CHRIST THE KING

KNOWLEDGE ORGANISER

Year 8 PENTECOST

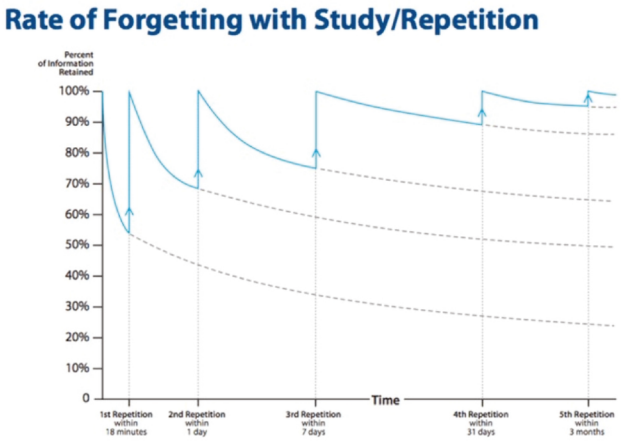
(Term 3)

#CTKCares

Knowledge Organisers

We use knowledge Organisers at Christ the King to help all students achieve. Knowledge Organisers improve your confidence by helping you to understand how to learn and revise. We are building a seven-year revision strategy that supports you to remember the core and powerful knowledge that is required to be successful in each subject.

The Ebbinghaus Forgetting Curve demonstrates that knowledge is lost over time if it is not revisited. A simple model for memory involves working memory and long term memory; working memory is limited, and can very easily become overloaded, whereas long-term memory is effectively limitless. You can support your limited working memory by storing key facts and processes in your long-term memory. Research evidence indicates that regular recall activities, known as retrieval practice, are an effective way of ensuring that knowledge is committed to long-term memory



At the start of each term, you will receive a knowledge organiser booklet that contains content for all subject areas. You will use your knowledge organiser in your lessons, in tutor time, and during homework tasks. An important aspect of your revision for assessments and end-of-year examinations will be to use the knowledge organisers for self-quizzing. If this core knowledge is secured, you will be in a strong position to use and apply this knowledge in a range of contexts. You will be given your knowledge organiser in a plastic wallet along with a homework booklet – the expectation is that you bring this to school every day – **it should be placed on your desk in every lesson**, ready to use. Geography and History highlight the essential 'golden knowledge' in yellow to support your learning.

How to use your Knowledge Organiser

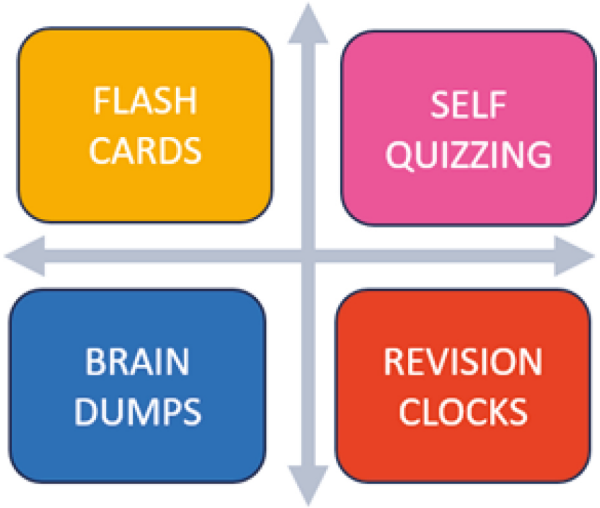
The best way to use your knowledge organisers is to regularly use one of our Core 4 Revision strategies as part of your home learning. These strategies will be explained to you in more detail in tutor time, by your class teachers and as part of your Personal Development lessons.

- **Flash Cards:** Use the information from your knowledge organiser to create flashcards – these could be double sided, with a question on one side and the answer on another, or a keyword on one side and the definition on the other.

- **Self Quizzing:** There are different ways you can self-quiz:
  - Look, cover, write, (say), check
  - Create gaps fills
  - Create questions for the information you want to learn and then answer them from memory

- **Brain dumps:** These are a small but powerful revision strategy which help makes the information 'sticky' so that it goes into your long-term memory, ready for you to recall it into your working memory. They are good to use at the end of topics. An effective brain dump involves you writing down everything you can about a topic you want to revise from your memory. You then check the information against the information on your Knowledge Organiser – you then mark your work and add any missing information onto your brain dump in a different colour pen, so that you know which information you need to revisit, either through using flash cards or self-quizzing.

- **Revision Clocks:** Revision Clocks are a blank clock shape – divided into 12 segments. In each segment put a sub-heading and then include the information linked to that. They are effective as they allow you to 'chunk' up the core knowledge from the topic into the segments. You can use colours and pictures to make the information more 'sticky'.



Homework Schedule

You should complete at least one hour of Home Learning per school day.

This will consist of:

- Knowledge Organiser and Online Learning as directed by your teachers.
- If you have no tasks set, carry out Knowledge Organiser activities as per the Knowledge Organiser timetable below.
- Two periods of 20 minute reading each week.

Week 1					
20 Minutes Per Subject	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Subject 1	English	Science	Maths (Sparx)	Maths	English
Subject 2	RE	PE	RE	Science	Geography
Subject 3	Music	History	Technology / IT	MFL	Art

Week 2					
20 Minutes Per Subject	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Subject 1	Science	English	English	Maths (Sparx)	Science
Subject 2	RE	Maths	RE	Drama	Geography
Subject 3	Music (Practical)	History	Technology / IT	MFL	Art (Practical)

Read 20 minutes a day and you'll read 1,800,000 words per year.

Reading for 6 minutes a day reduces stress by 68%.

Children learn 4,000 to 12,000 words per year through reading,

What are the homework expectations?

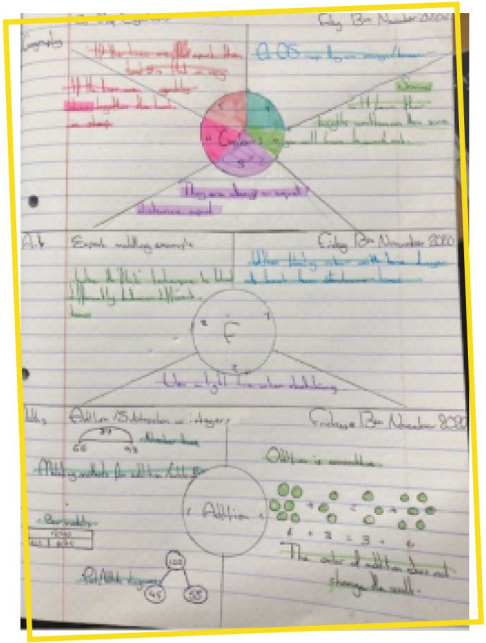
Each homework must meet the following 5 requirements:

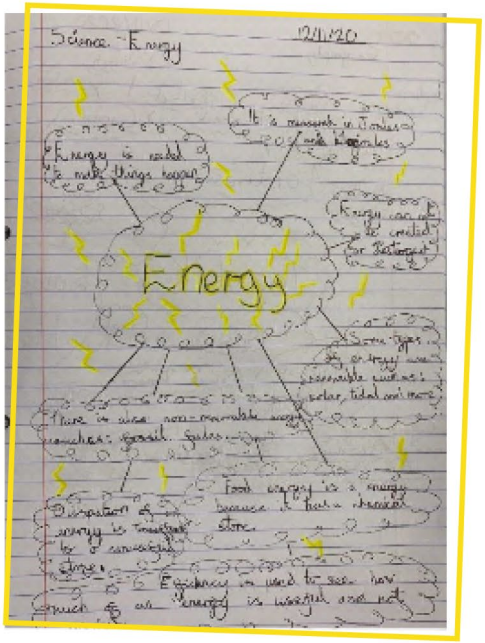
- Write the complete title and date in full *e.g Wednesday 7th June 2023* on each page and underline.
- You should include minimum of words to summarise the topic. Do not copy the words from the text.
- Make full use of the page for each topic by scaling your notes and images appropriately to use all the space.
- You must include diagrams, sketches, or cartoon doodles to visually represent the topic, try to use humour.
- Highlight key words and phrases, using underlines and highlighter pens, and explain technical terms.

How should I present my work?

Please remember that the same rules apply to the presentation of your homework as applies for your class work: **dates and titles** (which should be the name of the subject) **need to be underlined with a ruler** and you should **present your work as neatly as you are able to.**

If you are self-quizzing correctly, there should be **evidence of green pen on your page**. Here are some examples of how to set out your work:





DON'T FORGET!

Always record the date, topic, and page number in your Home Learning Book!

Art – Landscape Project

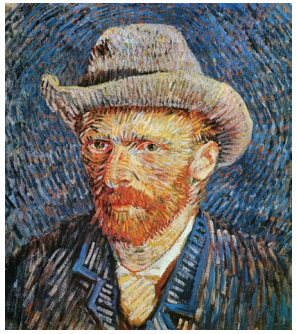
Landscape Art can come in many different forms such as paintings, drawings, photographs, prints, and even sculptures. They often show images of nature such as the countryside but also can depict cities and urban areas. Landscape Art can be **abstract** and **realistic** and can document factual events or can be used to express the feelings and emotions of the artist.

Term	Definition
1. Perspective	A technique which attempts to create the illusion of depth and 3 dimensions in a drawing or painting.
2. Background	Usually at the top and back of the painting or drawing and appears to be further away.
3. Foreground	Can be seen at the front or bottom of a landscape which appears to be closer.
4. Post Impressionism	Started in Europe in the late 19th century; characteristics include bright colours and thick brush strokes.
5. Brush strokes	Can shape and form and direction in a painting.
6. Composition	How you arrange and place the different parts of a piece of artwork.
7. Horizon line	Used to show where the land disappears in the distance.
8. Vanishing point	Used when drawing in perspective to create a 3D effect.
9. Cityscape	A landscape which shows 'urban' areas including buildings and streets.

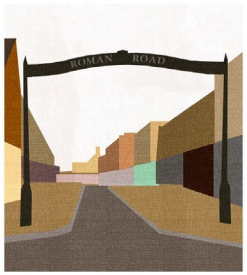
Post Impressionism

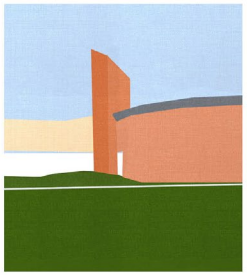
- **Origin:** Began in Europe in the late 19th century.
- **Subject Matter:** Paintings would show scenes of 'everyday life' such as people at work, the countryside, and nature.
- **Style:** Paintings would use brighter vivid colours and thick brushstrokes.
- **Focus:** Post-Impressionists painted to capture natural light and 'emotion' in their work.
- **Key Artists:** Vincent van Gogh, Paul Gauguin, Paul Cezanne, and Georges Seurat are considered original Post-Impressionist artists.

Note: Brush strokes and use of line are key characteristics of Post-Impressionism. Van Gogh's famous painting **'Starry Night'** is a primary example of this style.



Vincent van Gogh (1853 – 1890)
Vincent van Gogh was a Dutch Post-Impressionist painter. His work had a great influence on modern art because of its striking colours and emotional power. He suffered from anxiety and fits of mental illness and famously cut off his ear lobe. During a 10-year painting career, he produced over 1000 pieces of work. Although he only sold one painting in his lifetime, his work is now extremely valuable and popular, selling for millions.





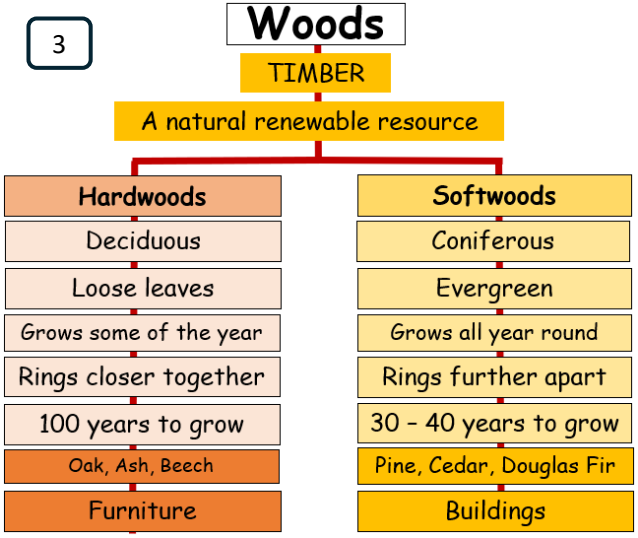
Kuda Mushangi (born 1995)
Born in Nottingham and now based in London, Kuda is a painter and architectural assistant. He is a previous CTK student who completed his GCSEs and A Levels before studying Architecture at John Moore's University in Liverpool. Kuda's art is influenced by many traditional and contemporary artists from all over the world. He paints portraits, interiors, and landscapes. Kuda's work often reflects his feelings and thoughts about society and his heritage. His landscape paintings have a strong connection to Post-Impressionistic painting.

