village and town; cathedrals were large and impressive.

Themes and Threads

Power	The control a person or group has in a country. For example, the Church had their very own hierarchy compromised of the pope, archbishop, bishops, priests, monks and nuns. *This includes threads such as warfare and protest.*
Identity	The qualities and characteristics that make a person who they are and what they value as important. For example, while Christianity (Catholicism) was the most common religion in medieval England, people following other faiths lived in England at this time too. *This includes threads such as the role of women.*
Connectivity	The act of joining or being linked to somewhere, someone or something else. For example, Jews migrated to England in 1070, invited by William I. *This includes threads such as trade and medicine.*

Church hierarchy



Extra - Read/watch/do

The Power of the Church: https://www.youtube.com/watch?v=lVsAykBb92U

Medieval Civilisations: https://www.bbc.co.uk/bitesize/articles/zw8nhcw

You will be assessed on

The Silk Road, Chinese Dynasties, the Byzantine and Holy Roman Empires

The succession crisis in 1066, William the Conqueror, the Battle of Hastings, Norman changes to England

Links to curriculum

RE

English

Geography

French

KPI 7.01 Numerical Skills

1) Place Value	The value of a digit relating to its position in a number. In 1482 the digits represent 1 thousand, 4 hundreds, 8 tens and 2 ones.	**2) Integer**	Whole numbers including zero. -2, -1, 0, 1, 2, 3 …
3) Decimal	A number with a decimal point in it. It can be positive or negative. 0.3, 1.26, -3.4 etc.	**4) Positive Number**	Any number above zero. 1, 2, 3, 4 …
5) Negative Number	Any number below zero. Always written with a negative sign in front of it: -1, -2, -3 …	**6) Zero Place Holder**	A zero that is used as a place holder to denote the absence of a power of 10 E.g. 506 has no tens so there is a 0 in the tens column.
7) Even Number	Any integer that can be divided by 2 without leaving a remainder. 2, 4, 6, 8, 10 …	**8) Odd Number**	Any integer that cannot be divided by 2 without leaving a remainder. 1, 3, 5, 7, 9 …
9) Square Number	The result of multiplying a number by itself. It will always be positive. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144 …	**10) Square Root**	The opposite of squaring a number to find the original factor. E.g. $\sqrt{9} = 3$ or -3
11) Inequality	When one number, or quantity, is not equal to another. $a < b$ a is less than b $a > b$ a is greater than b $a = b$ a is equal to b $a \neq b$ a is not equal to b	**12) Ascending**	Smallest to largest.
		13) Descending	Largest to smallest.
14) Decimal Place Value	The value of each digit after the decimal point. Tenth, hundredth, thousandth etc.	**17) Rounding**	
15) Decimal Places	The number of digits after the decimal point. E.g.14.278 has 3 decimal places.		
16) Estimate	Find a rough or approximate answer by rounding. e.g. 2.3 x 18.4 ≈ 2 x 20 = 40 ≈ 'approximately equal to'		

Round to	Circle, Underline, Decide	Answer
Nearest 1000	5 7 8 3 . 1 9 9	≈ 6000
Nearest 100	5 7 8 3 . 1 9 9	≈ 5800
Nearest 10	5 7 8 3 . 1 9 9	≈ 5780
Nearest integer	5 7 8 3 . 1 9 9	≈ 5783
1 d.p.	5 7 8 3 . 1 9 9	≈ 5783.2
2 d.p.	5 7 8 3 . 1 9 9	≈ 5783.20

KPI 7.02 Order of Operations

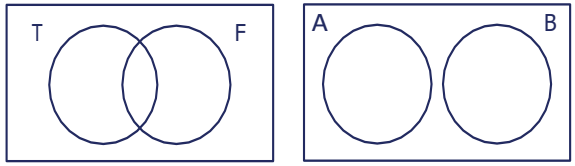
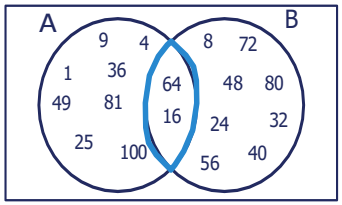
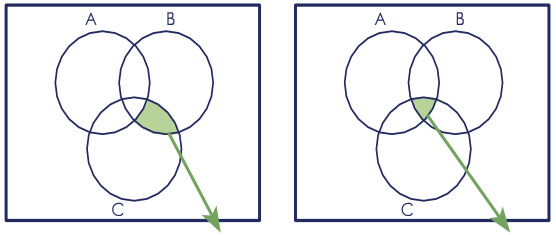
1) Operation	A rule for combining numbers + - × ÷	**2) Evaluate**	To work out the value of.
3) Index Notation	The **index** tells us how many times the **base** is being multiplied by itself. The plural of index is indices.		
4) Order of Operations	**B** = **B**rackets **DM** = **D**ivision and **M**ultiplication **I** = **I**ndices and Roots **AS** = **A**ddition and **S**ubtraction		
	If we have a calculation with addition or subtraction only then we calculate from left to right. 18 - 10 + 2 **8** + 2 **10**		If we have a calculation with multiplication or division only then go from left to right. 8 × 5 ÷4 × 10 **8** × **5** ÷ 4 × 10 **40** ÷ 4 × 10 **10** × 10 = 100

KPI 7.03 Introduction to Algebra

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 subtract b	a - b	**8) a reduced by b**	a - b
9) a divided by b	$\frac{a}{b}$	**10) b divided by a**	$\frac{b}{a}$
11) 4 times smaller than a	$\frac{a}{4}$	**12) 4 times larger than a**	4 x a → 4a
13) 5th power of a	a^5	**14) Variable**	A letter used to represent any number.
15) 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.	**16) Term**	A single number, variable or numbers and variables multiplied together.
17) Expression	A mathematical statement which contains one or more terms combined with addition and/or subtraction signs. E.g. 4x + 3y.	**18) Collecting like terms**	Combining the like terms in an expression. 7x + 3y −2x is simplified to 5x + 3y.
19) Substitute	Replace a variable with a given value. E.g. if b = 10, 2b = 2 × 10 = 20 b - 2 = 10 - 2 = 8	**20) Rearrange**	Alter the position of variables using the 4 operations. $5 = \frac{a}{t}$ $t = \frac{a}{5}$ $a = 5$ x t

KPI 7.04 Primes, Factors and Multiples

1) Factor	Any whole number that divides exactly into another number leaving no remainder is a factor. Factors of 20 are: 1, 2, 4, 5, 10, 20	**2) Multiple**	The result of multiplying a number with a whole number (all times tables!). The multiples of 7: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70 ...
3) Highest Common Factor (HCF)	The HCF of 2 or more numbers is the largest number that is a factor of each of those numbers. E.g. HCF of 18 and 45 = 9 18: 1, 2, 3, 6, (9), 18 45: 1, 3, 5, (9), 15, 45	**4) Lowest Common Multiple (LCM)**	The LCM of 2 or more numbers is the smallest number that is a multiple of each of those numbers. E.g. LCM of 6 and 8 = 24 6: 6, 12, 18, (24), 30, 36, 42, 48, 54, 60 8: 8, 16, (24), 32, 40, 48, 56, 64, 72, 80
5) Prime Numbers	A prime number only has two distinct factors: 1 and itself. 2 is the only even prime number. 1 is not a prime number. Prime numbers between 1 and 100 are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97		

6) Venn Diagrams	These were created by an English Mathematician, John Venn (1834 – 1923). They are used to sort groups of data and consist of two or more circles, often overlapping, contained inside a rectangle.	
7) One Intersection	In a Venn diagram with 2 circles, an overlap represents a section where **elements** (E.g. numbers) lie in **both sets** (E.g. A and B). The overlap between the sets, is called the intersection. E.g. A = First ten square numbers B = First ten multiples of 8	**16 and 64** are in the intersection as they are in both sets. 
8) Multiple Intersections	If a Venn diagram is representing three sets, it will have three circles. Each circle will <u>often</u> overlap with another data set twice, with all three circles overlapping at the centre.	

KPI 7.05 Expanding and Factorising 1

1) Expand	Multiply out the bracket(s) in the expression. E.g. $3(5x + 7) = 15x + 21$	**2) Factorise**	Identify the HCF and rewrite the expression with brackets. E.g. $6x^2 + 9x = 3x(2x + 3)$

KPI 7.06 Addition and Subtraction

1) Addition Plus, add, sum, more than.	To find the total of two or more numbers. The inverse operation is subtraction. **1.38** **4.90 +** **6.28** **1**	**2) Subtraction** Subtract, minus, take away, less than.	To find the difference between two numbers. The inverse operation is addition. 8 1 **4.90** **1.38 -** **3.52**
3) Commutative	Addition is commutative – the order of addition does not change the result. Subtraction is not commutative.	**4) Associative**	When you add you can do so regardless of how the numbers are grouped. Subtraction is not associative.
5) Two-way Table	A visual representation of the possible relationships between two sets of categorical data. You can add and subtract values horizontally and vertically to find totals or missing values.		The values in a row have a total at the right-hand side of the row. The values in a column have a total at the bottom of the column.