Design & Technology – Timbers

1 Keywords

Keywords	Definition
1. Wasting	The term used to describe the process of removing material when manufacturing. This can be through drilling, sawing, filling or cutting.
2. Template	A shaped piece of rigid material that is used to draw or cut around to increase accuracy. They can also be used when shaping or drilling.
3. Finishing	The term used to describe the process of adding a 'finish' such as paint, varnish, wax or stain to a material for functional or aesthetic reasons.
4. Quality control	Quality control is when your check the quality of a product against a set standard or specification. Products will often have a tolerance of how accurate they need to be.

3 Woods



2 Tools

Marking Gauge		Mark out lines by running it along an edge and using the pin to mark a line into the material.
Try Square		Used for marking out and checking 90° angles on wood, metal or plastic.
Tenon Saw		A saw used for cutting wood. Its flat blade makes it good for cutting straight lines.
Belt Sander		A machine that rotates a belt of sandpaper at high speeds. Used to neaten up edges of wood.
Coping Saw		A saw used to cut wood and plastic. Its thin blade makes it ideal for cutting curved lines.
Chisel		Is a cutting tool with a sharp edge. Sometimes used with a mallet to run along the surface off wood and remove shavings.
Sand Paper		An abrasive paper used to smooth the surface of wood. It comes in a range of 'grit sizes' which range from rough to very fine.

4 Scots Pine - softwood

- Easy to work with, reasonably strong and lightweight.
- Straight grain with lots of knots.
- Pale to reddish brown.

Uses: furniture, construction, door frames.

5 Process of converting a tree to timber

FELLING	The trees are chopped down in to logs and taken to the sawmill.
Transport to sawmill	
DEBARKING	The bark is removed from the logs. The bark is used for fuel.
Sawing - CONVERSION	The wood is converted into different stock form sizes.
Sorting & stacking	The timber is sorted and stacked to ensure air flow.
Drying - SEASONING	The timber is then dried using air or a kiln to remove 9-14% of the moisture.

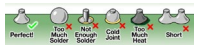
6

Oil – Soaks into the timber. As it penetrates the wood it provides protection and some water resistance.

Wax – a think layer is applied with a soft cloth and pushed in to the wood. It enhances colour and gives a shine. It protects wood from moisture.

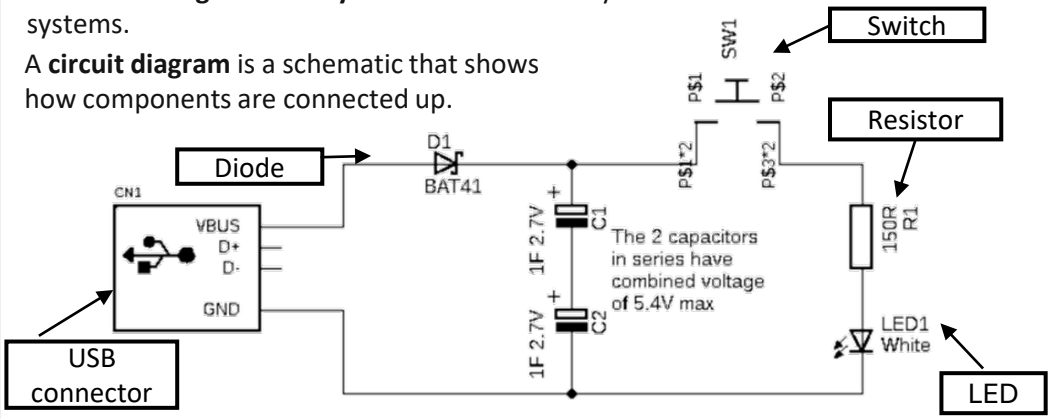
Stain – Permanently stains wood. The colour can be affected by the base wood. It does not protect.

Design & Technology – Torch Project

Key Word	Definition
1. Solder 	Solder is a metal alloy usually made of tin and lead which is melted using a hot iron. It is used to join electronic components to a circuit board.
2. Soldering Iron 	This provides the heat to melt the solder. It has a plastic handle to hold, and a tip that gets hot. It is usually held like a large pencil.
3. Soldering Iron stand 	Because the soldering iron gets hot it you need a safe place to put it down. It usually has a spring like surround to guard the hot tip, and a place to put a damp sponge for cleaning the tip of the iron.
4. Side Cutters 	A type of pliers with angled cutting edges designed for **cutting and trimming wires**
5. Dry Joint 	A **dry joint** is a faulty, dull solder join caused by insufficient heat or solder, leading to unreliable electrical flow.
6. Plywood	A man-made board made by gluing together thin layers of wood (veneers) with the grain alternating direction for strength.
7. Comb joint	A strong woodworking joint made by cutting interlocking 'fingers' into two pieces of wood.

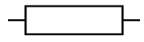
Schematic diagrams use **symbols** to show the layout of electrical or mechanical systems.

A **circuit diagram** is a schematic that shows how components are connected up.

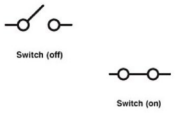
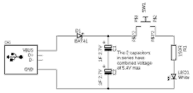


A system diagram uses the logical order of an input, a process and an output to plan the function of a circuit.

Electronic Components

Component	Job	Image	Symbol
LED (Light Emitting Diode)	LED stands for Light Emitting Diode. LEDs are like normal diodes, in that they only allow current to flow in one direction, however, when the current is flowing, the LED lights up.		
Resistor	A resistor is a device that opposes the flow of electrical current. The bigger the value of a resistor, the more it opposes the current flow. The value of a resistor is given in Ω (ohms) and is often referred to as its 'resistance'.		

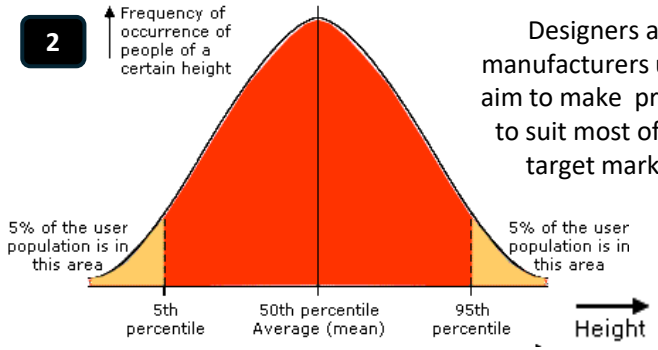
Colour		x Ω
Black (Bk)	0	1
Brown (Br)	1	10
Red (R)	2	100
Orange (O)	3	1000
Yellow (Y)	4	10000
Green (G)	5	100000
Blue (B)	6	1000000

Switch	A device used to interrupt the flow of electrons in a circuit. They are usually on or off.		
USB Connector	Allows a circuit to connect to a USB port, charging the capacitor.		
Capacitor	A capacitor is a component that can store electrical charge (electricity). In many ways, it is like a rechargeable battery.		
Diode	Diodes let current flow in one direction, but stop it from flowing in the other. They are like a one way valve.		
Circuit Board	A flat board that holds and connects electronic components using wires or metal tracks. It allows electricity to flow.		

1 Key terms

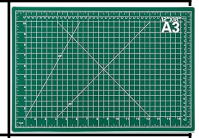
Anthropometrics	The **study of the human body** and its movement, often involving **research into measurements** relating to people. It also involves collecting statistics or measurements of the human body that can then be used to design products and environments that **fit** the users.
Ergonomics	Defined as the science of fitting a workplace to the user's needs, *ergonomics* aims to increase how comfortable, efficient and easy a product is to use.
Percentile	Percentage data points. For example, if you are in the 90th percentile for height, it means you are taller than 90% of the people in that group.
Crating	Using sketched 3D cubes/ cuboids to help structure more complex drawings.
Mood board	An arrangement of images, materials, pieces of text, colours, textures etc. Intended to represent a particular style or theme.
Scale	A method used to enlarge or reduce the actual size of a drawing of model whilst keeping proportions the same.

2

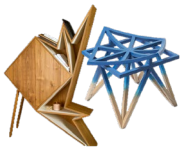
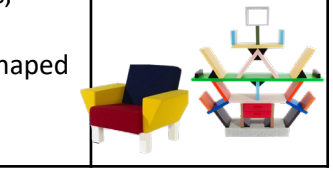


Designers and manufacturers usually aim to make products to suit most of their target market.

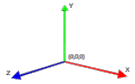
3 Modelling Tools & Equipment

Craft Knife	As single bladed knife that easily cuts through a variety of different materials. The blade is retractable so and can be snapped off to reveal a new blade, once the old one becomes blunt.	
Cutting Board	Self-healing cutting mats are purpose-built to be extremely durable and resilient, creating the perfect cutting surface that reduces blunting but also ensures any worksurface is well protected from damage.	
Metal Rule	Metal safety Rule's features a unique M profile which allows you **to keep your fingers well away from any knife edge** when used for cutting or scoring. They are made from metal to prevent the rule being damaged by the blade of a craft knife.	
Glue Gun	Heats up and melts hot glue sticks. Once melted, the glue is then directed out of the nozzle of the gun. **The nozzle can get very hot**, so it is important to follow safety rules to ensure that you don't burn yourself. Any burns should be reported straight away.	

4

Aljoud Lootah 	Aljoud's designs focus on the idea of contrasts in form and function while distinctly interpreting the Emirati culture through contemporary design. Her creative drive comes from a passion for detail and experimental approaches to materials and aesthetics.	
Philippe Starck 	Stark has produced designs for large companies such as Alessi, Puma and Microsoft. He is interested in bright colours, unusual shapes and materials. He wants his designs to be mass produced and relatively affordable, but he also wants them to be durable.	
Morag Myerscough 	Known globally for creating installations and immersive public artworks that transform places and champion community. Her work is instantly recognisable, combining geometric patterns with bold shapes and hand painted type, it aims to bring joy to all those who encounter it.	
Ettore Sottsass 	Ettore was an Italian architect and designer, he brought bold colors, unconventional shapes and an innovative contemporary style to everyday items, creating iconic postmodern furniture pieces that shaped the history of the **Memphis movement**.	

Design & Technology – CAD CAM

Key Word	Definition
1. CAD -	**Computer Aided Design -** Using a computer program to draw, model and design products on a screen instead of using pencil and paper. Some CAD designs can be sent directly to CAM machines.
2. CAM -	**Computer Aided Manufacture -** Machines controlled by computer software to make products and parts designed using CAD.
3. Laser Cutter 	A type of CAM machine that uses a powerful **laser** to cut or engrave shapes into materials. It can cut through thin sheets of wood, plastic, card and textiles.
5. 2D Design	A CAD software program used to **draw** flat, two-dimensional designs (width and height). It can be used to create files for the laser cutter. 
6. Sketchup	A CAD program used to create 3D **models** of products on a computer. 
7. 3D Printer	A CAM machine that makes a physical object from a 3D model by building it up **layer by layer** usually using thermo plastic.
8. Virtual Modelling	Creating and testing a product on a computer before making it in real life.
9. Rapid Prototyping	A group of techniques, including 3D printing, used to quickly make a physical or digital model of a product for testing.
10. Co-ordinates	Numbers used to show the exact position of points in a CAD drawing using x, y and sometimes z values. 
11. Datum point	The **fixed starting point** in a CAD drawing where x, y and z all equal zero (0,0,0).
12. Automation	Using machines to carry out tasks automatically with little or no human input.

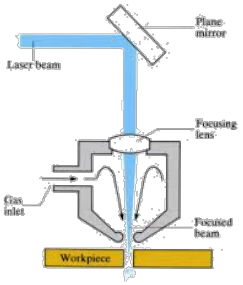
Laser cutting

- A **2D CAD drawing** is created using software such as **2D Design.**
- Coloured lines tell the laser cutter what power and speed settings to use:

Red lines = cut (vector)

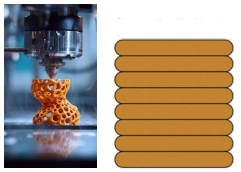
black lines = engrave (raster)

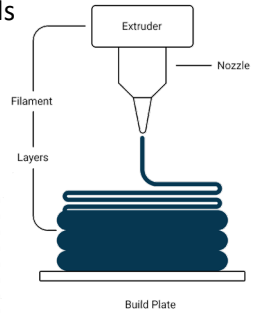
- The file is sent to the **laser cutter**.
- The laser follows the drawing.
- **Power and speed** control how the laser cuts.



3D printer

- A **3D CAD model** is created using software such as **Sketchup.**
- The file is **sliced into layers**.
- The file is sent to the **3D printer**.
- Heated plastic **filament** is pushed through a nozzle.
- The printer builds the object **layer by layer** on to a heated bed..





Advantages of CAD / CAM

- ✓ Very accurate and precise
- ✓ Designs can be edited easily
- ✓ Produces identical parts every time
- ✓ Saves time when making multiple products
- ✓ Can create complex shapes
- ✓ Reduces human error
- ✓ Can be linked directly to machines (laser cutter, 3D printer)

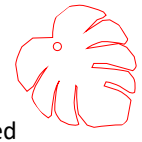
Disadvantages of CAD / CAM

- Requires training and skill to use software
- Machines are expensive
- Can break down or need maintenance
- Less hands-on making
- Relies on electricity and computers
- Mistakes in CAD affect the final product

Manufacturing a system – Manufacturing is a system where products are made through different stages that happen one after another. These stages are grouped into three parts:

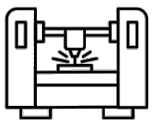
Input

2D CAD drawing, power speed settings



Process

Laser follows the CAD file and cuts or engraves



Output

Accurately cut or engraved product

Drama – Crime and Punishment

Key Words

Character Motivation	The reason behind a character's behaviours and actions in a given scene or throughout a story.
Background	Your character's past life experiences—where they come from, their upbringing, how they have been treated.
Devising	Working together in a group to create scenes from scratch in response to a stimulus.
Stimulus	A starting point for creating a scene.
Tone	The emotion behind what your character says e.g. an angry tone, a surprised tone.
Pitch	How high or low your character's voice is.
Accent	The way a person speaks—can show where they are from and sometimes class or status.
Pace	The speed at which your character speaks or moves.
Stance	The way a person stands.
Gait	The way your character walks—do they have a narrow gait or a wide gait?
Posture	The position in which someone holds their body when they sit or stand—can give us clues to their personality.
Gestures	Using your hands (or sometimes eyes and head) to communicate meaning with other characters and the audience.
Body Language	Showing emotion through the way you sit, stand or position yourself.
Facial Expression	Showing emotion through your face—eyes, mouth, eyebrows...
Mark the Moment	Highlight a significant moment in a piece of drama in a way which makes it stand out for the audience.

Topic Vocabulary

Stereotype	A widely held but oversimplified image or idea of a type of person.
Suspect	A person thought to be guilty of a crime or offence.
Evidence	The available facts or information indicating whether something is true or not.
Interrogate	To ask questions of (someone) closely, aggressively, or formally.
Crime	An action or omission which is punishable by law.
Guilt	The fact of having committed a specified offence or crime.
Report	An official document written after thorough investigation, by an appointed person.

Rehearsal techniques help us to understand our character:

Thought-tracking
Hot seating
Conscience alley

Performance techniques help us to engage the audience:

Marking the moment:
Slow motion, freezeframe, highlighting, use of lighting, use of sound...

Non verbal communication:
Use of body language, facial expression, eyeline, pause, posture...

Drama – Zombie School

Key Words	
Effective Rehearsal	The time used to create a performance. It is important to giving meaningful feedback and set targets to make sure that every rehearsal is productive.
Stage Combat	A technique in theatre designed to create the illusion of fighting without causing harm to the performers. Each move must be carefully choreographed to keep everyone safe.
Ensemble	A group of performers working together to create a scene. No one actor is more important than any other.
Atmosphere	The overall feeling or mood created by the actors in a scene. The atmosphere should affect the way to audience experience the scene or play.
Hot Seating	One actor sits in the 'hot seat'. Everyone in the ensemble asks the actor questions about their character's thoughts and feelings which they answer in role (as their character).
Stereotype	A widely held but oversimplified image or idea of a type of person. Used in theatre to create easily recognisable characters.
Special Effects	Design elements that don't fall under any category (lighting, sound, set etc). Can include smoke, pyrotechnics, prosthetics, make-up, flying... (also known as SFX).
Role on the Wall	A rehearsal technique involving writing down everything you know about your character. This helps to identify any gaps in your knowledge of the character.

My Character Development

- Which body part does your character lead from? How does this impact the rest of their body language?
- Where have they just been? Where are they going now?
- How do their background and past experiences influence their attitude?
- Name, Age, Status in the group
- Accent, Pitch, Tone of voice
- Body language, Stance, Gait
- What do others think of them?
- What is their objective?
- What do they think of others in the group?

PERFORMANCE CHECKLIST

- Audience awareness
- Well organised performance
- Smooth transitions
- Good projection
- Using the whole space
- Thoughtful use of physical and vocal skills
- Use of proxemics
- Costume
- Hair and make up
- Sound and lighting

Why are Costume and Make-up important aspects of a play?

- They establish a character—show who they are.
- They show the context of the production—what is going on in the world of our play?
- They support the style of the production—is the play naturalistic or abstract?

What is the purpose of Lighting?

- It illuminates the action onstage—the audience need to see what it happening to understand it.
- It conveys setting and time of day—where is the action taking place?
- It adds to the mood or atmosphere of a piece—how do you want your audience to feel?

How do we use Sound to enhance a performance?

- It can influence the pace of a scene—do we want the scene to feel rushed and frantic or slow and languid?
- It can convey time period, setting, time of day—can the audience hear birds singing? The sound of traffic? The radio?
- It can impact the way the audience feel—think about how different music makes you feel and how it could improve the piece.

A Midsummer Night's Dream

Shakespeare wrote over 30 plays which are often put Into three categories – comedies, histories and tragedies. A Midsummer Night's Dream is a **comedy**.

A Shakespearean comedy has the following key parts:

- A happy resolution at the end- often a marriage
- A romantic plot
- A group of ridiculous characters
- Confusion over who is who

Shakespeare's Theatre

- The theatre was **open air** and plays had to be performed in **daylight**.
- A **flag** would be flown from the top of the theatre to show a play was going to be performed.
- People sat around the stage in galleries.
- The cheapest place was in front of the stage where ordinary people **stood**. They were known as 'groundlings'.
- There was very little **scenery** – a character would tell the audience where the scene was set.
- Women's parts were played by boys.
- There was generally plenty of **violence** in the plays – Tudor audiences loved it.
- Many enjoyed going to the theatre as it provided good **entertainment**, an escape from their everyday lives and the chance to socialise and catch up on the latest news.
- Many nobles attended the theatre and the showing of a new play became a **social event**.
- **Puritans** disapproved of the non-religious nature of the plays which could lead to bad habits and behaviour. They believed it kept people from going to church.
- The authorities were unhappy because they believed it encouraged people to miss work and be idle, they also felt that theatres were ideal places for **thieves** and vagabonds to operate and where **plague** and other infectious diseases could spread.

Key Characters:

The Lovers

- ***Hermia –*** the daughter of Egeus and is love with Lysander. Her best friend is Helena.
- ***Lysander*** – a gentleman in the court of Athens. He is in love with Hermia.
- ***Helena*** – Hermia's best friend. She is in love with Demetrius but he does not love her anymore.
- ***Demetrius*** – a gentleman in the court of Athens. He is in love with Hermia and Egeus wants them to marry.

The Mechanicals

- **Nick Bottom** – goes into the forest to practise his role in the craftman's play**.**

The Athenians

- **Theseus** – Duke of Athens, engaged to Hippolyta (Queen of the Amazons).
- **Egeus** – Hermia's father. He wants her to marry Demetrius.

The Fairies

- ***Titania*** – Queen of the Fairies, married to Oberon
- ***Oberon*** – King of the Fairies, married to Titania
- ***Puck*** – also called Robin Goodfellow, a fairy and Oberon's servant

Key Settings:

Ancient Athens- Considered to be the birthplace of Western civilization. Named after the Greek goddess Athena (Goddess of wisdom and war). Ancient Athens was the home of democracy, the army/military discipline and philosophy. It represents order and control in the play enforcing strict laws for their citizens.

Enchanted Forest – The natural world lying outside the city walls and home of the Fairies. The forest is initially a place of refuge and freedom for the Lovers. However, it is an mysterious, secretive, unpredictable and confusing place where characters' behaviour often changes and social norms break down.

Historical Context

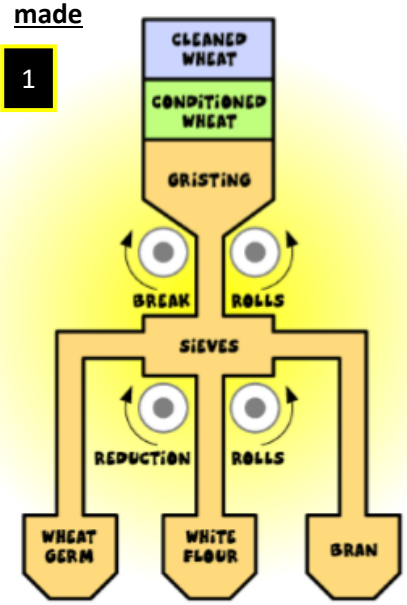
Queen Elizabeth I – She reigned England for 44 years from 1558-1603. Her time on the throne is known as 'The Elizabethan Era' or sometimes the 'Golden Age'. The play was written around 1590 when public opinion of her was negative due to war, plague and political tensions.

Midsummer – also known as the Summer Solstice (June 21st). Traditionally people celebrated with dances, music and bonfires. It was a time of superstition/ magic –when young maidens and men thought they could discover who their true love was in their dreams.

Key topics: Nutritional needs of others, health issues associated with a poor diet, religious diets and food choices, food origins, organic and intensive farming, food miles and seasonality.

Farm to Fork – How flour is made

1



On arrival at the mill the wheat is **cleaned** to remove dust, straw and other impurities.
Conditioning with water softens the bran layer of the wheat and makes it easier to separate the parts of the wheat.
The wheat is blended with other types of wheat in a process called **gristing** to make different kinds of flour.
It is then **milled** through steel rollers with teeth that break the grains open.
The fragments of wheat grain are **separated** by sieves.
The bran, wheatgerm and endosperm have all been separated out. They can now be **blended** to make different types of flour.

2

	Intensive Farming	Organic Farming
Quantity (yield)	High yield, large amounts of food produced.	Lower yield of crops and more is lost and less is grown.
Pesticides	Artificial pesticides are used to keep pests away resulting in more crop.	Pesticides restricted; natural predators encouraged.
Animals	Battery rearing of animals in enclosures , less humane and can cause disease to spread quickly through the animal population..	Animals have a better quality of life with access to outdoors. Animals not given antibiotics.
Labour	Artificial chemicals and machines means fewer people are needed for work.	More people are needed to work the farms.
Fertilisers	If too much is used, it can wash in to steams and lead to pollution.	Only natural fertilisers are used along with crop rotations.
Cost	Low cost of production but a high initial set up, maximum output is achieved resulting in a lower cost for consumers	Production is lower and more space is needed, resulting in higher cost produce for consumers.