1	**diversity**	Differences between a group or setting.
2	**Christianity**	The religion that **Christians** follow.
3	**Islam**	The religion that **Muslims** follow.
4	**Judaism**	The religion that **Jewish people** follow.
5	**Hindu Dharma**	The religion that **Hindus** follow.
6	**Sikhi**	The religion that **Sikhs** follow.
7	**Buddhism**	The religion that **Buddhists** follow.
8	**Humanism**	A non-religious tradition followed by **Humanists**.
9	**migration**	The movement of people from one place to another.
10	**persecution**	Unfair or cruel treatment over a long period of time because of race, religion or political beliefs.
11	**census**	An official survey of the people who live in a country.

YEAR 7 – What does Religion Look Like Locally and Nationally??

Census Data and Key Changes

In 2021,

- More people described themselves as religious than non-religious.
- The largest religious group was Christianity, followed by Islam and Hindu Dharma.

Between 2001 and 2021,

- The number of people choosing to answer the question increased.
- The number of people reporting 'no religion' increased.
- The number of people reporting Muslim, Hindu, Sikh and Buddhist increased.
- The number of people reporting Christian decreased.

Follower	Symbol		Building
Christian		Cross	church
Jewish		Star of David	synagogue
Muslim		Crescent Moon	mosque
Hindu		Aum	mandir
Sikh		Khanda	gurdwara
Buddhist		Dharma Wheel	temple
Humanist (non-religious)		Happy Human	(various)

Tools for Studying Religion

Social sciences are a group of subjects that are interested in how people live together in a society. Social scientists study how people change society and how society changes them.

Social scientists collect data in a range of ways, including surveys like the census, as well as looking at evidence of religion in a community's buildings.

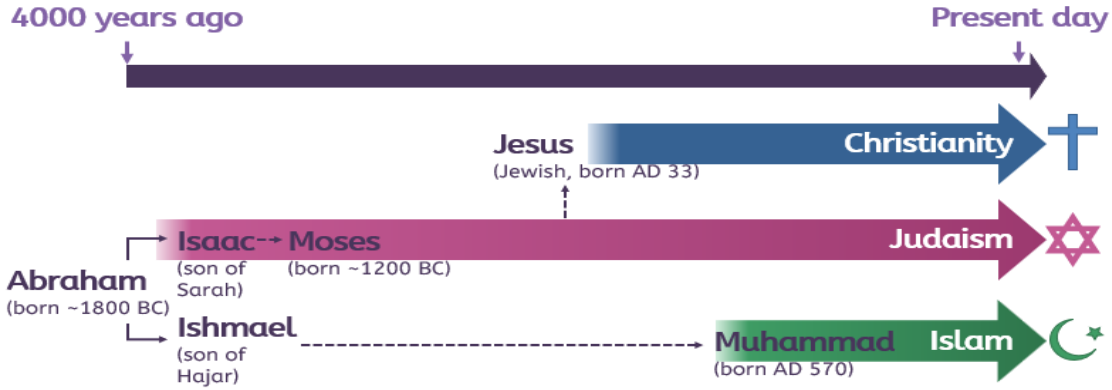
Extra - Read/watch/do

https://youtu.be/VXnSE0uvwzM - What are Worldviews?

https://www.bbc.co.uk/bitesize/articles/zfs2kmn - Facts about Religious and Non-religious beliefs

1	**Abrahamic faith**	one of three faiths that are all linked by Abraham: Judaism, Christianity and Islam.
2	**monotheism**	the belief that there is only one God
3	**polytheism**	the worship of or belief in more than one god
4	**covenant**	an agreement between two sides (between humans and God)
5	**sin**	an action that is believed to go against the laws of God
6	**idol**	objects or images that represent gods
7	**atonement**	making up for something that someone has done wrong
8	**sacrifice**	to give up something valuable in order to gain something else
9	**sermon**	a talk about a religious or moral subject given by a leader in the religion
10	**prophet**	someone chosen by God to say the things God wants them to tell people
11	**resurrection**	coming back to life after someone has died
12	**theology**	the study of God and ideas about God.
13	**theologian**	someone who studies theology, who might look at how holy texts and ideas about God influence people's beliefs and actions.

YEAR 7 What are the Origins of the Abrahamic Faiths?



Introduction to Holy Books:

The Torah	Holiest scripture for Judaism. The word means "law" in Hebrew. It was written by Moses. It is also important in Christianity and Islam.
The Qur'an	Holiest scripture for Islam. The word means "recite" in Arabic. It was revealed to the Prophet Mohammed.

The Covenant and the Abrahamic Faiths:

Abraham is a monotheist and worships only one God. God promises to look after Abraham and his descendants because of this, and that his descendants will be a blessing to the world. Abraham has two sons, Isaac (who Moses and Jesus are descended from) and Ishmael (who Muhammad is descended from). Moses is given the Ten Commandments as part of the covenant. Christians believe Jesus is part of the covenant being fulfilled. Muslims believe prophecy is a part of the covenant.

Extra - Read/watch/do

https://www.bbc.co.uk/bitesize/articles/zw3vcxs#zpwd239 – Covenant with Abraham
https://www.bbc.co.uk/teach/class-clips-video/articles/z6kcwty - Holy Books

Tenses

Estoy	I am (feeling)
estás	You are
está	He/she/ it is
Soy	I am
eres	You are
Es	He/she/it is
Me llamo	I call myself
Te llamas	You call yourself
Se llama	He/she /it calls themself
Tengo	I have
Tienes	You have
Tiene	He/she/it has

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

Opinions & Pronouns

Adoro

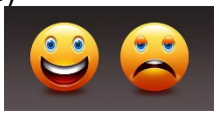
prefiero

me gusta (mucho)

me encanta

me chifla

me interesa



odio

detesto

no me gusta (nada

me irrita

Connectives

también	also
pero	but
además	furthermore
sin embargo	however
que	which
donde	where
cuando	when
porque	because

Complexity

Lo más – the most
Muy/ realmente – very / really
Bastante / un poco – very / really
me gustaría – I would like
suelo – I tend to..

Adjectives

(Muy) bien	Good
Regular	Meh, not great
Mal	Bad
Así así	So so
Fatal	Really bad
Cansado, a	tired
Enfadado,a	angry
Estresado, a	stressed
feliz	happy

Inglés, inglesa	English
Galés / galesa	Welsh
Irlandés /irlandés	Irish
Escocés/escosa	Scottish
Español, a	Spanish
Alemán/ alemana	German
Francés /francesa	French
Arabe	Arabuc
Chino, a	Chinese

Genial	great
guay	Ace
fabuloso	Fabulous
divertido	Fun
emocionante	Exciting
Aburrido	Boring
Irritante	irritating
Un rollo	A drag

LOS SALUDOS [GREETINGS]

1

¡Hola!	**Hello!/ Hi!**
¡Adiós!	**Goodbye!**
¡Hasta luego!	**See you later!**
Buenos días.	**Good morning.**
Buenas tardes.	**Good afternoon.**
Buenas noches.	**Goodnight.**
Fenomenal/estupendo	**Great.**
Bien.	**Fine.**
Regular.	**So-so.**
Mal.	**Bad.**
¡Fatal!	**Terrible!**

Los días

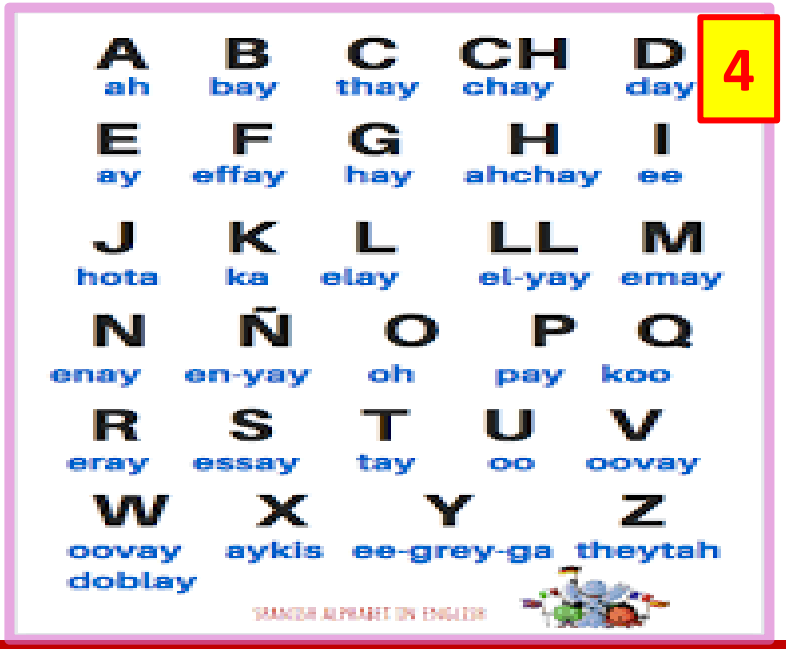
Lunes	Mo
Martes	Tue
Miércoles	W
Jueves	Th
Viernes	F
Sábado	Sa
Domingo	Su

2

Los meses	**The months**
enero	January
febrero	February
marzo	March
abril	April
mayo	May
junio	June
julio	July
agosto	August
septiembre	September
octubre	October
noviembre	November
diciembre	December

<u>En mi mochilla</u>	**<u>In my school bag</u>**
un bolígrafo	a biro
una carpeta	a file
un cuaderno	an exercise book
un diccionario	a dictionary
un estuche	a pencil case
una goma	a rubber
un lápiz	a pencil
los lápices	pencils
un libro	a textbook
una pluma	a fountain pen
una regla	a ruler
un sacapuntas	a pencil sharpener