3

Key terms	Definition
1. Organic	Food produced without the use of chemical fertilisers, pesticides or other artificial chemicals.
2. Intensive farming	A way of producing large amounts of crops, by using chemicals and machines as well as keeping animals indoors to restrict movement.
3. Seasonal	The times of the year when the harvest or the flavour of a food is at its peak.
4. Food miles	The distance food is transported from the time of its making, until it reaches the consumer.
5. Halal	Foods that are allowed to be eaten according to Islamic law. Foods that are not permitted are known as haram.
6. Kosher	Is a word used to describe food and drink that complies with Jewish religious dietary law and that are fit and proper for consumption.

4

RSPCA ASSURED

Farmed animals that have been inspected to **VERY high welfare standards** – providing them with physically and mentally stimulating environments from birth to slaughter.

ASSURED FOOD STANDARDS

This symbol means that the food you buy has been **responsibly sourced** from **British** farmers, safely produced and comes from crops and animals that have been well cared for.

Lion Quality

This logo is stamped on to egg to certify that they are **British** and that the **hens have been vaccinated** against Salmonella.

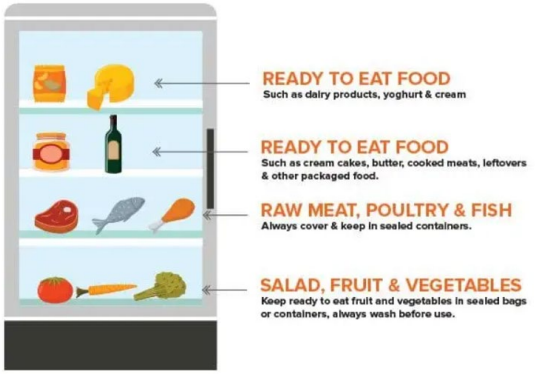
SOIL ASSOCIATION · ORGANIC STANDARD ·

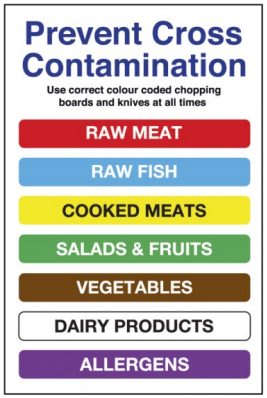
This symbol means that the product is certified to **high organic standards** and provides an assurance of organic authenticity.

Food Preparation and Nutrition: Special Diets and Food Origins

5 Food Safety

Microorganism	Tiny living things, such as bacteria, yeasts and moulds which cause food spoilage.
Pathogen	Harmful bacteria which can cause food poisoning.
High Risk Food	Foods which are ideal for the growth of bacteria or micro-organisms (e.g., chicken and shellfish).
Contamination	When food is affected with micro-organisms.





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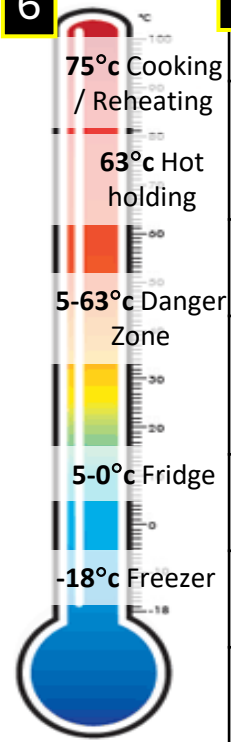


7 Different ages have different nutritional needs

Age	Definition
Young children	Children have small stomachs and should have small meals more frequently. Dairy is important for calcium. They should be encouraged to try new foods.
Children	They are very active and growing rapidly. Need a balanced diet, sugar and snacking should be avoided.
Teenagers	Growth is in spurts, protein required for muscles and calcium for skeleton. Teenage girls begin mensuration. Teenagers deal with stress and this can lead to poor eating habits.
Adults	Stop growing so needs don't as much. Eatwell guide should be followed. Metabolic rate slows through age. Muscle is lost and fat gained.
Elderly	Usually less active and need less energy. Taste and smell can change which affects enjoyment.
Pregnancy	Mum's diet is important for formation of a heathy fetus. Iron and calcium and supplement of B9.

8 Diet Related Health Problems

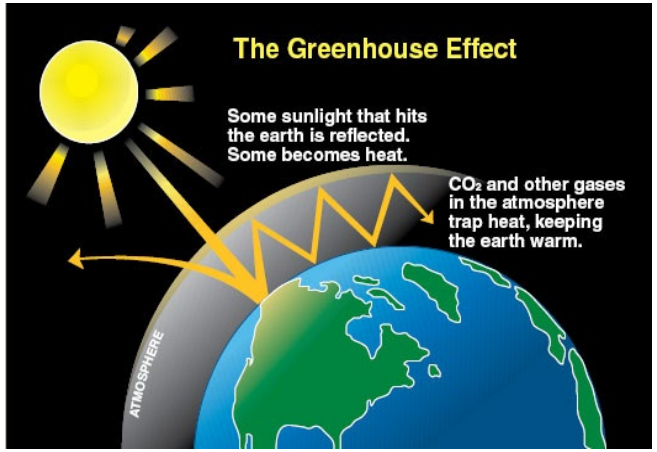
Obesity	The most common over nutrition problem is **obesity** caused by too much energy being consumed, or high levels of inactivity. It is measured as a ratio of weight to height.
Dental Health	To maintain healthy teeth, you need to have a balanced diet. Bacteria feeds on the sucrose found in food and produces acid.
CHD & High blood pressure	**Coronary heart disease** (CHD) is related to the amount of fat in the diet and is caused by a narrowing of the blood vessels to the heart. This reduces the flow of blood to the heart. **High levels of cholesterol** in blood increase the risk of CHD.
Type 2 Diabetes	This is a metabolic disorder caused by poor absorption of glucose. Diet plays a strong role in preventing type 2 diabetes, a condition that causes the level of sugar (glucose) in the blood to become too high.
Anaemia	A condition caused by insufficient **iron** in the body and **vitamin C**, which is needed for absorbsion. Common symptoms include tiredness and lethargy.
Diverticulitis	A condition which affects the large intestine. It is linked to a **low fibre** diet and causes the lining of the bowel to become inflamed, infected and damaged.
Osteoporosis & rickets	**Calcium** is important for strong bones. Vitamin D is needed for calcium to be absorbed from food. Rickets is caused by a lack of calcium **and vitamin D** in children. Osteoporosis is a disease in which the bones start to lose minerals and their strength and break easily.

D'habitude je vais en vacances en France pour une semaine avec mes parents à mon avis c'est génial	1	Usually I go on holiday to France for a week with my parents in my opinion it is great!
Nous voyageons en avion car c'est rapide mais je voudrais voyager en ferry car j'adore la mer	2	we travel by plane because it is fast but I would like to travel by boat because I love the sea.
Normalement nous restons dans un camping, au bord de la mer ce que je trouve vraiment nul !	3	Normally we stay in a campsite by the seaside which I find really rubbish!
En général, je vais à la plage tous les jours. Parfois, je fais de la natation ou je joue au volley, c'est reposant	4	In general, I go to the beach every day Sometimes, I do swimming or I play volleyball, it's relaxing.
Par contre l'année dernière , je suis allée aux alpes pendant une semaine avec mes amis	5	However, last year, I went to the Alps for a week with my friends
J'ai visité un grand lac et j'ai fait beaucoup de sports d'hiver	6	I visited a big lake and did lots of winter sports
L'année prochaine, je vais aller à Marseille avec mes grands-parents et mes cousins	7	Next year, I am going to go to Marseille with my grand-parents and my cousins
Nous allons rester dans un hôtel de cinq étoiles avec une grande piscine et des bons restaurants	8	We are going to stay in a five star hotel with a big swimming pool and good restaurants.

Geography – Topic 9 – Climate Change

1. Climate Change key words	
Climate Change	Changes in climate as a result of natural causes or human activity
Global warming	The recent increase in global temperatures
Greenhouse effect	Trapping of the sun's warmth in our lower atmosphere which warms the earth
Greenhouse gases	Gases such as carbon dioxide and methane, which absorb heat from Earth
Anthropogenic	Environmental change caused by humans
Mitigation	To reduce or eliminate the effects of something from happening
Adaptation	Do not aim to reduce or stop global warming – actions taken to adjust to natural events

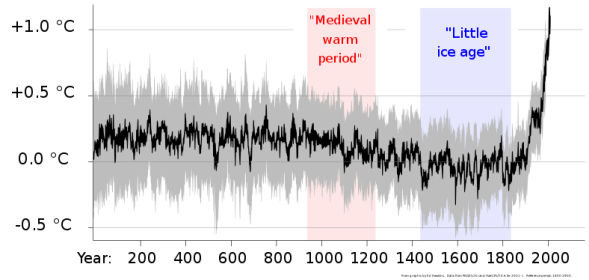
2. The greenhouse effect
The natural process of trapping the sun's warmth in our lower atmosphere which warms the earth



3. Evidence of Climate Change	
Short-term	**Long-term**
Glacier retreat	Ice cores
Rising sea levels	Pollen analysis

4. Causes of Climate Change	
Natural	**Anthropogenic**
Changes in the orbit and tilt of the Earth	Burning of fossil fuels
Volcanic activity	Deforestation
Solar output	Dumping waste into landfill
	Agriculture

Global Average Temperature Change



5. Natural Resources	
Natural Resource	Substances that are found in nature which can be used by humans for our benefit e.g. water, soil, coal, minerals, wood, animals
Energy Mix	The proportion of energy that comes from different sources e.g. coal, wind, solar
Fossil Fuels	Non-renewable energy sources e.g. coal, oil and natural gas
Renewable	Sources of energy that can be replaced when they are used
Non-renewable	Sources of energy that cannot be replaced once they are used
Resource security	Plentiful supply of a resource

6. Sources of Energy	
Renewable	**Non-renewable**
Solar	Oil
Wind	Coal
Hydro-electric power (HEP)	Gas
Biomass	Nuclear
Geothermal	

7. Factors in locating a wind farm
Droughts
Storms
Heat waves
Rising sea levels
Melting glaciers
Warming oceans

7. Global Consequences of Climate Change
Droughts
Storms
Heat waves
Rising sea levels
Melting glaciers
Warming oceans

8. Effects on small island developing states (SIDS)
Increase in storms
Relocation of populations
Loss of biodiversity
Coastal erosion

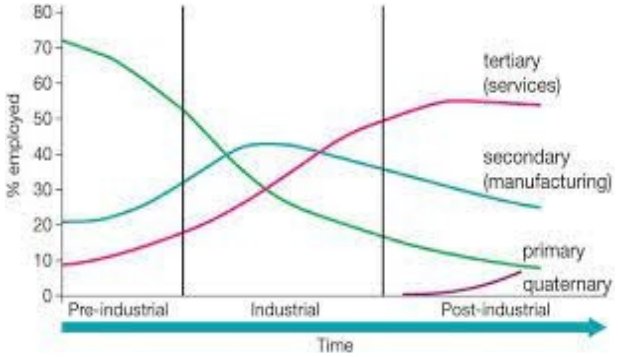
9. Climate Change impacts in the UK
Severe water shortages in the summer
Risk of flooding will double to 1.9 million people
Increase in sea levels by one metre and as much as two metres by coasts
Increase in heat related deaths in the summer

10. Managing global climate change	
Mitigation	Adaptation
Alternative energy	Agriculture
International agreements	Water supply
Planting trees	Reducing risk from sea level rise

Geography – Topic 10 – Economic Geography

Economy	The wealth and resources of a country in terms of the goods that are produced and consumed there

1. Clark Fisher Model – showing sectors of industry over time

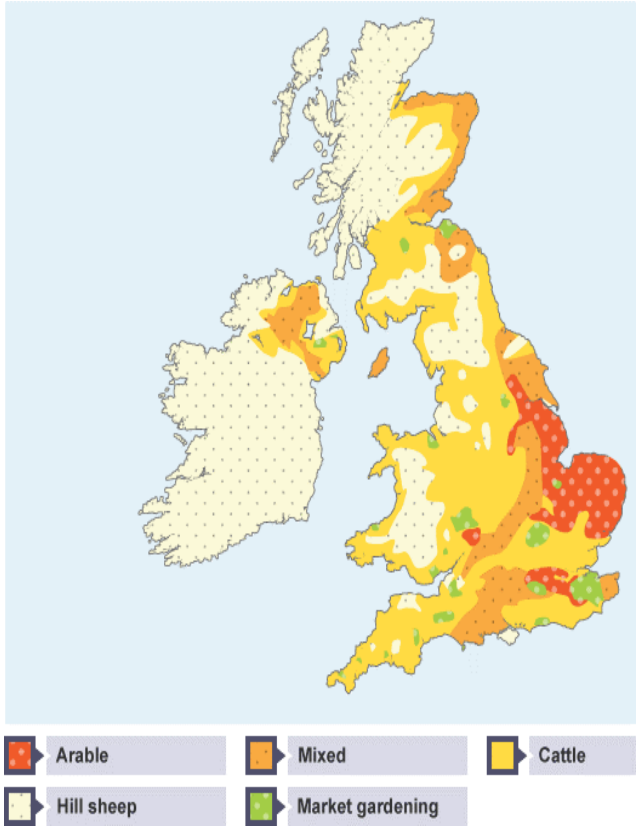


2. Agriculture	
Arable farming	Where crops are grown e.g. wheat and barley
Pastoral farming	Where animals are raised e.g. cattle and sheep
Mixed farms	Where crops are grown and animals kept
Market gardens	Where fruits, vegetables and flowers are grown

3. Factors in determining factory locations	
Costs	Buying/leasing land, equipment, wages, training, taxes
Capacity of the workforce	Availability of local labour with the right skills
Capability of the region	Raw materials available, availability of road/rail connections
Culture of the region	Ability to attract talented workforce, government policies supporting industry
Customers	Close by to the markets
Physical Landscape	Flat land/space for expansion

4. Retail change in the UK	
Convenience goods	Goods bought nearly everyday such as bread, milk. Readily available from the majority of shops
Comparison goods	Higher value goods purchased less often such as electrical goods, clothes. People go to several shops to compare before buying .
Clone town	A town where the high street is dominated by chain stores
Out of town retail parks	Areas of shops located away from the traditional CBD

Agriculture in the UK



5. Globalisation & trade	
Globalisation	The increasing links between countries around the world as a result of the movement of goods, services, and money.
Containerisation	A system of transporting products by using freight containers (usually on ships)
Balance of trade	The difference in value between a country's imports and exports
Trade link	A connection between two countries to allow the movement of goods and services

6. Economic advantages of tourism
Supports employment, for example in hotels, restaurants and shops
Boosts local farming to supply hotels and restaurants
Encourages improvements in road networks and the environment
Brings income for the local economy, which can be spent on improving public services

7a. Benefits of TNCs
Creation of jobs
Improved education and skills
Investments in infrastructure e.g. roads
Help exploit natural resources

7b. Costs of TNCs
Poorer working conditions
Damage to the environment
Profits go to companies overseas, not locals
Natural resources may be over-exploited

History – Enslavement

1. African kingdoms	
Africa	Africa has 54 countries and 2,000 languages are spoken.
Why was it colonised?	**Economic** – rich in gold, ivory and other resources. **Political** – European countries wanted to expand empires. **Religious** – Europe wanted to spread Christianity.
Kingdom of Benin	Benin (modern day Nigeria) was one of the first countries to have continued contact with European traders. The empire thrived on trade (ivory, textiles) and is famous for its brass, bronze, and ivory art.

2. Capture and middle passage	
Capture	Men, women and children kidnapped and sold.
Conditions on board	Chained in rows on their backs in the dark for months
Food	Weak watery porridge every meal brought in buckets below deck
Disease	Cholera and Typhus

3. Life on the plantations	
Auctions	People were sold to the highest bidder on a stage alongside goods
Work	6 days a week. At least 12 hours a day without pay. Picking cotton in gangs.
Living conditions	Small wooden huts, no amenities, straw bed.
Punishments	Whipping, hanging, amputations, chains.

4. Resistance	
Mutinies on ships (refusing orders)	10% of slave ships experienced some type of slave revolt. Usually, they would be defeated by the crew, often with great bloodshed. Some mutinies were successful.
Cultural resistance	Enslaved people would often keep alive aspects of their African heritage, resisting attempts to destroy their culture. Music united slave communities. Songs would contain secret messages about freedom.
Maroons	Maroons were a group of former enslaved people who had escaped. They lived in the Blue Mountains of Jamaica, where they established their own towns and way of life. They would help others to escape.
Haitian Revolution 1791-1804	Toussaint Louverture was a former enslaved person who was very organised and a skillful military leader. He inspired with ideas of liberty and freedom. He led the Haitian revolution.
Slave revolts after 1807	After the Abolition of Slavery Act in 1807, enslaved people were made to work harder. This led to an increase in slave revolts. In Jamaica 1831-32 60,000 enslaved people seized areas of land.

5. Abolition of Slavery	
Why?	1. Economic reasons 2. Political changes
How?	Abolitionism movement campaigned and pushed the British government to end slavery in the British Empire in 1833.
Opposition	Plantation owners and investors demanded financial compensation from the government
Key people and groups	The Quakers, William Wilberforce, Olaudah Equiano

6. Life after enslavement	
Why was it hard?	Many people weren't educated and had no savings so many ended up staying on their plantation and working for minimal money.
Black Codes	Back codes were set up in 1965 which segregated black people and resulted in punishment if they disobeyed.

History – Causes of WW1

1. Europe before WW1	
Europe	Europe dominated by Great Powers: Britain, France, Germany, Austria-Hungary, Russia.
Nationalism	pride in country; desire for independence (e.g. Serbia).
Germany	Germany unified in 1871 → rapidly industrialised and powerful.
France	France angry about loss of Alsace-Lorraine (1871) to Germany.
Austria-Hungary	Austria-Hungary ruled over many different ethnic groups → instability.
Why this mattered?	Europe was already tense and divided. Rivalries and nationalist movements made conflict more likely

2. Arms Race	
Arms Race	Competition to build armies and Dreadnoughts
Germany	Germany increased army size after 1890 (Kaiser Wilhelm II).
Britain	Britain had strongest navy → Germany challenged this. 1906: HMS Dreadnought launched → new powerful battleship.
Weapons	By 1914 Britain had 29 Dreadnoughts, Germany had 17.
Conscription	Most powers introduced conscription (forced military service).
Why this mattered?	Countries were prepared for war and felt pressure to use their armies before falling behind.

3. Alliances	
The Alliance system	Countries formed defensive agreements for protection.
Triple Alliance	Germany, Italy and Austria-Hungary
Triple Entente	England, France and Russia

4. Imperialism	
Imperialism	Competition for colonies and overseas empires.
Britain	Britain had largest empire ("The Empire on which the sun never sets").
Germany	Germany wanted its "place in the sun."
Why this mattered?	Imperial rivalries increased distrust and strengthened alliances against Germany.

5. Assassination	
Assassination	The action of killing someone for political or religious reasons.
Archduke Franz Ferdinand	Heir to the Austro-Hungarian empire was assassinated on 28th June 1914
Who by?	Killed by Gavrilo Princip, member of Serbian group Black Hand.
Events	•Germany gave Austria the "Blank Cheque" (full support). •Austria issued an ultimatum to Serbia (23 July 1914). •Russia supported Serbia → mobilisation. •Germany declared war on Russia (1 Aug) and France (3 Aug). •Germany invaded Belgium → Britain declared war (4 Aug 1914).
Why this mattered?	The alliance system turned a regional dispute into a European war within weeks.

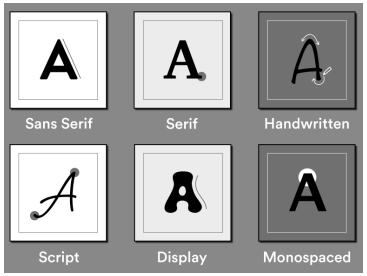
1. Type of software	Example	Used for
Web browser	Google Chrome	Searching for information / images
Word processor	Microsoft Word	Creating documents / letters / reports
Spreadsheet app	Microsoft Excel	Data analysis / graphs / charts
Email client	Micosoft Outlook	Sending and receiving emails / calendar function
Team collaboration software	Microsoft Teams	Sharing files / working on files with other people

2. Keyword	Definition
Cell	Individual element of a spreadsheet
Formula	Mathematical equation
Function	A preset formula such as SUM, AVERAGE or COUNT
Filter	Used to highlight data that contain a certain value
Sort	Allows data to be placed in an order such as numerical or alphabetical

3. Colour swatch

Company Logo

Font Style



4.	
Animations	Images / text can be animated to move around or appear on a slide in a specific way
Transitions	Movement between one slide and the next
Slide Show	Presenting the slides in order to an audience

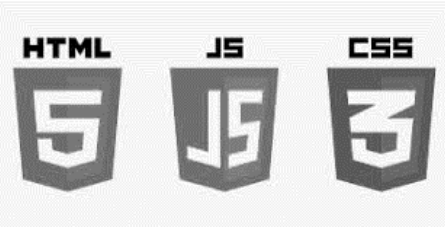
1. Keyword	Description
Algorithm	A sequence of instructions that can be used to complete a task
Computational Thinking	Understanding a complex problem and developing possible solutions
Programming	Writing computer code to solve a particular problem
Programming Language	A defined structure of words that can be used to create a program or application

2. Variable Rules

- Suitable name
  (helps you to understand what they are for)
- Can't use spaces in the name
- Can't start with a number
- Use quotes for text
- No quotes for numbers

3. Concept	Explanation
Variable	A named memory location that can store information for later use. This can be changed whilst the program is running
Constant	A named memory location that can store information for later use. This cannot be changed whilst the program is running
Input	Information provided by the user
Output	Information displayed to the user, usually as audio, text or video

4. Python Keywords	Explanation
print	Output a message to the display
input	Take input from the user
if	Branch code depending on if a condition is met
while	Loop code depending on if a condition is met
int	Convert to an integer



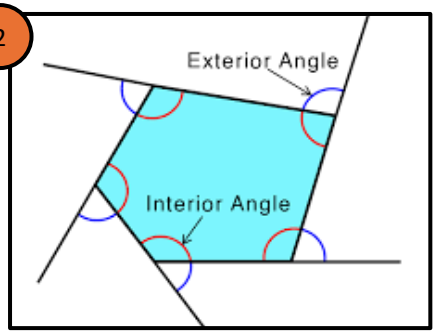
Polygons and Parallel Lines

Sparx Codes M653 U826 U427

1

Key Word	Definition
Parallel	Straight lines equal distance apart (Never Meet)
Perpendicular	Lines that meet or intersect at 90°
Polygon	A 2D shape with straight sides
Interior	The inside angle of a shape
Exterior	The angle between a side of a polygon and an extended adjacent side

2



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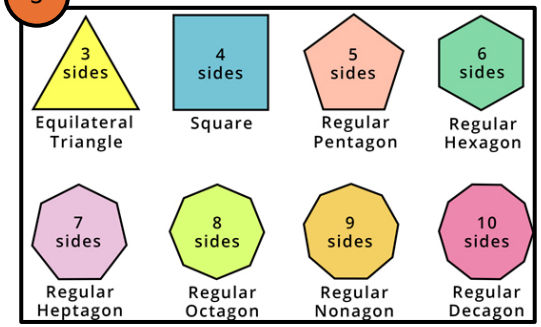

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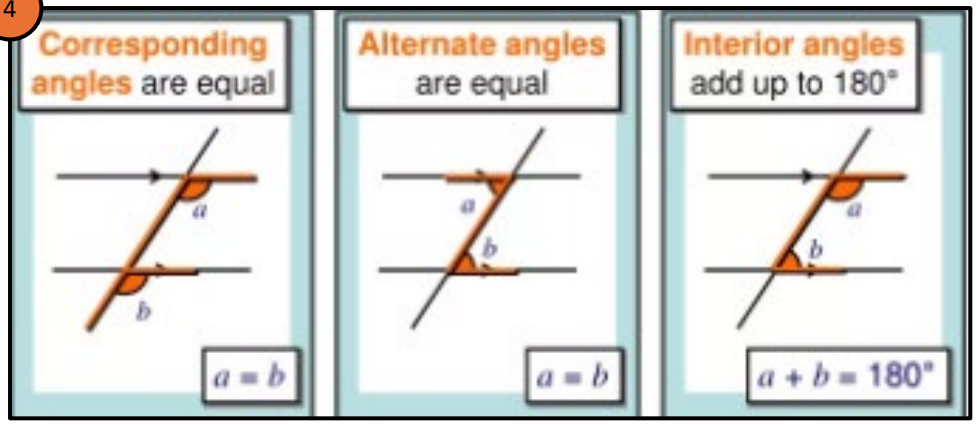


Trapeziums and Circles

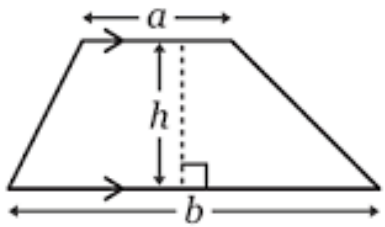
Sparx Codes M169 M231 M705

1

Key Word	Definition
Trapezium	A quadrilateral with one pair of parallel sides
Circle	A 2D shape whose boundary consists of points equidistant from a fixed point (the centre)
Pi π	The sixteenth letter of the Greek alphabet. Used in Maths to denote the ratio of a circle's circumference to its diameter. (Approx equal to 3.14159)
Perimeter	The total distance around a 2D shape
Circumference	The perimeter of a circle
Area	The total amount of space taken up by a 2D shape

2

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



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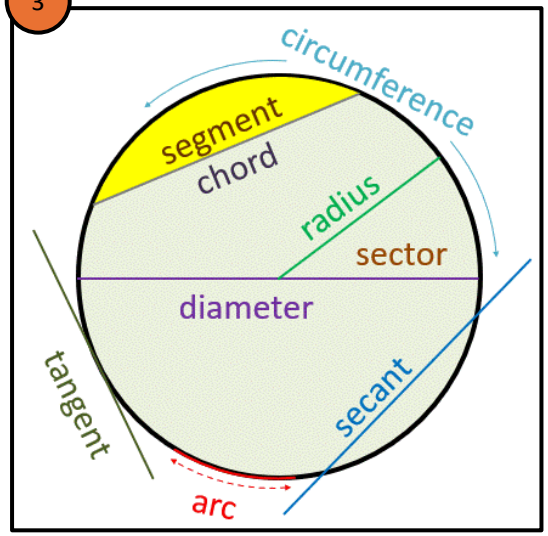


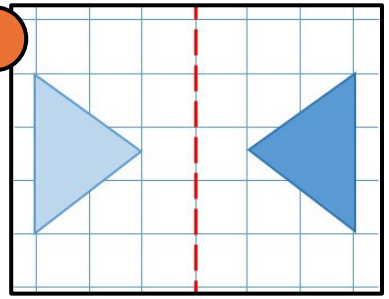
Symmetry and Reflection

Sparx Codes M523 M290

1

Key Word	Definition
Line Symmetry	A line of symmetry is the line that divides a shape or an object into two equal and symmetrical parts
Reflection	A type of geometrical transformation, where an object is flipped to create a congruent image on the opposite side of a given line of symmetry
Object	The original shape or figure
Image	The 'new' shape resulting from a transformation of the object.
Congruent	Two shapes are described as congruent. if they are identical. (All sides and angles are exactly the same)
Vertex	A point where two or more curves, lines, or edges meet or intersect.

2



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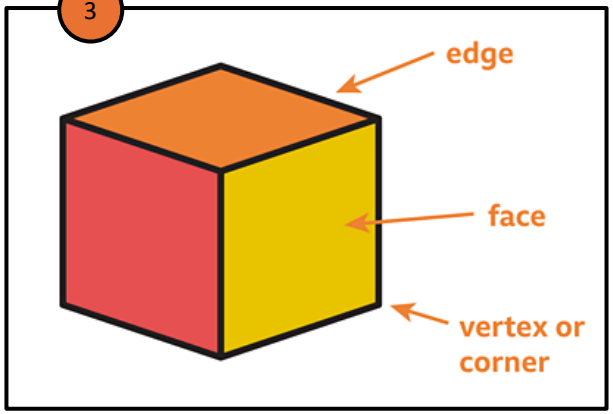


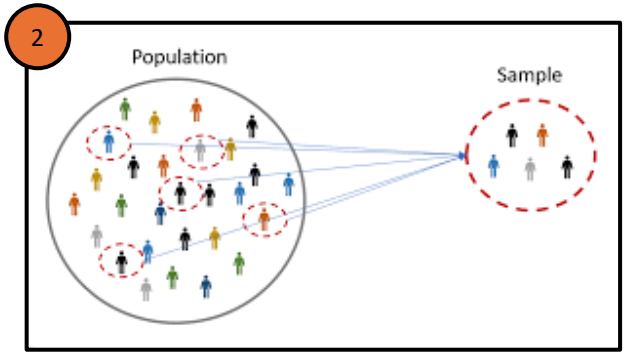
Data Handling

Sparx Codes M493 M945 M450

1

Key Word	Definition
Primary Data	First-hand data gathered by the researcher
Secondary Data	Data used from information that already exists
Hypothesis	A proposal made on the basis of limited evidence as a starting point for further investigation.
Sample	A sample is a subset of individuals within a larger population that you will collect data from.
Discrete Data	Exact figures you can count, such as the numbers of students in a class.
Continuous Data	Measurable data that can take any value e.g. Height, weight, temperature and length

2



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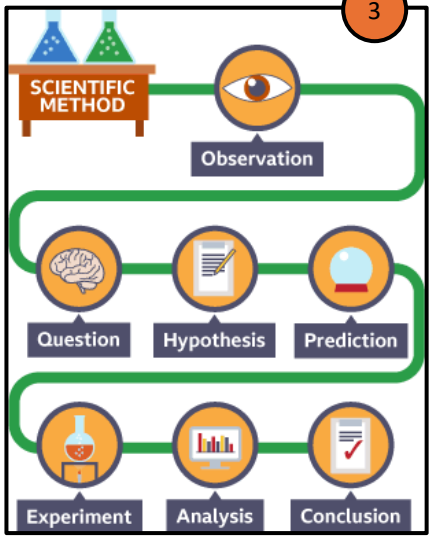


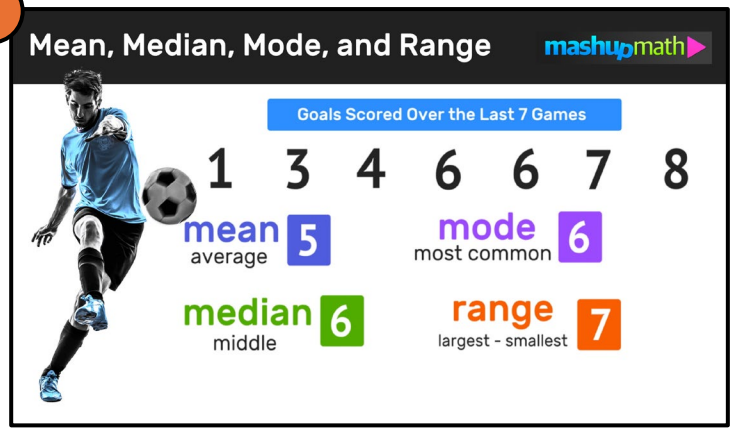
Averages

Sparx Codes M934 M841 M940 M328

1

Key Word	Definition
Average	A number expressing the central or typical value in a set of data, in particular the mode, median, or (most commonly) the mean
Mean	The sum of all numbers divided by total number of values
Median	The middle value of data when ordered in terms of size
Mode	The most common value in a set of data
Range	The spread of data. Highest value take the lowest value
Outlier	A single data point that goes far outside the average value of a group of statistics

2



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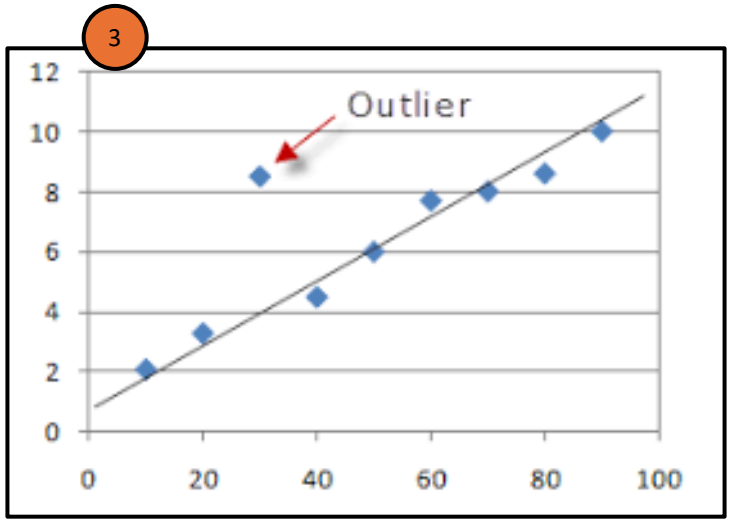
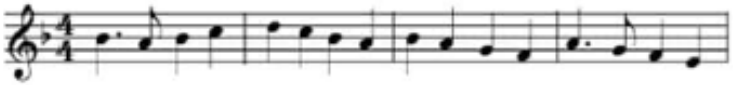


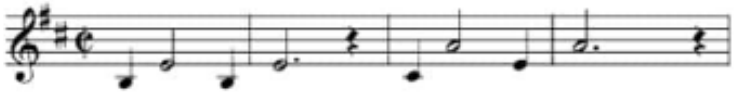
Music – What makes a good song?

Key Words	
Lyrics	The words of a song, usually consisting of verses and a chorus.
Hook	The 'catchy bit' of a song; can be melodic, rhythmic, or verbal/lyrical.
Riff	A repeated musical pattern used in introductions or instrumental breaks.
Melody	The main tune of the song often sung by the LEAD SINGER.
Counter-Melody	An 'extra' melody performed 'on top' of the main melody (also known as a descant).
Texture	The layers that make up a song (e.g., Melody, Chords, Bass Line).
Conjunct Motion	Melodies that move mainly by step or use notes that are close to one another.
Disjunct Motion	Melodies that move mainly by leap or use notes that are not close to one another.
Melodic Range	The distance between the lowest and highest pitched notes in a melody.

Conjunct



Disjunct



Song Structure & Components How a song is made up of or divided into different sections (see below) and the order in which these sections occur. To work out the structure of a song, it's helpful to analyse the LYRICS and listen to a recording for the song (for instrumental sections).	
Intro	The first section that sets the mood; often an instrumental section using the song's chord pattern.
Verses	Introduce the song's theme with the same melody but different lyrics to develop the narrative.
Pre-Chorus	An optional section before the chorus that helps the music move forward and "prepare" for what is to come.
Chorus	Contains the most memorable hook/riff; repeats the same melody and lyrics to relay the message.
Middle 8 / Bridge	A contrasting section (often 8 bars) with new material, often featuring a vocal or instrumental solo.
Coda / Outro	The final section that brings the song to an end (Coda is Italian for "tail").
Link	An optional short section used to join different parts of a song together.

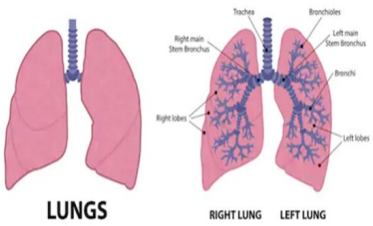
Instrumentation & Performance	
Pop Band Core	Drum kit, percussion, electric guitars (lead, rhythm, bass), and keyboards.
Orchestral Adds	Strings, saxophone, trombone, and trumpet.
Lead Singer	The "frontline" member who sings most of the melody line.
Backing Singers	Support the lead singer by providing harmony or a counter-melody.
Lead Sheet	A form of notation containing only essential elements (melody, lyrics, riffs, chords, bass line).
Cover Version	A new performance or recording by someone other than the original artist.

Respiratory System

1) Respiratory System

Function – to get **OXYGEN** in and **CARBON DIXOIDE** out.

Oxygen is transported around the body via the blood and pumped around the body by the heart.

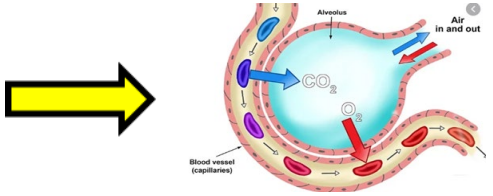


2) Respiratory System and Cardiovascular System

The respiratory system (lungs) works with the cardiovascular system (heart and blood vessels) to increase the supply of oxygen and remove carbon dioxide efficiently.

GASEOUS

EXCHANGE Occurs in the **ALVEOLI**



3) KEY TERMS

Tidal Volume (TV): the amount of air that is inspired and expired normally.

Breathing Rate (f): the number of breaths taken in a minute normally.

Lung Capacity: the amount of air (volume) the lungs can hold.

Minute Ventilation (VE): the volume of air that is inspired or expired in one minute.

VE = TV x f **(measured in 1/min)**

4) Breathing Rates

AT REST: breathing rate is slow and shallow (normal)

DURING EXERCISE: breathing rate increases and depth of breathing increases. Allows more air in.

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Skeletal System

1. Skeletal System – Classification of joints	
Hinge Joints	This includes the knee and elbow. Allow flexion and extension movement to occur for example kicking a football
Ball and socket joints	This includes the hip and the shoulder. They allow abduction, adduction and rotation. For example abduction from shoulder when serving in tennis
Pivot	This is found in the neck – for example turning your head to look for the next pass in netball.

2. Type of movement	Joints that provide it	Examples in sport
Flexion– bending movement that decreases the angle between body parts	Shoulder, hip, elbow	Someone working out in the gym bends their arms when doing a bicep curl
Extension– straightening movement that increases the angle between body parts	Shoulder ,hip	A swimmer swings the arm backwards preparation for a racing dive
Adduction—movement that pulls towards the midline of the body	Shoulder, hip	A golfer on the tee swings the club down towards the ball
Abduction—movement that pulls away from the midline of the body	Shoulder, hip	A gymnast moves their arms out sideways at the shoulder when performing 'the crucix' on the rings
Rotation—movement around a single axis or pivot point	Shoulder, hip	A tennis
Circumduction—moving in a circular shape	Shoulder, hip	A cricketer bowls a ball
Dorsi—flexion—bending or flexin the toes up, closer to the shin	Ankle	A sprinter positions their feet in the starting blocks
Plantar –flexion—extending or pointing the toes down, away from the shin	Ankle	A floor gymnast points their toes

RE – To the Ends of the Earth

Key Quotes	
1	*"If Christ has not been raised, our preaching is useless and so is your faith."* (1 Corinthians 15:14)
2	*"The empty tomb was… an essential sign for all. Its discovery by the disciples was the first step toward recognising the very fact of the Resurrection."* (CCC 640)

Key Words		
1	**Resurrection**	The Christian belief that after his crucifixion and death, Jesus rose back to life.
2	**death**	The permanent end of a person's physical life
3	**Judgement**	The judgement and individual person faces at the moment of their death is known as particular judgement and determines whether their soul goes to heaven, purgatory or hell.
4	**Heaven**	An eternity in God's presence
5	**Hell**	The eternal absence of God's presence.
6	**Purgatory**	The condition a soul enters when in need of purification before entering the presence of God.
7	**Funeral rite**	The ceremonies carried out when an individual dies and is laid to rest by the church.
8	**Requiem**	An act of remembrance for the souls of the dead.

Key Facts	
1	Jesus rose from the dead on the third day after his crucifixion, and this event is known as the Resurrection. It is the most important belief in Christianity.
2	The Resurrection accounts in the Gospels differ in detail, but all agree that Jesus' tomb was found empty by his followers early on Sunday morning.
3	Catholics believe the Resurrection is a real historical event, not just a symbol, because the Gospel writers include specific details like names, places, and eyewitness reactions.
4	The empty tomb is important evidence for Christians, showing that Jesus' body was not stolen and that he rose bodily from the dead.
5	St Paul taught that without the Resurrection, Christian faith would be meaningless, because it proves Jesus' victory over sin and death.
6	Catholics believe humans are made of both a body and an immortal soul, which is created by God and lives on after death.
7	After death, Catholics believe each person faces particular judgement, where their life is judged and their soul goes to heaven, hell, or purgatory.
8	Catholic funerals express hope in eternal life, using prayers, symbols, and rituals to commend the soul to God and support those who are grieving.

RE – Dialogue and Encounter

	Key Quotes
1	"Between these [Churches] there exists an admirable bond of union… the variety within the Church in no way harms its unity." – Pope Paul VI
2	"The two should meet together, and get to know and love one another." – Pope Paul VI
	"The Church must breathe with her two lungs!" – Pope John Paul II

	Key Words	
1	**Ecclesiam Suam**	The Latin phrase for 'His Church; also Pope St Paul VI's first encyclical, which explored how the Church should bring it's message to a changing world.
2	**Dialogue**	Positive interactions and discussion between different people to encourage mutual understanding and enrichment.
3	**Proclamation**	In Catholicism, communication of the Gospel message: announcing Jesus to the world and sharing the mystery of salvation offered through him.
4	**Second Vatican Council**	A meeting of bishops of the worldwide Church, called by Pope St John XXIII in 1962 and closed by Pope St Paul VI in 1965
5	**Eastern Catholic churches**	The 23 Catholic Churches which observe the Alexandrian, West Syrian, East Syrian, Armenian and Byzantine rites.
6	**Patrimony**	Patrimony includes how a Church celebrates its rites, how it's churches are decorated, and the art and music used in worship.
7	**Liturgical traditions and rites**	The particular ways a Church conducts and structures it's acts of worship, ceremonies and spiritual life.

	Key Facts
1	The **Second Vatican Council** (1962–1965) is the most recent ecumenical council and aimed to update the Church and improve its relationship with the modern world.
2	One key aim of the Council was to promote **dialogue** between the Catholic Church and other Christians and religions.
3	*Ecclesiam Suam* taught that the Church should engage in dialogue with all people, including those of other faiths.
4	The Catholic Church is made up of **24 different Churches**, not just the Roman (Latin) Church.
5	All 24 Churches share the same beliefs and recognise the authority of the **Pope**, but have different traditions and styles of worship.
6	Eastern Catholic Churches (like the Ukrainian Greek Catholic Church) follow different **liturgical rites**, such as the Byzantine rite.
7	When disagreements in Christianity cannot be resolved, they can lead to a **schism**, creating new Christian denominations.
8	**Ecumenism** is the movement to bring Christians together in unity by focusing on shared beliefs and working together for the common good.

1. Natural selection

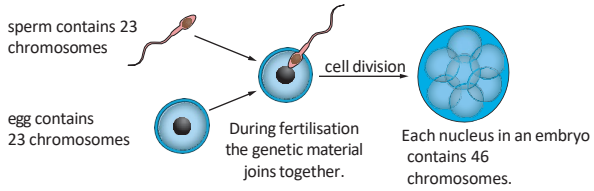
- Scientists believe that the organisms which we see on Earth today have gradually developed over millions of years, this is known as **evolution**
- Charles Darwin came up with the concept of **natural selection**, he said that only the best adapted animals will survive to pass on their **genes**, weaker animals will die out

Organisms show variation in characteristics caused by their genes → Organisms with the best adaptations survive and reproduce, weaker organisms die out and do not pass on their genes → Genes from the successful organisms are passed onto the next generation, passing on their successful characteristics → Over a long period of time the best adaptations continue to be passed on which can lead to a new species being formed

- One example of natural selection can be seen in giraffes, only the giraffes with the longest necks would be able to eat from trees, the ones with shorter necks would not be able to eat and die out
- This would mean that only the gene for long necks would be passed on, leading to all giraffes having long necks

2. Inheritance

- **Characteristics** are passed along from parents to their offspring
- Half of the genetic information comes from each parent, this is passed on through the sex cells in the process of fertilisation

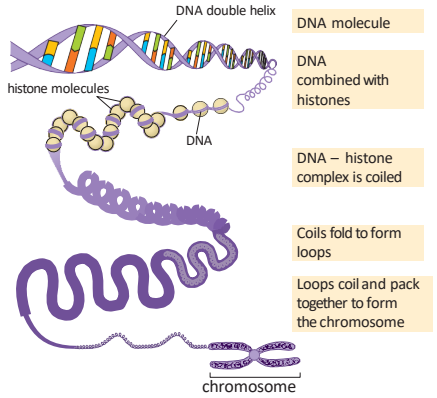


- **DNA** is the material which contains all of this genetic information

DNA – in the shape of a double helix

Genes – a section of DNA which hold the information for a particular characteristic

Chromosomes – long strands of DNA which hold many genes, humans have 46 of these in the nucleus of cells



3. Extinction

- A species will become **extinct** when all of a species die out
- The **fossil record** shows us that animals have existed in the past which have now become extinct
- Extinction can be caused by:
  - Changes to the environment
  - Destruction of habitat
  - New diseases
  - Introduction of new predators
  - Increased **competition**
- When a species becomes extinct, the variety of species within an ecosystem is reduced, this is also known as a reduction in **biodiversity**
- The more diverse a **population** is, the more likely they are to survive environmental changes

4. Punnet squares

Possible alleles from mother \ Possible alleles from father	**B** (dominant allele for brown eyes)	**b** (recessive allele for blue eyes)
b (recessive allele for blue eyes)	**Bb** Offspring will have brown eyes as B is dominant	**bb** Offspring will have blue eyes as both alleles are recessive
b (recessive allele for blue eyes)	**Bb** Offspring will have brown eyes as B is dominant	**bb** Offspring will have blue eyes as both alleles are recessive

5. Genetic modification

- **Genetic modification** is the process which scientists can use in order to alter the genes of an organism
- Examples of this include altering cotton to produce higher yields, altering bacteria genes to produce medicines and altering crops to produce their own insecticides

6. Genetics

- For every characteristic an organism will have two **alleles**, this is two different genes which can code for the same characteristic, one is inherited from each parent
- **Dominant** alleles will cause the characteristic to be displayed even if they are with another allele, this is represented by a capital letter
- **Recessive** alleles will not be displayed as characteristics unless there are two of the same allele, they are the characteristic least likely to be shown, this is represented by a small letter
- We can predict the inheritance of characteristics using a **Punnet square**

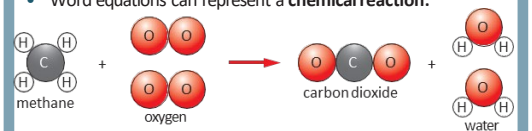
Keyword	Definition
Allele	Different forms of a gene
Biodiversity	A measure of the variety of all the different species of organisms on earth or within a particular ecosystem
Characteristics	Features of an organism passes from parents to offspring via genes
Chromosome	Thread-like structure containing tightly coiled DNA. It contains the genes
Competition	When 2 or more living things struggle against each other to get the same resource
DNA	A molecule found in the nucleus of cells that contains genetic information
Dominant	A dominant allele will always be expressed if it is present
Evolution	Theory that animals and plant species descended from species in the past
Extinct	When no more individuals of a species remain anywhere in the world
Fossil record	Fossils of a species that show how a species has changed over time
Gene	A section of DNA that determines an inherited characteristic
Genetic modification	A technique in which scientists insert foreign genes into organisms to change their characteristics
Mutation	A change to the DNA that can cause disease

Natural selection	Process of organisms most suited to the environment survive and reproduce
Population	Group of organisms of the same kind living in the same place
Punnet square	A diagram used to show possible allele combinations inherited from the parents
Recessive	A recessive allele will only be expressed if 2 alleles are present

Science – Reactions

1. Chemical reactions

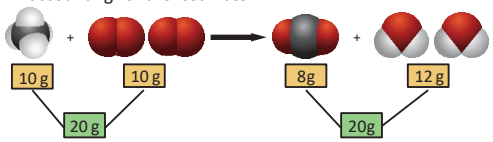
- Word equations can represent a **chemical reaction:**



- The **reactants** are on the left side of the arrow and the **products** are on the right side of the arrow
- We use an arrow instead of an equals sign as it represents that the reactants are changing into a new substance
- In a reaction, the amount of each type of atom stays the same, however they are rearranged to form a new product

2. Conservation of mass

- In a reaction the mass will be **conserved**, this means that the total mass of the reactants will be equal to the total mass of the products
- If it appears that some of the mass has been lost, this means that a gas has been produced and escaped, accounting for the lost mass



Balanced symbol equations show the amounts of all of the individual atoms in a reaction

- The symbols used are from the Periodic Table
- They also show:
  - Formulae of reactants and products
  - How the atoms are rearranged
  - Relative amounts of reactants and products

$$2H_2 + O_2 \rightarrow 2H_2O$$

3. Combustion

- **Combustion** is the burning of a **fuel** in oxygen
- A fuel is a substance which stores energy in a chemical store
- Examples of fuels include petrol, diesel, coal and hydrogen
- When a carbon based fuel undergoes combustion, it will produce water and carbon dioxide

methane + oxygen → carbon dioxide + water

- Hydrogen can also be used as a fuel, this is much better than traditional fossil fuels as it does not produce carbon dioxide:

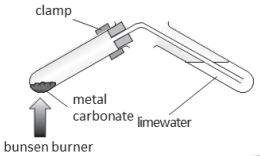
hydrogen + oxygen → water

4. Thermal decomposition

- A **thermal decomposition** reaction is one where the reactants are broken down (decomposition) using heat (thermal energy)
- An example of this is with metal carbonates:

zinc carbonate → zinc oxide + carbon dioxide

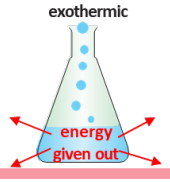
- We can test for this carbon dioxide by bubbling the gas through limewater, if the limewater turns cloudy, the gas is carbon dioxide



5. Exothermic and endothermic

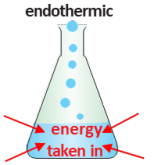
Exothermic reactions involve a transfer of energy from the reactants to the surroundings

- As energy is transferred to the surroundings this will show an increase in temperature
- Examples of exothermic reactions include combustion, freezing, and condensing



Endothermic reactions involve a transfer of energy from the surroundings to the reactants

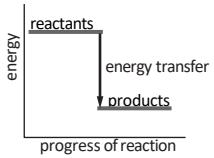
- As energy is taken into the reactants a decrease in temperature will be shown
- Examples of endothermic reactions include thermal decomposition, melting, and boiling



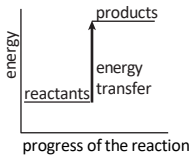
6. Energy level diagrams

Energy level diagrams show the values of energy between the reactants and the products in a reaction

- If the energy is greater in the reactants than the products then the reaction is **exothermic** as energy has been given out to the surroundings
- If the energy is lower in the reactants than the products then the reaction is **endothermic** as energy has been taken in from the surroundings



Exothermic



Endothermic

7. Bond energies

- Energy must be used to break **chemical bonds**, meaning that this reaction is endothermic
- Energy is given out when **chemical bonds** are made, meaning that this reaction is **exothermic**
- To see if a reaction is endothermic or exothermic, you must find the difference in the energy needed to break and to make the bonds in the reaction
- If the energy needed to break the bonds is less than the energy given out when making the bonds, the reaction is **exothermic**
- If the energy needed to break the bonds is more than the energy released when making the bonds, the reaction is **endothermic**

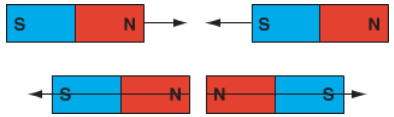
Keyword	Definition
Balanced symbol equation	Show the amounts of all the individual atoms in a reaction
Chemical bond	the force that holds atoms together in molecules
Chemical reaction	A change in which a new substance is formed
Combustion	A chemical reaction in which a substance reacts with oxygen and gives out heat and light
Conserved	When the quantity of something does not change
Conservation of mass	The total mass of the reactants is equal to the total mass of the products
Decomposition	A chemical reaction in which a compound breaks down
Fuel	A substance that stores energy in a chemical store
Endothermic	A reaction that takes in energy, usually heat from the surroundings

Energy level diagram	A diagram showing whether a reaction is endothermic or exothermic
Exothermic	A reaction that gives out energy into the surroundings
Products	Substances formed in a reaction
Reactants	Substances that react together
Thermal decomposition	A chemical reaction in which a compound breaks down when heated

Science – Electromagnets

1. Magnets

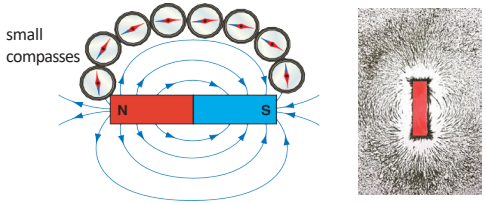
- A **magnet** has two poles, a north and a south pole
  - North poles **attract** south poles
  - South poles **attract** north poles
  - South poles **repel** south poles
  - North poles **repel** north poles



- **Magnetic materials** will experience a magnetic force when placed near a magnet, this is a type of non-contact force as the materials do not have to touch for the force to be apparent
- The three magnetic metals are iron, nickel and cobalt

2. Magnetic fields

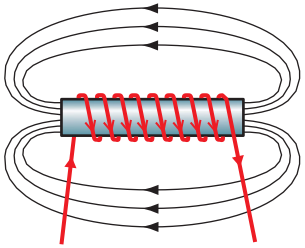
- A **magnetic field** is an area where a magnetic material will experience a force
- A **permanent magnet** will have it's own magnetic field
- **Magnetic field lines** represent the field, these always travel out of the north pole of the magnet, and into the south pole
- The closer together the magnetic field lines are, the stronger the magnetic field will be
- We can find out the shape of a magnetic field in two ways:
  - Using plotting compasses
  - Using iron filings



- The Earth has its own magnetic field, which acts like a giant bar magnet inside the centre of the Earth
- This magnetic field allows compasses to work when navigating around the Earth

3. Electromagnets

- **Electromagnets** are made by wrapping a coil of wire around a magnetic **core**
- Electromagnets only work when electricity is flowing through the coil, which means that they can be turned on and off
- Electromagnets are also stronger than **permanent** magnets
- The electromagnet will produce the same magnetic field shape as a bar magnet



- You can increase the strength of an electromagnet by:
  - Increasing the number of turns on the coil around the core of the electromagnet
  - Increasing the current which is flowing through the coil of wire
  - Using a more magnetic material for the core, e.g. iron rather than aluminium

4. Using electromagnets

Electric Bells

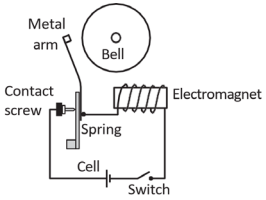
The electromagnet attracts the iron armature

When it moves, it breaks the circuit, no longer allowing current to flow

The coil and core are no longer magnetic meaning the spring is no longer attracted and returns to its original position

The bell is rung once

The circuit is complete again, restarting the process

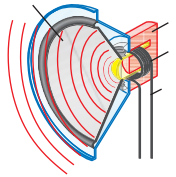


Circuit breakers

- Circuit breakers detect large changes in current in a house, and will break a circuit
- When a large current flows, the electromagnet becomes strong enough to attract an iron catch which will break a circuit
- They can then be reset and used again
- This makes them suitable as an electrical safety device in a home

Loudspeakers

- Loudspeakers use an electromagnet in order to generate sound
- A current passes through the coil and creates an electromagnet, this repels another permanent magnet which moves the cone in and out creating sound



Keyword	Definition
Attract	Objects moving towards one another due to a magnetic force
Core	Soft iron metal which the solenoid is wrapped around
Circuit breaker	A device that uses an electromagnet to break a circuit
Electromagnet	A non-permanent magnet turned on and off by controlling the current through it
Electric bell	A device that uses an electromagnet to make sound using a "make and break circuit"
Loudspeaker	A device that uses an electromagnet. It turns an electrical signal into a pressure wave of sound
Magnet	A material with a magnetic field around it in which a magnetic material experiences a force
Magnetic pole	The ends of a magnetic field, called north-seeking and south-seeking poles
Magnetic field lines	Imaginary lines that show the direction of the force on a magnetic material
Magnetic material	A material that experiences a magnetic force when placed near a magnet
Permanent magnet	An object that is magnetic all the time
Repel	Objects moving away from one another due to a magnetic force

Los lunes estudio el inglés, la tecnología y las matemáticas.	1	On Mondays, I study English, Technology & Maths
Mi día favorito es el miércoles porque estudiamos la educación física.	2	My favourite day is Wednesday because we study PE
Me encanta el español porque es divertido y útil .	3	I love Spanish because it is fun and useful
Sin embargo, no me gustan las ciencias porque son difíciles.	4	However, I don't like Science because it is difficult
Durante el recreo vamos a jugar al fútbol porque es divertido.	5	At breaktime we are going to play football because it is fun
Después del insti voy a ayudar a mis padres, pero es aburrido.	6	After school, I am going to help my parents but it is boring.
Cuando sea mayor, voy a ser enfermera porque es un trabajo importante.	7	When I am older, I am going to be a nurse because it is an important job
Pero me gustaría trabajar como artista como Frida Kahlo.	8	But I would like to work as an artist like Frida Kahlo.

THE CORE FOUR

How to Create Flash Cards

1. Identify Knowledge

- What are you creating flashcards on?
- Do you have your knowledge organiser?
- Use your book to look at previous misconceptions from whole class feedback.

2. Colour Coding

- Use different coloured flash cards for different topics. This helps with organisation, NOT recall.

3. Designing

- 1 Question per flash card - make them concise and clear
- Use a one-word prompt, so that you can recall as much as you can
- No extended answer questions
- Number your cards for self-quizzing.

4. Using

- Write your answers down, then check, or say your answers out loud. This clearly shows the gaps in your knowledge.
- Do not just copy and re-read.
- Shuffle the cards each time you use them.
- Use the Leitner system to use flash cards every day.

5. Feedback

- How have you performed when you look back at your answers?
- Is there anything you need to revisit in more detail?
- Is your knowledge secure? If so, move on to applying knowledge in that area in specific extended exam questions.

Brain Dumps

1. Identify Knowledge

- Identify the knowledge / topic area you want to cover.

2. Write it Down

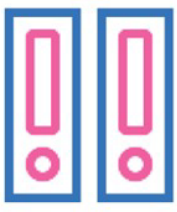
- Take a blank piece of paper/white board and write down everything you can remember about that topic (with no prompts)
- Give yourself a timed limit (e.g 10 minutes)

3. Organise Information

- Once complete and you cannot remember any more, use different colours to highlight / underline words in groups.
- This categorises / links information

4. Check Understanding

- Compare your brain dump to your Knowledge Organiser or book and check your understanding.
- Add any key information you have missed (key words) in a different colour.



5. Store and Compare

- Keep your brain dump safe and revisit it.
- Next time you attempt the same topic, try and complete the same amount of information in a shorter period of time or add more information.

THE CORE FOUR

Revision Clocks

1. Identify Knowledge

Select a topic you wish to revise. Have your class notes, knowledge organiser or revision books ready.

2. Designing

You can make your own revision clock by drawing a clock in the centre of a page and dividing it into 12 chunks. You can also use an existing template from your teacher, or one you can find online.

3. Manageable Chunks

Organise your revision notes into 12 sub-topics and make brief notes for each sub-topic into one of the segments on the page, creating manageable chunks of information. Combine text with images to help retain the information.

4. Using Revision Clocks

Revise each segment for 5 minutes. Turn the clock over and recite the sections out loud or ask someone to quiz you.

Alternatively, you can revise certain sections for 5 minutes and use a blank revision clock with headings, recall as much information as you can in the segments.

5. Check Understanding

How have you performed when you compare you answers to what you have written? Is your knowledge secure?

Remember to repeat the process regularly, using different techniques to answer the questions.

Put it somewhere visible for you to use again.

Self Quizzing

1. Identify Knowledge

- Identify knowledge / content you wish to cover

2. Review and Create

- Spend around 5 - 10 minutes reviewing content (knowledge organisers / class notes / textbook.)
- Create 10 questions on the content (if your teacher has not provided you with questions already)

3. Cover and Answer

- Cover up your knowledge and answer the questions from memory.
- Take your time and where possible answer in full sentences.

4. Self Mark and Reflect

- Go back to the content and self-mark your answers in green pen.

5. Next Time

- Revisit the areas where there were gaps in knowledge and include these same questions next time.

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