3



4

LOS NÚMEROS	NUMBERS
uno	1
dos	2
tres	3
cuatro	4
cinco	5
seis	6
siete	7
ocho	8
nueve	9
diez	10
once	11
doce	12
trece	13
catorce	14
quince	15
dieciséis	16
diecisiete	17
dieciocho	18
diecinueve	19
veinte	20
veintiuno	21
veintidós	22
veintitrés	23
veinticuatro	24
veinticinco	25
veintiséis	26
veintisiete	27
veintiocho	28
veintinueve	29
treinta	30
Treinta y uno	31

5

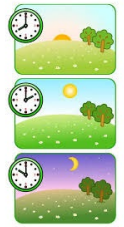
6

El tiempo libre	Free time
Jugar	To play
Tocar	To play (an instrument)
cantar	To sing
practicar	To practice
comprar	To buy
hablar	To talk
Montar en bicicleta	To ride a bike
Bailar	To dance
cocinar	To cook
Navegar	To search
comer	To eat
Leer	To read
Ver la tele	To watch TV
Hacer	To do
dormir	To sleep
salir	To go out
ir	To go

7

El tiempo	The weather
Hace sol	It is sunny *(it makes sun)*
Hace calor	It is hot *(it makes heat*
Hace frío	It is cold *(it makes cold)*
Hace viento	It is windy *(it makes wind)*
Hace buen tiempo	It is good weather
Hace mal tiempo	It is bad weather
Llueve	It rains
nieva	It snows

8

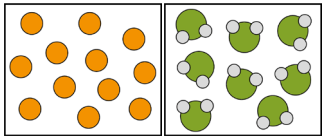


	when
Por la manana	In the morning
Por la tarde	In the afternoon/evening
Por la noche	At night
Los sábados	On Saturdays
Los fines de semana	On the weekends
A veces	Sometimes
siempre	Always
nunca	never

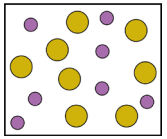
Science - Particles, substances and mixtures

Pure substances and mixtures

A **pure substance** is one that contains only one substance, e.g. pure iron contains only iron particles . A **mixture** contains two or more substances that are not joined together and can be physically separated.



pure substances
(one type of particle)



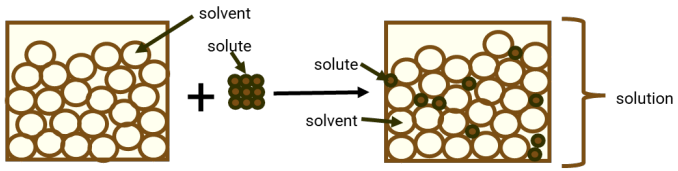
mixture

Solutions and solubility

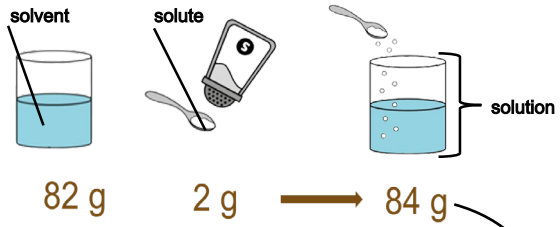
A **solute** can be dissolved in a **solvent** . The mixture created is called a **solution** . When no more solute can dissolve in the solution, it is a **saturated** solution. If a solid dissolves in a solvent, it is **soluble** . If it does not dissolve in a solvent, it is **insoluble** .
Solubility is a measure of how much solute can dissolve in a solvent. The higher the temperature of the solvent, the greater the mass of the solute that can be dissolved.

Solubility is different for different solutes. The solubility of a solute will change depending on the solvent used.

During **dissolving** , the solute particles are separated and fit between the solvent particles to make a solution.



mixture



Conservation of mass

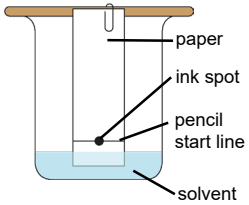
When a solution is formed, **the mass of the solvent + the mass of the solute = the mass of the solution.**

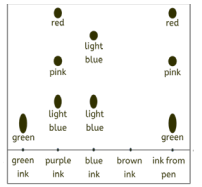
Mass remains constant because the number of particles is the same before dissolving as it is after.

Separating mixtures

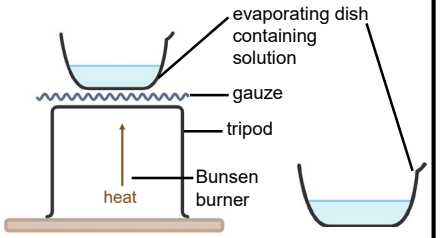
We can separate mixtures in different ways depending on their properties:

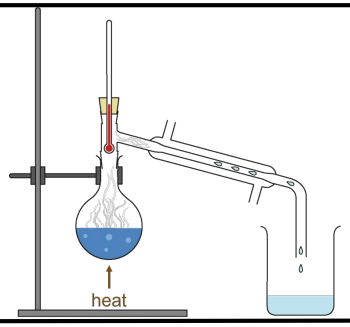
Chromatography is a separation technique that separates mixtures containing more than one solute based on their solubilities in a solvent. It works because some of the coloured substances dissolve better than others, so they travel further up the paper. A pencil line is drawn, and spots of ink or dye are placed on it. There is a container of solvent (e.g. water or ethanol). As the solvent continues to travel up the paper, the different coloured substances spread apart.
A **chromatogram** , the results of chromatography experiment.





Evaporation and **crystallisation** can be used to separate a soluble solid from a solution. For example, copper sulphate is soluble in water – its crystals dissolve in water to form a copper sulphate solution. During evaporation, the water evaporates away, leaving solid copper sulphate crystals behind. Crystallisation produces larger solid crystals.

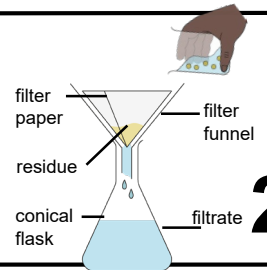




Distillation is a separation technique used to separate a mixture of liquids. The basis for separation in distillation is the difference in the boiling points of the components. For example, water can be separated from an ink and water solution because water has a much lower boiling point than ink. When the solution is heated, water evaporates. It is then cooled and condensed into a separate container. The ink does not evaporate, so it stays behind.

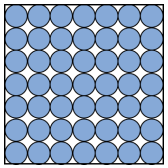
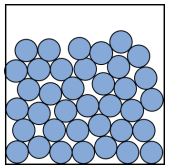
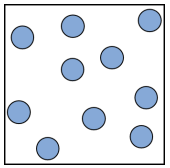
Filtration can be used to separate a liquid from an insoluble solid. The filter paper used in filtration is 'selectively permeable', meaning that it has holes in it that allow the movement of only some substances through whilst preventing the movement of others. The insoluble solid is unable to pass through the small holes of the filter paper. When a mixture of sand and water is filtered:

- The sand stays behind in the filter paper (it becomes the **residue**).
- The water passes through the filter paper (it becomes the **filtrate**).



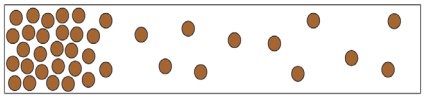
Science - Particles, substances and mixtures

The particle model of matter

	Solid	Liquid	Gas
Diagram			
Arrangement	ordered and all touching	random and all touching	random and not touching
Movement	vibrate in fixed positions	move and slide over each other	move around quickly in random directions
Attraction between particles	strong	weak	very weak

Diffusion

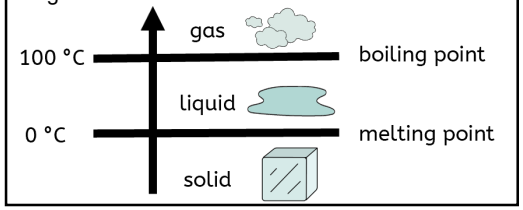
Diffusion is the random movement of particles from an area of high concentration to an area of low concentration. Particles of substances in the liquid and gas states can diffuse because their particles can move freely.



Melting and boiling points

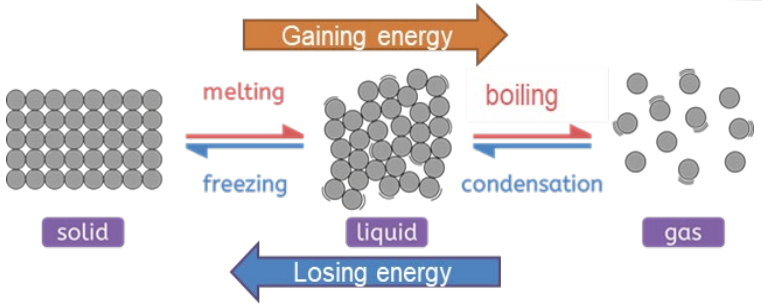
melting point : the temperature at which a substance changes from a solid to a liquid

boiling point : the temperature at which a substance changes from a liquid to a gas, e.g. water



Change of state

A change of state is a physical change because no new substances are made, and the change is reversible. Only the amount of energy the particles have changes, which affects the arrangement and movement of the particles. Temperature stays constant during a change of state.



Explaining the properties of solids

Property	Reason
Fixed shape and cannot flow	Strong forces of attraction between the particles keep them in fixed positions.
Cannot be compressed (squashed)	Particles are all touching and have no space to move into.

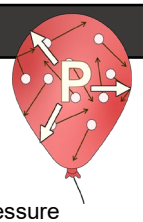
Explaining the properties of liquids

Property	Reason
Takes shape of container and can flow	Weak forces of attraction between the particles, so they can move around each other.
Cannot be compressed (squashed)	Particles are all touching and have no space to move into.

Explaining the properties of gases

Property	Reason
Takes shape of container and can flow	Very weak forces of attraction between the particles, allowing them to move and spread out.
Can be compressed (squashed)	Particles are not touching and have space to move into.

Gas pressure



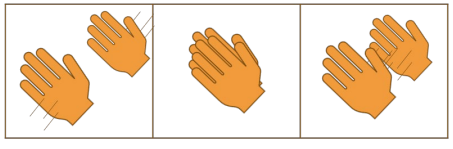
When gas particles collide with the walls of their container, this creates a constant force on the walls of the container.
This causes pressure. The faster the particles move, the higher the gas pressure. The gas pressure inside containers can be increased by adding more particles or increasing the temperature. The more frequent the collisions, the higher the gas pressure.

Science 7.02: Fundamentals in physics

Forces and their interactions

Interaction :

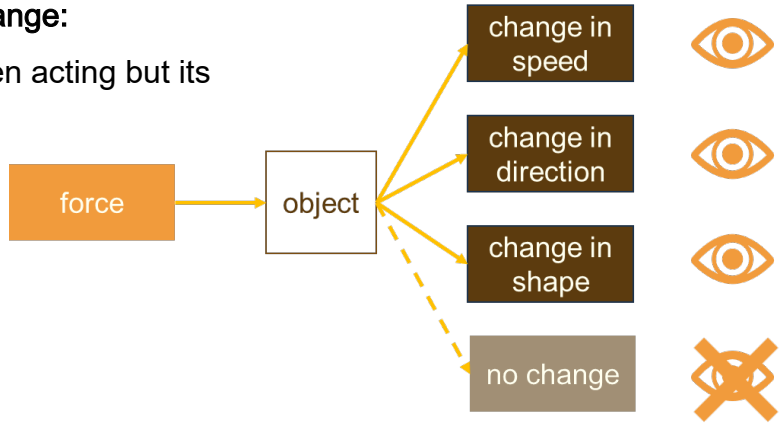
When two objects influence each other and cause a pair of forces to arise.



one force on each object — equal in size — opposite in direction

Forces can cause change:

A force cannot be seen acting but its effects often can.



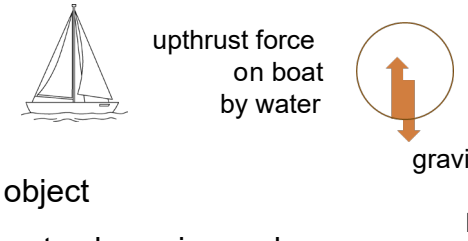
Forces can be contact or non - contact:

Contact forces arise between two touching objects.

Non- contact forces can act between two objects at a distance.

contact	thrust, friction, air resistance, water resistance, normal contact, upthrust
non-contact	gravity force, magnetic force

Free- body force diagrams



One object

Arrows to show size and direction of forces

Labelled forces:

- What kind of force is acting?
- What is the force acting on?
- What exerts the force?

Deforming forces

Two pushing forces cause compression: the object contracts.

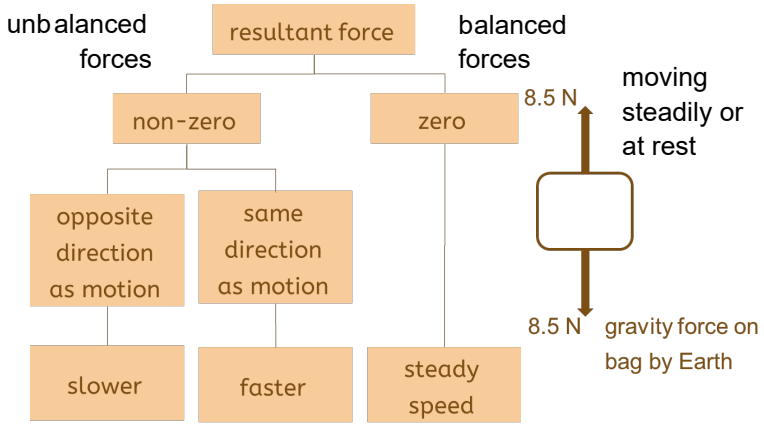
Two pulling forces cause tension: the object extends.

Science 7.02: Fundamentals in physics

Combining forces

More than one force acting:

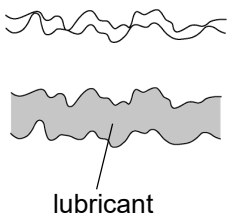
- Their effects are combined
- As if a single force is acting: the resultant force



Friction force

- **What?** One of three frictional forces. They act to resist motion.
- **Where?** Acts between solid surfaces, along the surfaces.
- **When?** An object is sliding or trying to. When starting to slide, the applied force must be larger than the limiting friction: so, an unbalanced force acts.
- **How?** Opposite direction to the motion, or the applied force.
- **Why?** Surfaces are uneven, so the 'catching' between them must be overcome.

	Useful	Nuisance
Walking	✓	
Machines		✓
Driving	✓	
Wear and tear		✓



catching;

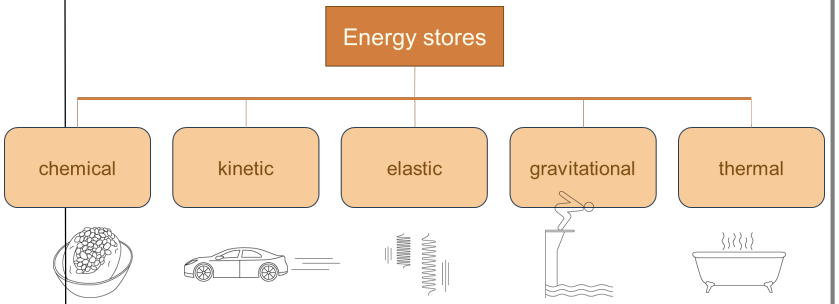
surfaces parted: no catching

Energy stores and pathways

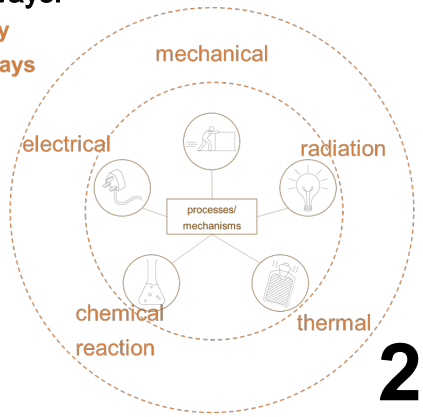
What energy does:

- Flows between objects in a system
- Stays the same when it transfers
- Cannot be used up

Energy is transferred between stores:



Energy is transferred because of processes, by pathways:

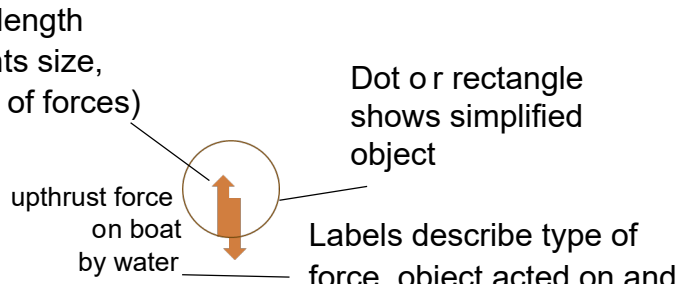


Science 7.02: Fundamentals in physics

Modelling forces

Forces are modelled because:

- forces cannot be seen acting
- there are many forces acting at a time
- their size and direction have important effects on situations, so need to be shown.



Investigating forces

Scientific methods:

- With or without hypothesis
- Manipulating variables or not

Statement to answer an enquiry question.

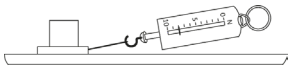
comparative term — Smoother surfaces cause less friction to act on objects sliding over them. — present tense

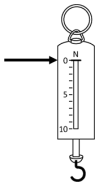
the effect which can be tested

'group' being tested (IV)

Planning to collect high- quality data:

- Measuring with skill
- Preparing the data table
- Repeatable data





Check force- meter is on zero with no force.

headings describe variable

IV

Surface	Force to start sliding (N)		
	1	2	3
Glass	1.4	1.5	1.7
Metal	1.5	1.6	1.7
Polished wood	2.0	2.3	2.2
Plastic	2.9	3.0	2.9
Paper	4.5	3.8	4.0

DV in columns

repeated

Peer review: ★★★

Peers (people of a similar level of knowledge) test the results for quality.

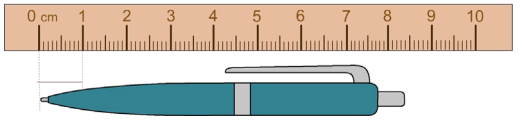
Repeatability: Same group, same results

Reproducibility: Different group, same results

Observing by measurement

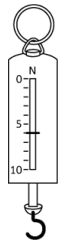
Using a scale

- set of lines at equal increments
- Labelled with numbers and units



Measuring instruments

- Include rulers, balances, clocks and thermometers.
- Force is measured using a force - meter.



Quantities: and thei r units

Base quantities: length (m), mass (kg), time (s) and temperature (K).

Derived quantities include force (N).

Science - Cells and organisation

The seven common processes of living organisms

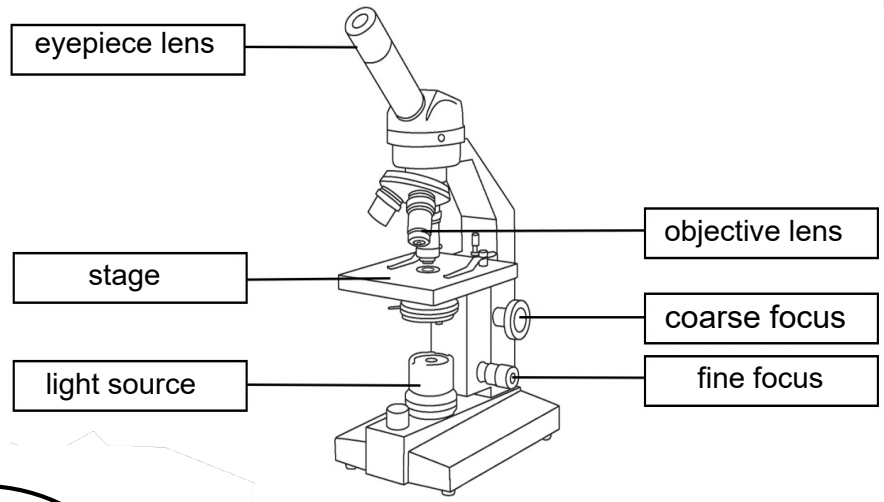
Process	Definition
movement	moving itself or its parts to change position or location
reproduction	producing offspring of the same kind
sensitivity	sensing and responding to changes in their surroundings
growth	increasing in size and repairing parts that are damaged
respiration	using oxygen and glucose (a sugar) to provide energy
excretion	removal of waste substances that are no longer needed
nutrition	using food or other nutrients like water to stay alive

Levels of organisation

cell → tissue → organ → organ system

cell	the smallest living building block of organisms
tissue	a group of similar cells that work together to perform a specific function
organ	a structure made up of different types of tissues that work together to carry out a specific function
organ system	a group of organs that work together to perform a common function

The parts of the microscope

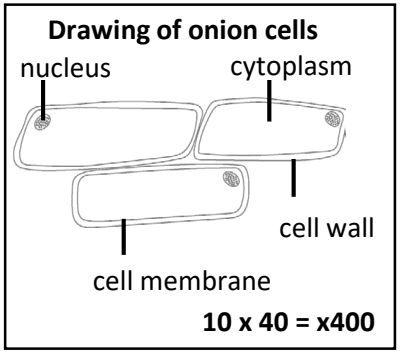


total magnification = eyepiece x objective

Using a microscope

1. Turn the **objective lens** to the **lowest magnification** .
2. Secure the slide on the **stage** using the clips.
3. Move the **stage** up to the **objective lens** by turning the **coarse focus**.
4. Look down the **eyepiece lens,** and move the stage away by turning the **coarse focus**.
5. To make the image sharper and clearer, turn the **fine focus.**
6. Rotate the **objective lens** to get a higher magnification.

Rules for scientific drawings of cells



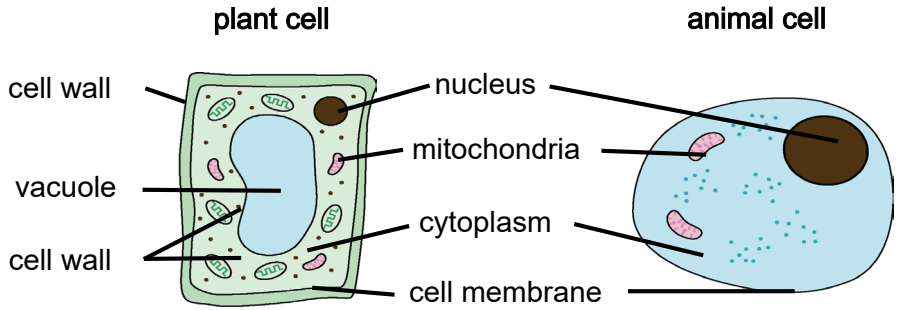
- smooth continuous lines
- large, with the same proportions
- stippling
- a few cells
- title and label
- total magnification

30

Science - Cells and organisation

Cell organelles and their functions

nucleus	contains the genome that controls the cell's activities
cytoplasm	where the chemical reactions of the cell take place
mitochondria	where energy is released in respiration
cell membrane	controls which substances enter or leave the cell
vacuole	stores a watery sap
cell wall	strengthen and support the cell
chloroplasts	where light is trapped for photosynthesis to happen



Cells are three dimensional (3D).

The rate of diffusion

The rate of diffusion means how fast diffusion happens.
Three factors that can affect the rate of diffusion are **temperature** , the **concertation** of particles and **surface area** .

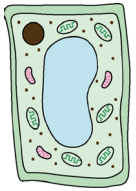
- The higher the temperature, the faster the rate of diffusion.
- The bigger the difference in the concentration of particles, the faster the rate of diffusion.
- The larger the surface area, the faster the rate of diffusion.

Needs of plants and animals for survival

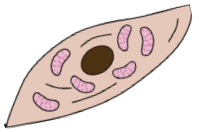
- Plants need, oxygen, water, light, carbon dioxide, minerals, a suitable temperature and space to grow.
- Animals, including humans, need water, oxygen, nutrients and the right temperature to survive.
- Plants and animals need these to keep all the cells that make them up alive and functioning properly.

Oxygen and **glucose** (a sugar) are needed for **respiration** to take place in cells, to provide energy to keep cells alive . These useful substances enter the cell by **diffusion .** Waste products of respiration are carbon dioxide and water . Waste products leave the cell by diffusion and need to be removed from cells to keep them alive .

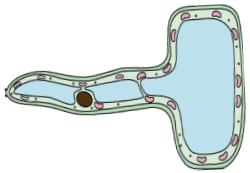
Specialised cells are adapted to carry out a specific function



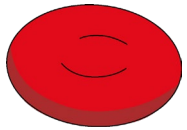
A **palisade cell** has **lots of chloroplasts** that absorb light for photosynthesis and a **column shape** to pack more in the leaf.



A **muscle cell** has **lots of mitochondria** to release energy for contraction.



A **root hair cell** has a **long cell membrane** that provides a large surface area to absorb more water and minerals.



A **red blood cell** has **no nucleus** for extra space to carry more oxygen.

Literacy / key words

- **Format**: The way something is arranged or organised.
- **Source:** Where information comes from, such as a book, website, article, or person.
- **Citation:** A reference to the source of information.
- **Referencing:** The process of listing sources that were used in creating a piece of work.
- **Licensing:** The act of giving formal permission to use something, like a piece of work, a brand, or software, under specific terms and conditions.
- **Copyright:** A legal right that protects original works from being used without the creator's permission.
- **Blog:** A website or section of a website where people regularly post written content, ideas, or updates, often on specific topics.
- **Plagiarism:** Using someone else's work, ideas, or words without giving them credit.
- **Audience:** The group of people who are intended to read, watch, or engage with a piece of content.

Content

Formatting can be using tools like **bold**, *italic*, underline, changing colour, font style and size, alignment and many more.

Formatting can be used for many reasons. Including to make text easier to read, easier for the audience to use, highlight important information or attract attention.

It is important to select the appropriate formatting for the audience!

Images play an important role when using software. It is important that **appropriate** images are used, ones that meet the requirements of the **audience** and the **purpose** of whatever is being created.

A **blog** is a regularly updated website or web page, typically one run by an individual or small group, that is written in an informal or conversational style.

Copyright Law gives the creators of literary, dramatic, musical, artistic works, sound recordings, broadcasts, films and typographical arrangement of published editions, rights to control the ways in which their material may be used.

Creative Commons(CC) license is one type of copyright license. This allows the copyright owner to say exactly what other people can and can't do with or to their work.

They help copyright owners share their work while keeping the copyright. For example, a Creative Commons licence might allow other people to copy and distribute the copyright owner's work, if they give them credit.

Plagiarism using someone else's work or ideas and using them as if they were your own. This can be any type of work either printed or electronic.

C**itation** the audience where the information came from. Anything that is used needs to have **citations** or **references** to the original work. the audience details about the source so that they can see that the source is relevant and recognised so they can find the source themselves if they want to.

Extra - Read/watch/do

Conduct Research: to find an example of Fake News.

Produce a Guide: to inform others on how to identify Fake News.

You will be assessed on

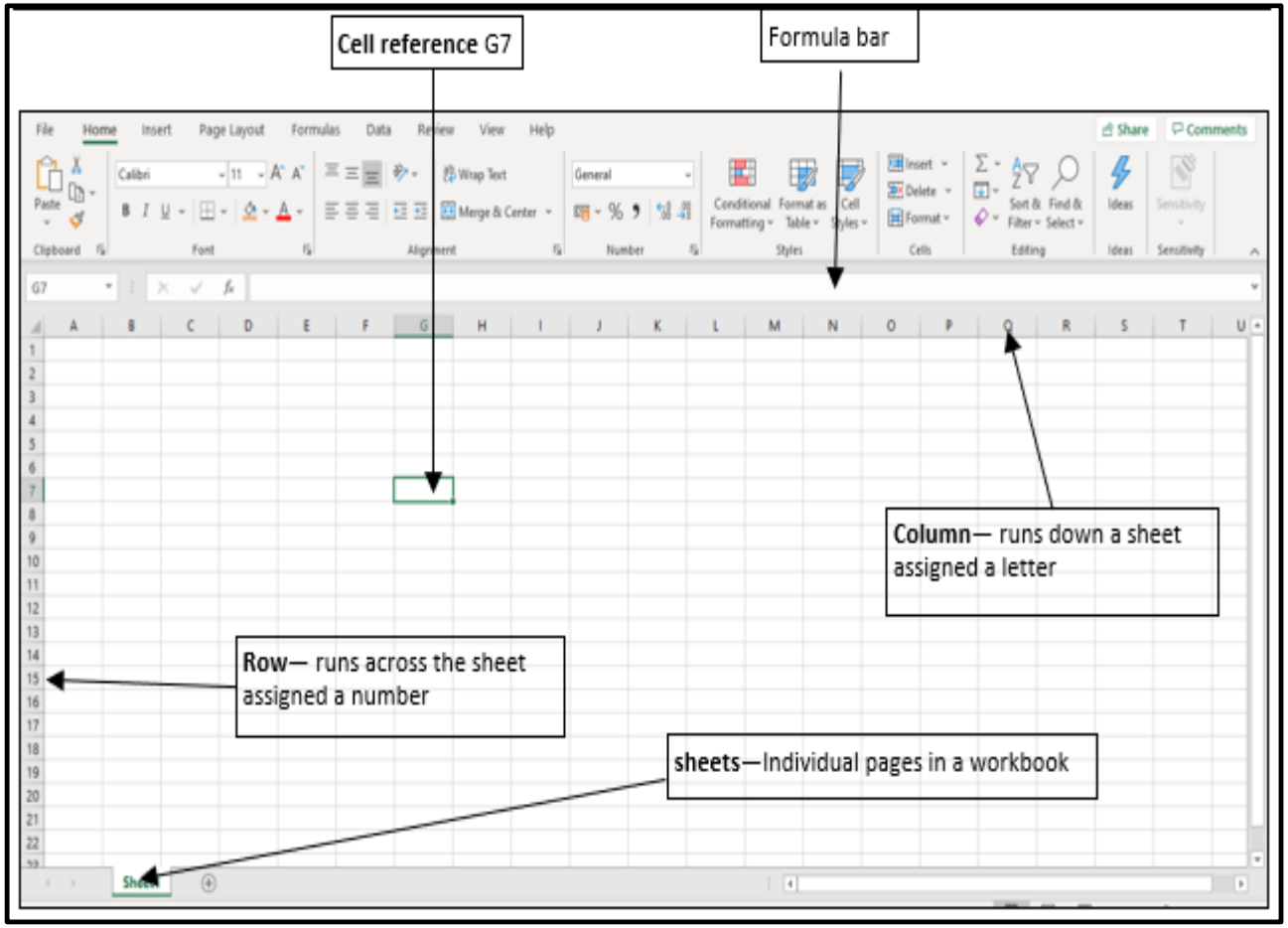
The Features of Word Processing Software and Copyright Law and how to avoid Infringement of it.
How Blogs can be used to Raise Awareness of a Good Cause.

Links to curriculum

Understanding Digital Content: pupils learn how digital information is created, stored and shared.
Ethical and Legal Issues: pupils explore ethical and legal issues relating to computer use.

Literacy / key words

Data: raw, unprocessed facts or values entered into a spreadsheet, such as numbers, text, dates.
Information: processed or organised data that has been given context and therefore is meaningful, such as 'Number of Items Sold'.
Cell: the basic unit in a spreadsheet where data is entered.
Cell Reference: a unique identifier for a cell, determined by its column letter and row number (e.g., A1, B5). It is used to locate a specific cell in a formula or function.
Column: a vertical arrangement of cells in a spreadsheet, labeled alphabetically (e.g., A, B, C).
Row: a horizontal arrangement of cells in a spreadsheet, labeled numerically (e.g., 1, 2, 3). Rows are often used to represent individual records or entries.
Formula: an expression entered in a cell that performs calculations or operations on data. Formulas begin with an equals sign e.g., =A1+B1.
Function: Functions take inputs and return a value e.g., SUM, AVERAGE, IF). For example, =SUM(A1:A5) adds the values in cells A1 through A5.



Data can be gathered from different sources:
· **Primary** source: collecting data yourself
· **Secondary** source: someone else collects the data
You can fill data automatically by using **AutoFill.**

In order to complete calculations spreadsheets make use of **formulae**.
A formula uses the following basic symbols
The **=** symbol is always at the start of a formula
The **+** symbol is used for addition
The **-** symbol is used for subtraction
The ***** symbol is used for multiply
The **/** symbol is used for divide

Extra - Read/watch/do

Pick a Business and Create a Spreadsheet that it might use.

For example, a 'Sweet Shop' spreadsheet might include a list of all of the sweets sold and their cost.

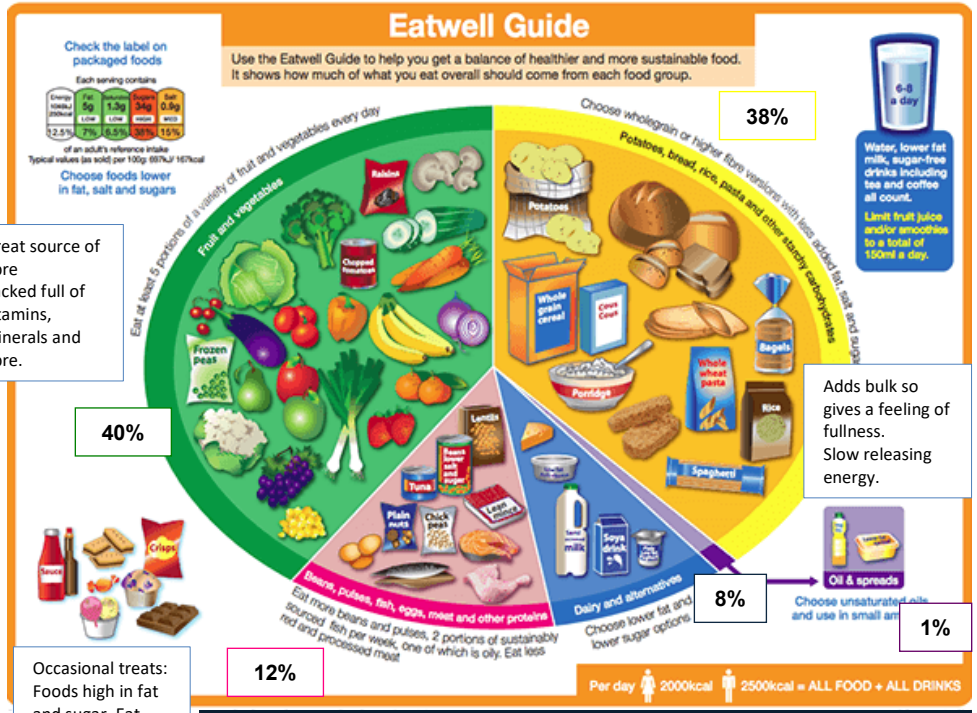
You will be assessed on

The 'Features of Spreadsheet Software' and how they are used, using formulas, functions and formatting data to be best appropriate.

Links to curriculum

Digital Literacy: pupils learn how to use digital tools and their features effectively.

Data Representation: pupils explore how data is organised and presented.



8 tips for eating well

1. Base your meals on starchy foods.
2. Eat lots of fruit and vegetables.
3. Eat more fish – including a portion of oily fish each week.
4. Cut down on saturated fat and sugar.
5. Eat less salt – no more than 6g a day for adults..
6. Get active and be a healthy weight.
7. Don't get thirsty.
8. Don't skip breakfast.

Nutrient	How	Why
Cutting Fat	Eat more chicken and fish and less red meat Use skimmed or semi-skimmed milk instead of full fat milk Grill food instead of frying Cut fat off meat before cooking	Overweight Obesity Increase in Cholesterol in the blood Heart attack. Type 2 diabetes
Cutting down on Sugar	Avoid fizzy drinks and high calorie drinks. Have fruit juice or water instead. Eat fewer cakes, biscuits and sweets Eat more fruit as an alternative Try the natural sweetness of fresh fruit in puddings instead of sugar	Overweight Obesity Heart attack. Type 2 diabetes
Have more Fibre	Eat lots of fresh fruit and vegetables Eat more wholemeal flour, bread, pasta, rice Use more canned beans, peas and lentils eat more Try jacket potatoes with a variety of fillings	Helps to protect against diseases of the bowel. Gives you a feeling of fullness and so can help in diets.
Eat less salt	Use herbs and spices as an alternative to salt	Too much salt can lead to high blood pressure. This will increase the risk of suffering heart problems and strokes.

Extra - Read/watch/do

https://www.youtube.com/watch?v=7MlE4G8ntss

You will be assessed on:

- Food Hygiene and Food Spoilage
- Fruit/Sensory evaluation
- Healthy eating tasks and the 8 tips for eating well.
- Vitamins

Links to curriculum: Apply current healthy eating advice, and understanding of people's needs, to develop diets for different individuals.

Literacy / keywords

Personal Hygiene: people are sources of contamination. Personal hygiene must be followed to prevent food poisoning such as:-Wash hands before and after handling foods; tie or cover hair; remove jewellery;

Cross Contamination: The transfer of bacteria into food: Food to food, Food handler to food, Equipment to food

High Risk foods: are foods high in protein and moisture e.g. meat, dairy, cooked rice, gravy. Must be stored at a temperature below 5◦C to prevent bacteria growth.

Types of Hygiene Hazards

Physical: fly, hair, broken glass, fingernails, plaster.

Biological: bacteria such as E. coli, Salmonella, Staphylococcus aureus. Bacillus cereus, Campylobacter.

Chemical: pesticides, herbicides, cleaning chemicals

Preventing cross contamination

Preparing food safely using the 4 Cs

Cleaning
- Keep yourself and hands clean
- Use clean equipment
- Use clean dish clothes and tea towels

Cooking
- Cook raw foods until the core is 75C, check with a temperature probe.
- Reheat foods to 75C
- Never reheat food more than once

Chilling
- Cool cooked foods for no longer than 90mins before refrigerating .
- High risk foods must be stored below 5C

Cross Contamination
- Store raw foods away from cooked foods
- Use separate equipment (chopping boards and utensils
- Wash hands after handling raw meat and before preparing food

Links to curriculum: Demonstrate and apply the principles of cleaning, preventing cross contamination, safe storage of food including chilling, cooking food thoroughly; reheating food until it is steaming hot.

Enzymic Browning:
The process where fruit and vegetable turn brown due to them being exposed to oxygen

Knife Skills

Claw grip

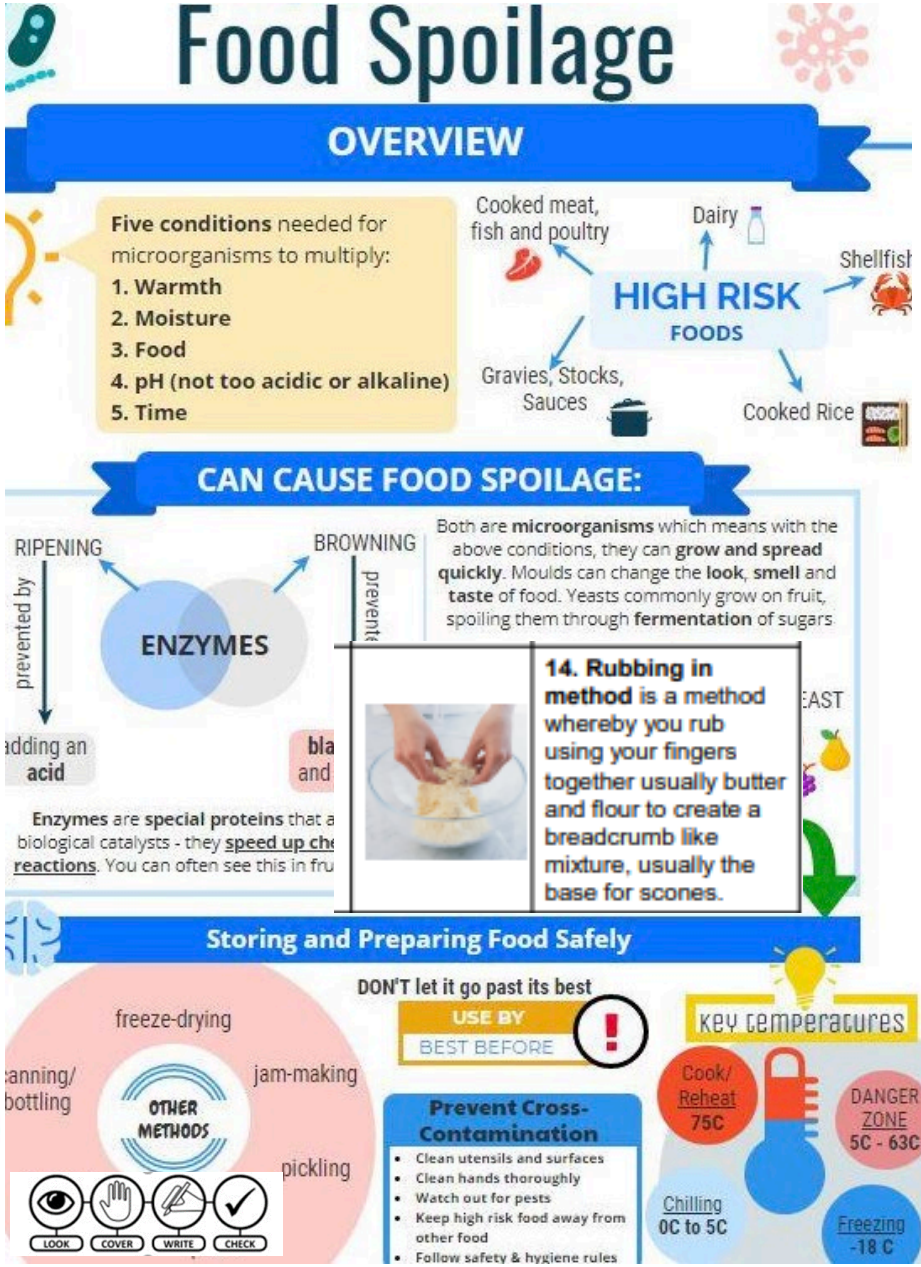
Bridge hold

Rondelle

Julienne
3mm*3mm*3~5cm

Medium Dice
1.25*1.25*1.25cm

Small Dice
6*6*6mm



Key abbreviations: Weights and Measurements		
L	Litres	
g	Grams	
ml	millilitres	1000ml =1 litre
Kg	kilograms	1000g
Tbsp	tablespoons	15ml
Tsp	teaspoon	5ml
1pt	1 pint	568ml

Chemical raising agents produce CO2.
Alkali+ Acid+ liquid+ CO2
Makes baked products like scone rise, light and soft.

Rubbing in method:
Is a method of rubbing your fingers together usually butter and flower to create a breadcrumb like mixture, used to make scones.

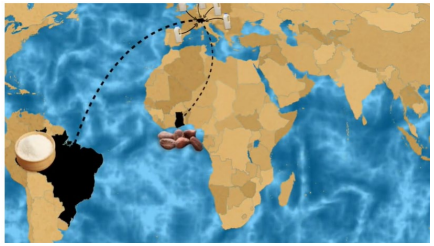
Literacy / Key terms

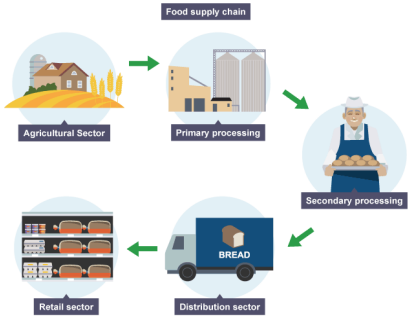
Food Miles:

The distance food has travelled to get to your plate. Food must travel from the farm it is grown on or the factory it is made in to a supermarket or shop to be sold.

Carbon Emission: Harmful gases such as carbon dioxide are released into the earth's atmosphere when we use fossil fuels (coal and oil) to provide energy. We need energy to grow, produce and transport food. Some food uses more energy than others.

Local: a place close to where you live. Fruit and vegetables that were grown near you would be considered local.





Chocolate –ingredients coming from all over the world has a lot of food miles.

Vitamin	Foods	Functions	Deficiency
A	Cheese, milk, yoghurt eggs, oily fish, yellow, red and green (leafy) vegetables, such as spinach, carrots, sweet potatoes and red peppers, yellow fruit, such as mango, papaya and apricots	Fighting infection, better vision, keeping skin healthy	Night blindness
D	Our body creates this from direct sunlight but it is in: oily fish, red meat and egg yolks, liver	Helps keep bones, teeth and muscles healthy	Bone deformities such as Rickets in children, and Osteomalacia in adults.
E	Vegetable oil, olive oil, nuts, seeds, cereals	Healthy skin, eyes and immune system	Rare
K	Green vegetables, vegetable oil, cereals	Healing wounds	Rare. Problems with blood clotting

https://www.bbc.co.uk/bitesize/topics/zjr8mp3/articles/zjnxwnb

Strawberries grown in Manchester

Task: When you next visit your supermarket check the food labels to see where the fruits and vegetables in your basket comes from.

Extra - Read/watch/do

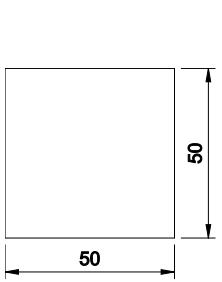
https://www.bbc.co.uk/bitesize/articles/zjnxwnb#zktxywx

Links to curriculum: Examine where and how a variety of ingredients are grown, reared, caught, and processed, and consider sustainability and the impact of different choices on the environment. Define and demonstrate how to apply the principles of nutrition; that food and drinks provide energy and nutrients in different amounts; that they have important functions in the body; and that people require different amounts during their life and the implications of dietary excess or deficiency.

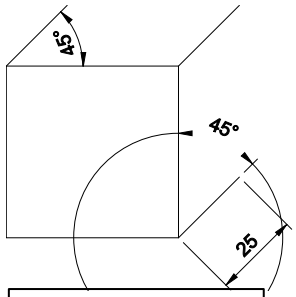
Design and Technology: Design skills

Literacy / key words
Rendering
Rendering with colour pencils involves layering and blending colours to create detailed, textured, and realistic illustrations or designs.
Oblique drawing
Oblique drawing is a way to make a 3D picture where the front looks normal, and the sides are drawn at an angle to show depth.
Isometric drawing
Isometric drawing is a way to make 3D pictures where all sides are drawn at equal angles, showing depth clearly.
1 point perspective
1-point perspective drawing is a technique where all lines meet at a single vanishing point on the horizon, creating depth.

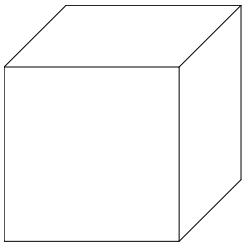
Oblique drawing



Draw a square 50 mm x 50mm.



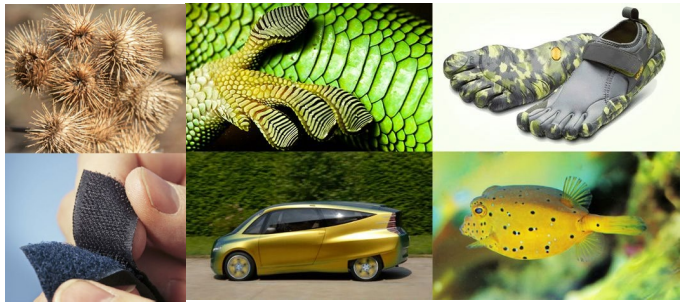
Draw 3 lines that are 25mm long at an angle of 45°.



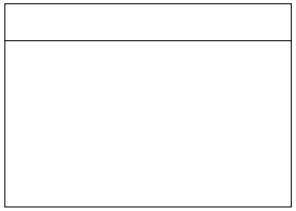
Draw the lines for the back of the cube.

Biomimicry

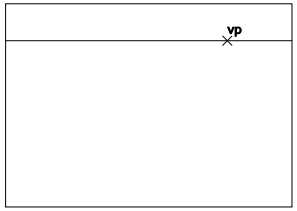
Biomimicry is when designers copy ideas from nature to solve problems. For example, **Velcro** was inspired by burrs sticking to animal fur, and **bullet trains** were shaped like a kingfisher's beak to reduce noise and drag. Nature's designs often lead to efficient, sustainable solutions.



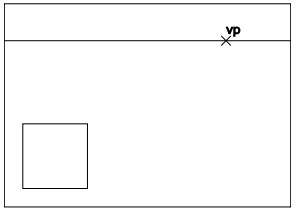
One point perspective



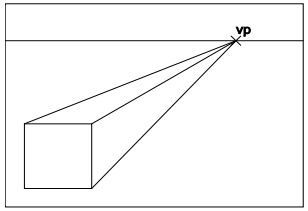
Draw a line across the top of the page.



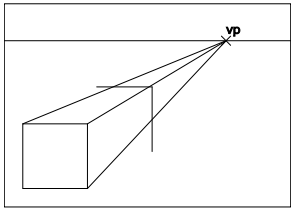
Put an x where the vanishing point is



Draw a square in one of the bottom corners of the page.



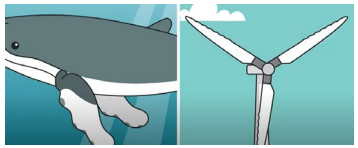
Draw construction lines from each to the vp.



Add the lines for the back of the cube.

Extra - Read/watch/do

Watch:
Biomimicry



https://www.youtube.com/watch?v=V2GvQXvjhLA

You will be assessed on

- Your ability to use a range of design/drawing techniques.
- Your ability to write a detailed specification.

Links to curriculum
Design
use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses

Design and Technology: polymers

Literacy / key words

Polymer
Polymer is another name for plastic.

Thermosetting polymers
Can only be formed once. They are hard to recycle. They are good insulators and are resistant to heat and chemicals.

Thermoforming polymers
Can be heated and formed repeatedly. They are recyclable.

Crude oil
A primary source of plastics .

Bio degradable
able to decay naturally and in a way that is not harmful.

Micro plastics
small plastic pieces which can be harmful to our oceans

Vacuum forming
The simplest type of plastic forming, that uses a mold and vacuum pressure.

Thermoforming polymer	Physical properties	Working properties
Acrylic (PMMA)	Hard, brittle, shiny, available in a wide range of colours	Resists weather well, can be cut, folded and polished well, scratches easily, used for car lights, visors and baths
High impact polystyrene (HIPS)	Rigid, cheap, available in a lot of colours	Can be cut and vacuum formed easily, food safe but toxic when burned, used for CD cases and yoghurt pots
High density polythene (HDPE)	Stiff, strong, lightweight	Lightweight and flexible, can be recycled well, used for washing baskets, pipes and chairs

Thermosetting polymer	Physical properties	Working properties
Melamine formaldehyde	Hard, brittle	Food safe, printable surface, used for picnic wear
Polyester resin	A resin and a hardener, sets clear and smooth	Strong, heat resistant and good insulator, used as waterproofing and for encapsulating items
Urea formaldehyde	Smooth finish, limited colours	Heat resistant, hard, brittle and easily injection moulded, used for electrical fittings

ACCESSFM

- **Aesthetics** –

How visually appealing is the design?

- **Cost**

Is the product affordable to make or buy?

- **Customer**

Who is the target audience for this?

- **Environment**

How eco-friendly or sustainable is it?

- **Safety**

Is it safe for users to operate?

- **Size**

Are the dimensions suitable for its purpose?

- **Function**

Does it perform its intended function effectively?

- **Materials**

Are the materials appropriate?

CAD and CAM

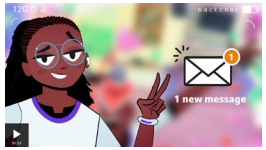
Computer Aided Design (CAD) drawing allows products s to be manufactured using Computer Aided Manufacture (CAM) Computer aided manufacture is very fast and accurate and requires less human intervention.

CAD
Techsoft 2d design

CAM
Laser cutter

Extra - Read/watch/do

Watch:
the problems with plastics video



https://www.bbc.co.uk/bitesize/articles/z4d62v4

You will be assessed on

- Your knowledge of polymers
- Your ability to analyse exiting products
- Your completed product (ball bearing maze)

Links to curriculum

Make
select from and use a wide and complex range of materials and components, taking into account their properties

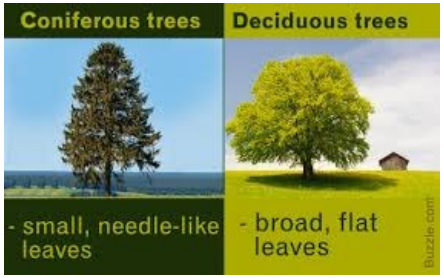
Design and Technology: timbers

Literacy / key words
Coniferous
Soft woods come from coniferous trees. They keep their leaves all year and are quick growing.
Deciduous
Hardwoods come from deciduous trees. These are slow growing and loose their leaves in the winter.
Manufactured board
Manufactured board is a natural timber that is combined with adhesive to make a composite material. Examples include MDF, chipboard and hardboard
Life cycle assessment
(LCA) can be used to analyse all the stages in a product's life and highlight the impact it will have on the environment..

Softwood	Physical s and Working properties
Larch	Pale coloured with a contrasting darker grain, knotty. Durable, easy to machine, high sap content gives it good water resistance, used for exterior building and flooring
Pine	Pale coloured with aesthetically pleasing grain. Lightweight, easy to form, used for construction and decking
Spruce	Pale cream with an even grain. Easy to form, takes stain colour well, used for construction and furniture

Hardwood	Physical properties and Working properties
Ash	Pale coloured, narrow grain Flexible and good for steam bending, tough, used for sports equipment
Teak	Teak is a durable, oily wood with a tight grain. It is moisture resistant, making it a good choice for outdoor use, eg outdoor furniture. It is also used in boat decks, chopping boards and flooring.
Oak	Moderate-brown colour with unique and attractive grain markings Tough and durable, polishes well, used for quality furniture

Manufactured board	Physical and Working properties
Medium-density fibreboard (MDF)	Smooth, light brown, can be veneere. Smooth and easy to finish, absorbs moisture so not suitable for outdoor use, used for kitchens and flat pack furniture
Plywood	Odd number of layers of veneer glued at 90 degree angles for strength, aesthetically pleasing outer layer Easy to cut and finish, can be stained or painted, used for shelving, construction and toys
Chipboard	Compacted wood chips, laminated with a variety of coverings, end cuts are difficult to finish Strong but absorbent to water, used for veneered worktops and flooring



Extra - Read/watch/do
Watch:
FSC

https://www.youtube.com/watch?v=HBScUXDlF90&t=2

You will be assessed on

- Your knowledge of timbers.
- Your ability to evaluate a final product
- Your completed product (desk tidy)

Links to curriculum
Make
Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture.