LYMM

HIGH SCHOOL

#1

Year 7 Knowledge Organisers Autumn Term
(Half term 1 and 2)

A Knowledge-Rich Curriculum at Lymm High School

Why are we using Knowledge Organisers?

Research around memory suggests that "knowledge is sticky": the more factual knowledge you know, the easier it is to learn more in future! But there is a catch: If knowledge is studied once, and not revisited or revised, it is not stored in long-term memory.

To strengthen your memory, and ensure information is stored permanently in your long-term memory, it must be revisited frequently. This means that after one lesson, or a single test, the knowledge is not fully embedded or learned unless it is studied again.

This is why your knowledge organiser is an important part of revising the essential information you learn in class!

Use of Knowledge Organisers for revision and in class

As part of their home learning, students should be revising what they have learned recently, but also content they were taught previously. Therefore, as part of our strategy to ensure that knowledge is embedded over time, we have developed knowledge organisers, which contain the 'bedrock knowledge' necessary in each subject area. A mastery of this knowledge will ensure that students can progress comfortably to new units of learning, and can be successful in their subjects.

This information will provide the basis of our assessments and exams, and so getting into good revision habits with these resources will ensure students feel as prepared as possible.

Teachers may set specific areas of each knowledge organiser as part of homework tasks on 'Satchel one' – formerly 'Show my Homework' – however students should be using their knowledge organiser for independent revision regularly.

For mastery of your subjects, remember:

==*"Don't practise until you get it right. Practise until you can't get it wrong!"*==

As well as supporting revision at home, this knowledge organiser should be kept in students' bags, and brought to school each day so that it can also be used and referred to in lessons.
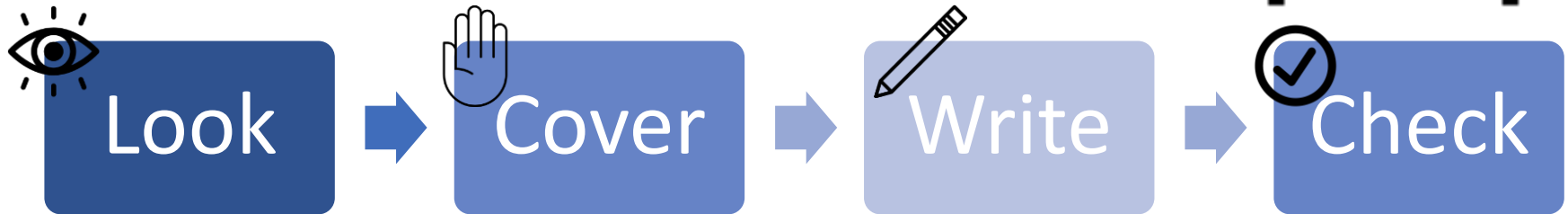
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How to use your knowledge organiser:

Recommended strategies *(don't just read or highlight – **get active**!):*

Look ➤ **Cover** ➤ **Write** ➤ **Check**

- Create **mind maps**
- Create **flash cards**
- Write out **key points on post-it notes** and place somewhere visible so you see and review them regularly
- **Write your own quiz questions** based on your knowledge organiser – leave until the next morning, next day, or next week to see how well you have retained the information
- **Get someone else to test you**
- **Use key vocabulary** from your KO in sentences
- Use the formulae, vocabulary lists, facts, processes etc on your KO to **help you complete homework tasks**
- **Draw diagrams and flow charts** of key information
- **Summarise each section** into your own words – what are the MOST important facts or details in each box?
- **"Just a minute"** – time yourself for 60 seconds. **Can you talk about this topic or explain it to someone else without stopping for a whole minute?**
- **Draw images/symbol**s to represent the different concepts and vocabulary
- **Teach someone else** about this topic. Research suggests we retain even more information when we teach a topic than when we learn it or revise it.

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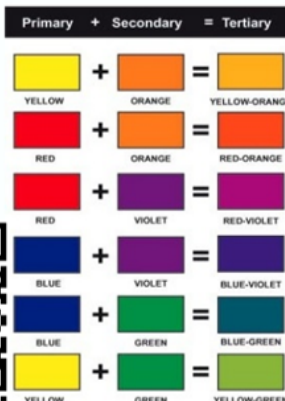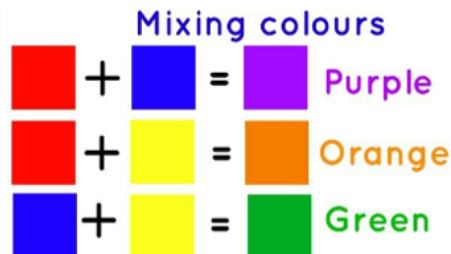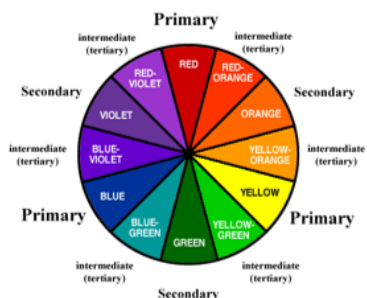# Tier 2 Vocabulary – General academic vocabulary for success across all subjects

"The limits of my language are the limits of my world" - *Ludwig Wittgenstein*

List 1		List 2		List 3	
approach (v)	move towards/get closer	**factors (n)**	Influences/things involved in something	**precise (adj)**	exact
assessment (n)	test	**function (n)**	the point of something/what it does	**required (v, adj)**	needed
authority (n)	the person in charge/expert/power	**identify (v)**	pick out	**response (n)**	reply
available (adj)	free/not taken	**indicate (v)**	show	**sector (n)**	area
consistent (adj)	same every time	**issues (n)**	problems	**significant (adj)**	important
contract (n)	formal, signed agreement	**legislation (n)**	laws	**structure (n)**	how something is put together
definition (n)	what something means	**labour (n)**	work	**subsequent (adj)**	coming after
derived (*from*) (v)	coming from	**major (adj)**	important	**theory (n)**	An idea or belief (usually supported by evidence)
denote (v)	stand for	**method (n)**	way of doing something	**variable (n)**	A factor that might influence or change
distribution (n)	the spread of something	**period (n)**	chunk of time	**worthwhile (adj)**	worth doing
economic (adj)	to do with wealth and money	**procedure (n)**	Something which is done (e.g. an operation)	**yearn (v)**	To wish (usually for something you've lost)
establish (v)	Confirm or create something	**perspective (n)**	viewpoint	**youthful (adj)**	young

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The colour wheel	This is a diagram that shows how colours are mixed or the relationship between colours.
Primary colours	Red, blue and yellow. These are colours that cant be made by mixing other colours together.
Secondary colours	Green, orange and purple. Mix two primary colours to create a secondary colour
Tertiary colours	These are colours create by mixing a primary and a secondary colour together.
Complimentary colours	These are colours that are opposite on the colour wheel.
Harmonious colours	These are colours from the same section of the colour wheel. These work well when blending.
Cool colours	Fall on one half of the colour wheel. Calm or soothing in nature. They are not overpowering and tend to recede in space. For this reason, they typically make a space seem larger.
Warm colours	Fall on the opposite side to the cool colours on the colour wheel. They are vivid or bold in nature. They tend to advance in space and can be overwhelming.

Blending
- Always start with the lightest colour and add the darker colour in small amounts
- Harmonious colours blend well together.
- Cross hatching is a good mark making method when blending dry materials.
- Wet materials should be mixed on a palette before blending.

Scan here to watch a step by step guide; how to blend using different materials.

| Still life	A collection of objects arranged together.
Tone	A tone is produced either by the mixture of a colour with grey, or by both tinting and shading..
Shade	The mixture of a colour with black, which increases darkness.
Proportion	Proportion refers to the relative size of parts within a whole.
Tint	The mixture of a colour with white, which increases lightness
Mark making	Different lines, patterns, and textures we create in a piece of art. It applies to any art material on any surface, not only paint on canvas or pencil on paper.
Composition	The position and layout of shapes on the paper.
2 Dimensional	Having or appearing to have length and breadth but no depth.
3 Dimensional	Having or appearing to have length, breadth, and depth.

Recording from Observation
Primary source observational drawing: drawing something real in front of you.
Secondary source observational drawing: drawing something from a picture.
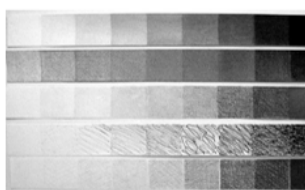
Painters' Color Mixing Terminology
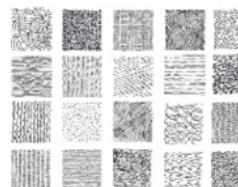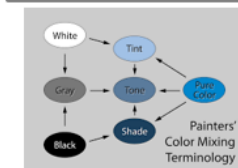
MARK MAKING IDEAS

Scan here to watch a step by step guide; how to draw 3D shapes
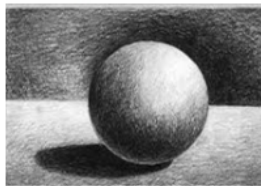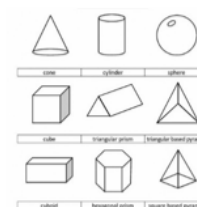
Grades of Pencils
Pencils come in different grades. The softer the pencil the darker the tone.
H = hard, B = black (soft)
In Art the most useful pencils are B, 2B and 4B. If your pencil has no grade it is likely to be an HB (hard black in the middle of the scale)

Making something look 3D
- To prevent objects looking flat, a range of tonal shading is essential to make objects look 3D
- Pressing harder and lighter with a pencil creates the different tones
- As a surface goes away from you the tones usually darken
- Shading straight across a surface will make an item appear flat
- Use the direction of your pencil to help enhance the 3D surface
- Including shadows will also help make objects appear 3D and separate objects from each other.

Art

Day of the Dead

- It is a Mexican holiday celebrated throughout Mexico and around the world in other cultures.
- Dia de los Muertos: Spanish translation (language spoken in Mexico).
- It focuses on gatherings of family and friends to pray for and remember friends and family members who have died.
- It is particularly celebrated in Mexico, where the day is a bank holiday.
- The celebration takes place on October 31, November 1 and November 2, in connection with the Christian events Halloween etc
- Traditions include: Building private altars called 'ofrendas'. Leaving gifts at the grave to honour the dead (Sugar skulls, marigolds, favourite foods of the dead). They also leave possessions of the deceased.
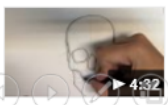- The main emblem for the Day of the Dead festival is the skull.

Thaneeya McArdle (name is pronounced "tuh-nee-yuh").

- An artist, designer and craftsperson from Florida.
- She is most well known for her use of vivid colours and intricate symmetrical pattern work.
- Draws and paints sugar skulls.
- The work she produces is inspired by her travels around the world.

https://www.thaneeya.com (Thaneeya McArdles personal website)

https://www.art-is-fun.com (Thaneeya McArdles website in which she has hints and tips for drawing, painting and much more!)

Tone	A tone is produced either by the mixture of a colour with grey, or by both tinting and shading.
Scale	Refers to the size of an object (a whole) in relationship to another object.
Block Colour	One solid colour that does not differ in tone.
Line	A mark formed by drawing.
Symmetrical Pattern	Lines and shapes that are made up of exactly similar parts facing each other or around an axis
Composition	The position and layout of shapes on the paper.
Mono printing	A form of printmaking that has lines or images that can only be made once, unlike most printmaking, which allows for multiple originals
Scraffitto	A form of decoration made by scratching through a surface to reveal a lower layer of a contrasting colour.
Clay	Clay is the raw material used in ceramics. It is a versatile material that can be transformed into a variety of shapes.

What do I include on an artist research page?
- Title (artist name)
- Images of the artists work.
- Facts/information and annotation (include your own opinion)
- Own drawings
- Key words
- Consider creative presentation.

Try to make the page reflect the artists style.

https://www.youtube.com/watch?v=ECL662yPMlk
Watch this tutorial to learn how to draw a skull.

Drawing accurately
The easiest way to ensure an image is drawn accurately is by using a square grid. Over your image draw a grid. On a separate piece of paper, re draw the grid and start to plot out your image square by square.

Enlarging an image by hand
You can also use a grid to enlarge an image. Your second grid should be double in size so that when you plot your drawing it increases.
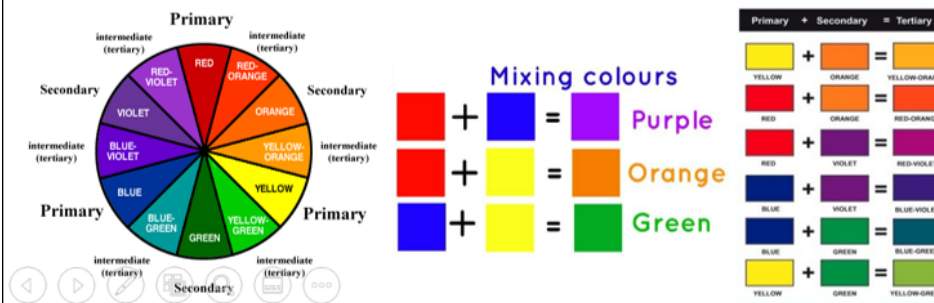
What is a Diorama?
A diorama is a model which represents a scene or story with three-dimensional figures.
Day of the Dead dioramas are based on the altars and retablos (devotional paintings) associated with the festival. They are made using tin or wood cages, known as *nichos* and contain collages of skeletons, skulls, flowers and photographs.

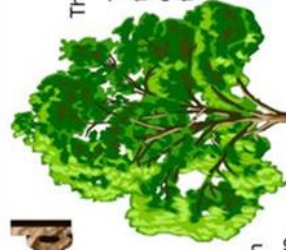|	
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Art

Design and Technology

Year 7 Material Focus: Timber & Timber Products

Types of wood......

Hardwoods

Type of wood	Description	Usage
Oak	A very strong wood Light brown in colour. Open grained Difficult to work with	High quality furniture Beams used in buildings Veneers
Mahogany	An easy to work with materials, Reddish brown in colour	Indoor furniture Shop fittings Bars Veneers
Beech	A straight- grained wood with a fine texture. Light in colour Very hard but easy to work with Can be steam bent	Furniture Toys Too handles Tool handles
Teak	A very durable oily wood Golden brown in colour. Highly resistant to moisture	Outdoor furniture Boat building Laboratory furniture and equipment

Softwoods

Type of wood	Description	Usage
Spruce	Creamy-white colour Has small hard knots Not very durable	General indoor work Used mainly for kitchens and bedrooms
Scots Pine	A straight-grained wood, but knotty. Light cream/ pale brown in colour Fairly strong but easy to work with, Inexpensive	Readily available for DIY Constructional work and simple joinery work
Parana Pine	Hard and straight grained. Almost knot free. Fairly strong and durable. Expensive Pale yellow in colour with red/ brown streaks	Better quality pine furniture and fittings such as doors and staircases
Yellow cedar	A pale yellow colour with fine even texture Light in weight but stiff and stable	Furniture, amateur aeroplane building, boat building, veneers

Scan the QR code to learn how timber is processed......

Hardwood

You can have evergreen hardwood trees which do not lose there leaves and Deciduous tress which loses there leaves in winter

Tend to have a tighter grain

They can be very Expensive.

Most evergreens are found in tropical or sub-tropical countries such as South America

These are usually quite hard.

They are broad leave trees and the seed are enclosed in the fruit that the tree produces

They generally grow in temperate climates including the British Isles

They are slower growing trees it can take 100 years to grow fully

Softwood

They mainly grow in a cooler climate like Canada

These cone baring trees are called conifers

They have a looser grain structure

They are often used as building material.

These are usually softer and easy to work

The trees grow tall and straight which makes it easier for the manufacturer to cut long straight planks of wood

Evergreen trees which means they do not lose there leaves.

These grow quite faster and so are cheaper

Manufactured wood- Manufactured, or man-made, wood is board produced using industrial production techniques. It consists of gluing together wood layers or wood fibres. Manufactured boards are usually made in very large sheets. Designers choose manufactured boards when they require consistency in strength, workability and texture. Their plain appearance is often disguised by more decorative material.

Scan the QR code to learn how plywood is manufactured ...

Manufactured boards (man made woods)

Type of wood	Description	Usage
MDF medium density fibre board	Smooth even surface. Easily machined and painted or stained. Also available in water and fire-resistant forms	Used mainly for furniture and interior panelling due to its machining qualities. Often veneered or painted
Plywood	A very strong board which is constructed of layers of veneer or piles which are glued at 90degrees to each other. Interior and exterior grades available	Structural panelling in building construction. Furniture making. Some grades used for boat building and exterior work
Hardboard	A very inexpensive particle board which sometimes has a laminated plastic surface	Furniture backs, covering curved structures. Door panels
Chipboard	Made from chips of wood glued together. Usually veneered or covered in plastic laminate	Kitchen and bedroom furniture when veneered or plastic laminated. Shelving and general DIY work

Manufacturing Processes
CAD/CAM (Computer Aided Design/Computer Aided Manufacture)

Laser cutter

Scan the QR code to learn how laser cutters work......

A drawing is sent from a CAD program such as 2D Design, to the laser cutter.
A laser cutter can cut through acrylic, laser plywood and some metals.

Tools and Equipment........

Wasting Tools....

Cutting....

Coping Saw

Tenon Saw

Hack Saw

Drilling....

Pillar Drill

Shaping....

File

Drilling....

Twist Drill   Counter Sink Drill

Holding....

Metal Vice   Bench Vice

Machine Vice   Bench Hook

Finishing....

Glass Paper (Wood)   Wet & Dry Paper (Plastic & Metal)   Wood Oil
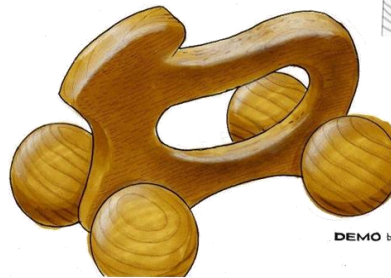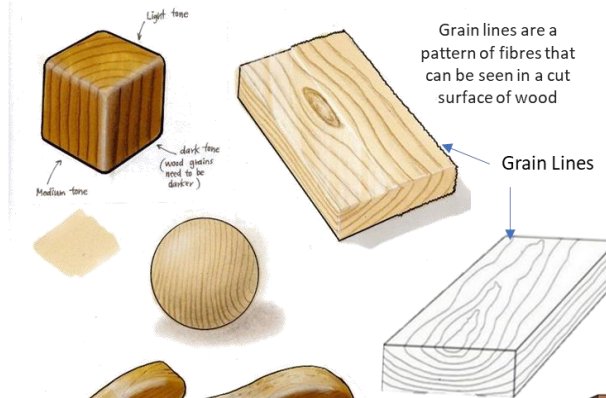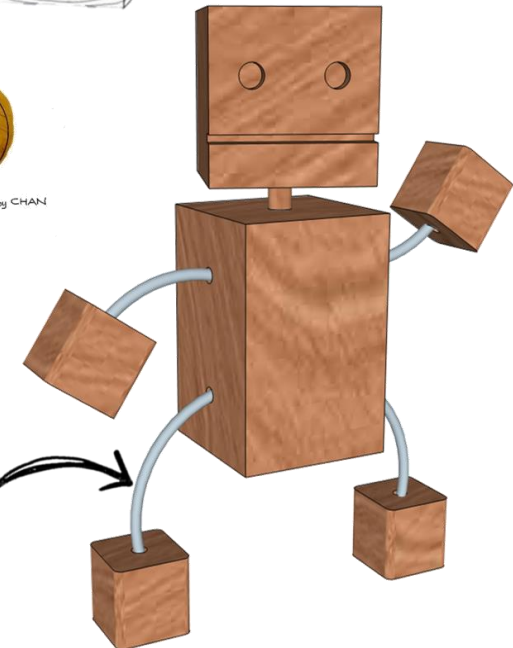
Joining....

Nut and bolt   Screw

Shading an object to look like wood....

Shade the back ground colour of the wood first and then add the grain lines.
Look at your pine wood to copy the detail of the grain lines.

Light tone

Medium tone

dark tone (wood grains need to be darker)

Grain lines are a pattern of fibres that can be seen in a cut surface of wood

Grain Lines

DEMO by CHAN

Scan the QR code to learn how to shade a wooden texture......

You will use coloured rope to join the hands and feet on to the body.
Try to show what the rope will look like and shade it the colour that you would like it to be.
The rope can be different colours for the arm piece and leg piece.

Design and Technology
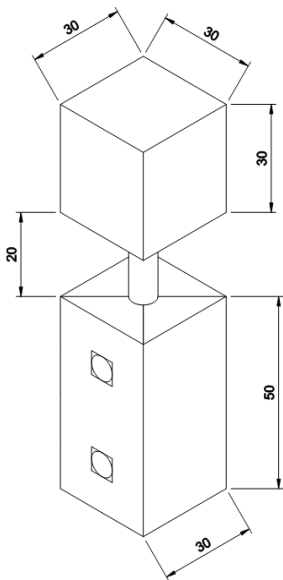
Isometric Drawing.........

YEAR 7
BLOCK-BOT PROJECT

Block Bot with dimensions
All dimensions in mm

30 30
30
20
50
30

Head
Hands
Arms
Neck
Body
Feet
Rope
Pine Wood
Legs
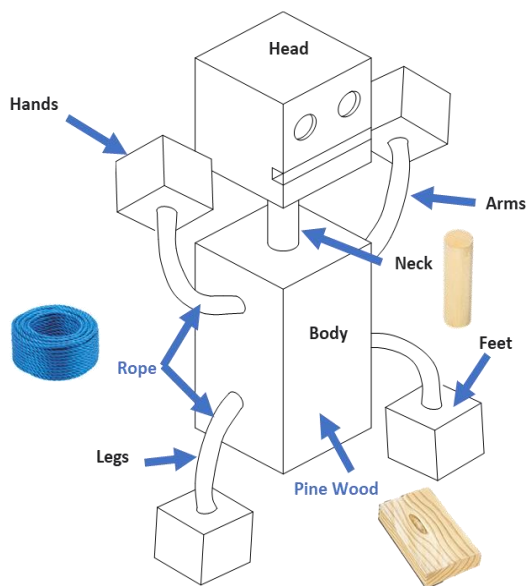
Final Block Bot Isometric Drawing

1 Eyes
Mouth

Draw the head.
Then add the detail of the eyes and the mouth.

2 Draw the body.

Leave 20mm (2cm) from the head to the body.

3 Then draw the neck.
The neck is made from a piece of wooden dowel.

4 Then draw the hands and feet.

10 10
10
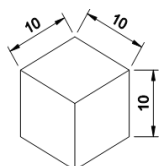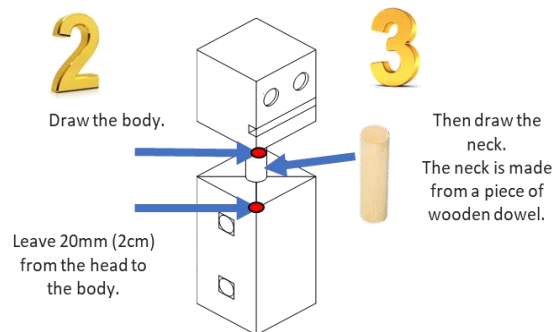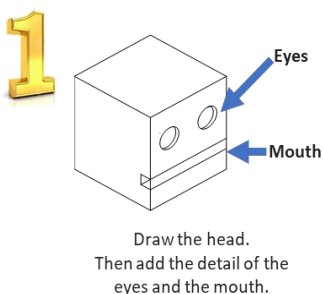
They will be connected with a piece of rope to create the arms and legs.

Product Analysis...........

Aesthetics
Does the product look good?
Does it make good use of colour and texture?
What has inspired it's appearance? (E.g. is it organic? Is it industrial?)

Cost
What is the estimated cost of the product?
What is the retail price?
What is the relationship between the two?
Is the product affordable?
Does it offer value for money?
What is the product's cost in relation to the income of potential buyers/users?

Customer
Who is the product designed for?
How and where would they use it?
What effect will it have on their lives and relationships?
Will it add value?
How is the product promoted to attract customers?
Has the designer considered how people will interact with the product?
Does the product target a particular age group or sector of people?
What assumptions have been made about the potential buyers/users?

Environment
What is the product's impact on the environment?
What happens to the product after use?
How long will it last?
What factors limit/lengthen its life span?
Can it be repaired? Can parts be replaced?
How easily can it be recycled?
Who would pay for the cost of recycling?

Safety
How has the designer considered safety issues in the products design?
Think about the ways it is being used and how different parts have been joined together.
Are there any risk assessment issues in relation to the use of the product?

Size
Are the product's proportions appropriate for its use?
If you increased or decreased the products size, would it look or function better?

Function
Does the product do the job it was intended to do?
How does it work?
How easy is it to use?
What effects will using it have, including those beyond intended use and user?

Material
What materials are used to make the product and why?
Would another type of material work better?
What impact could the designers choice of material have on the environment?
Where do the materials and other resources needed for production come from?
Are they likely to run out?

KS3 Design Technology Sentence Starters - Annotation Support

Analysing Sentence Starters

I think that……….

I liked/disliked this design as……….

It would appeal to a target audience of……….

The strengths of this design are………. because……….

The weaknesses of this work are………. because……….

Aesthetically this design……….

The use of the colours………. means/allows……….

Design Explanation Sentence Starters

I have chosen the colours………. because

This product is designed to……….

My product is made from……….

What I like about my design is……….

My design follows the theme of……….

I could improve my design further by……….

Annotation

Negatives:

What are the negatives about your design?

Positives:

What parts of your design work well?

Improvements:

What could you change and improve about your design?

Environment:

What impact would your design have on the environment

Manufacture:

How would your design be manufactured?

Target Market:

Who would this design appeal to and why?

Materials:

What materials would you use to create this?

Key Words

Design

Technology

Analysis

Investigate

Research

Generate

Develop

Model

Evaluate

Reflect

Manufacture

Sketch

Prototype

Aesthetics

Safety

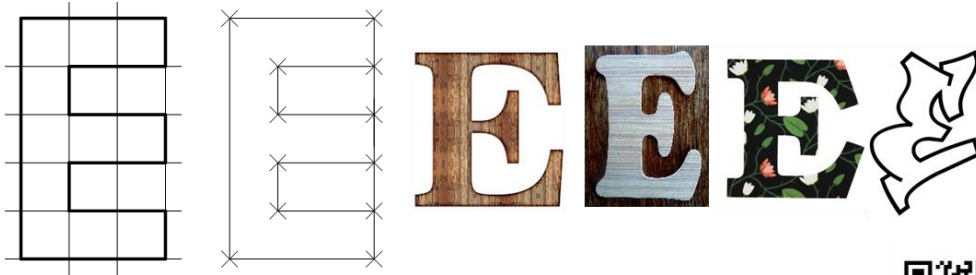Tenon saw

Coping saw

Pillar drill

Bench hook

Pine

Plywood

Describing Words

Accurate	Cheap	Curved	Fragile	Overlapping	Uneven
Attractive	Complex	Defective	Imaginative	Repeated	Smooth
Bland	Colourful	Delicate	Innovative	Rough	Subtle
Bright	Contrasting	Elegant	Interesting	Shiny	Suitable
Bulky	Creative	Geometric	Organic	Simple	Symmetrical

Manufacturing Processes

Line Bending.....

Line bending is a process whereby a piece of plastic is **bent** along a narrowly defined "**line**". This process allows items such as display stands, leaflet dispensers, POS display, garden furniture, binders, POP display products and acrylic tables to be made from flat material.

Scan the QR code to learn how to bend plastic with a hot wire heater/strip heater

Hot wire heater/strip heater

To create bends with specific angles, a jig or former can be used.

Examples of jigs and formers

EDGES SMOOTHED	MARKING OUT	PLACE PLASTIC ON SUPPORTS
1.	**2.**	**3.**
Hand files are used to smooth the edges. Wet and dry paper may also be used.	The position of the fold is marked with a china-graph pencil. With this type of pencil the line can be removed easily later.	The plastic is placed across the rests, above the heating element.
HEAT PLASTIC	USE FORMER/JIG	QUALITY CONTROL
4.	**5.**	**6.**
The strip heater is turned on and the plastic is turned over every 30 seconds - one minute. This stops the	Fit plastic 'jig'. The jig is made to the correct angle, in the example - 90 degrees. Plastic is held in position as it cools.	The quality of the formed plastic is checked.

Stages of line bending

Thermoplastic: A type of plastic which becomes soft when heated and hard when cooled down.
Acrylic. PVC and polystyrene are examples of **thermoplastics**.

Driving Test
Use this diagram to draw an identical copy on to the plywood

Scan the QR code to learn how to finish plastic

Tools & Equipment

All dimensions in mm

Drawing using construction points.....

Letter Hook Project

Isometric Drawing.........

axes are drawn so that the two horizontal axes are drawn at 30 degree angles

30°   30°
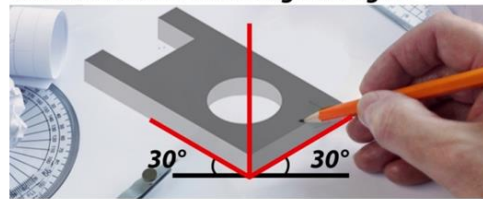
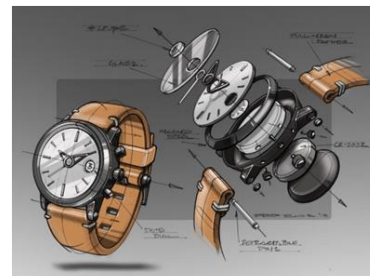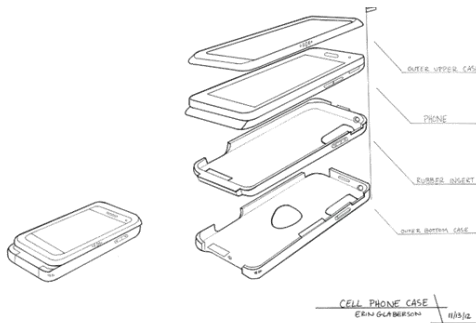Scan the QR code to learn how to draw simple shapes in isometric......

Hook template

Scan the QR code to learn how to shade a plastic texture......

Exploded Isometric.........

Exploded views

Exploded drawings are extremely useful when explaining a design / idea. The drawing opposite is a design for an educational toy (for a young child) has been drawn with all the parts disassembled.
It is important when drawing an exploded view that all the parts line up with each other when disassembled. The vertical guidelines clearly show how the various parts are in line with each other. If an exploded drawing is constructed properly anyone looking at the drawing should be able to see how the various parts go together to form the finished design/object.

Scan the QR code to learn how to draw simple shapes in exploded isometric......

Shading an object to look like plastic....
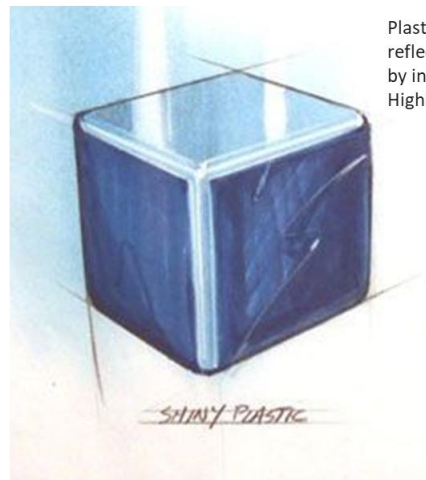
Plastics have a shiny surface that reflects the light. We show this by including 'highlights'. Highlights are white.

SHINY PLASTIC

CELL PHONE CASE
ERIN GLABERSON

Exploded phone drawing.........

Exploded watch drawing.........

Ancient Greek Myths

Persephone

Forced to become the wife of Hades. Her mother Demeter was the goddess of the earth and pleaded with Zeus to have her daughter back. She won her daughter back but only for 6 months of the year (Spring) when she allows nature to flourish, and in Winter when Persephone went back to Hades, Demeter made nature die away (Winter).

Daedalus & Icarus

Daedalus created giant wings so that together with his son Icarus, he could escape from the Minotaur's labyrinth. Icarus was too excited by the freedom of flight and flew too close to the sun which melted his wings. Consequently Icarus fell into the sea and drowned.
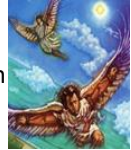
Prometheus

Prometheus is a Titan, who defies the gods by stealing fire and giving it to humanity, an act that enabled progress and civilization. As a punishment the immortal Prometheus was bound to a rock, where each day an eagle, the emblem of Zeus, was sent to feed on his liver, which would then grow back overnight to be eaten again the next day.

Theseus & the Minotaur

Theseus was the Prince of Athens and he put himself forward to fight King Minos's minotaur in his labyrinth. With the help of the King's daughter Ariadne he is successful. He is able to kill the minotaur and find his way out of the labyrinth.

Narcissus and Echo

Echo falls in love with Narcissus, but Narcissus doesn't feel the same. Echo proceeds to pine over Narcissus until her body withers away and only her voice is left. Meanwhile, Narcissus stops for a drink at a small pond. When Narcissus sees his reflection in the water of the pool he falls hopelessly in love—with himself. He is so in love with his reflection that he dies by the side of the pond.

Jason and Medea

In Euripides' tragedy, *Medea*, Jason divorces Medea so that he can marry Creon's daughter, GLAUCE and Creon orders Medea to leave Corinth. Medea sends her children with gifts for Glauce—a robe and a crown smeared with magic ointment that burn Glauce and Creon to death. Medea then kills the children as a final revenge on Jason.

Pandora

Pandora was the first mortal woman in Greek mythology, she was moulded by Hephaestus and endowed with gifts by all the other Olympian gods. One of these gifts was a jar full of all the evils and diseases which exist in the world; once Pandora married Epimetheus, she lifted the lid of this jar and set them all free, thus marking the end of the Golden Age of Humanity.

Perseus

Perseus killed the famed monster Medusa, the hideous gorgon with snakes for hair who turned anyone with the misfortune of looking into her eyes into stone. After he had slain Medusa, Perseus was said to have used her head as a weapon against his enemies, since it retained its power to turn to stone those who looked at it. Eventually, Perseus gave Medusa's head to Athena **to place on her shield**

English

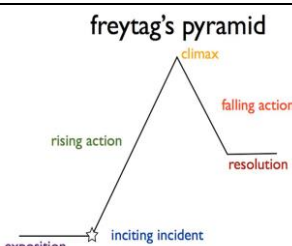| 1. 1910 - 1710 BCE	2. 1710 - 1672 BCE	3. 1672 - 1628 BCE	4. 1628 - 1460 BCE	5. 1460 - 1101 BCE	6. 1101 - 560 BCE	Greek Mythology
CREATION: Eurynome lays a cosmic egg which contains all life. She gives birth to the titans.	**GOLDEN AGE:** Titan rule peacefully until Zeus separates Cronos & Gaia.	**SILVER AGE:** Olympians take rule & create humans who are wild & long lived.	**BRONZE AGE:** humans are warlike & unruly. Zeus kills them with a great flood.	**HEORIC AGE:** Heroes fight tyrants & monsters in an attempt to restore harmony.	**IRON AGE:** The Gods abandon man. It is foretold this wicked race will destroy themselves.	
300,000 BCE - 50,00 BCE	50,000 BCE - 15,000 BCE	15,000 BCE - 3000 BCE	3000 BCE - 0 CE	0 CE - 3000 CE	3000 BCE - 15,000 CE	

The Oral Tradition

Human beings have been telling stories since they first learned to speak. And even before we could speak, we managed to tell stories by drawing and painting pictures on the walls of the caves we lived in. These stories have been passed down, retold, translated, and adapted over time through the oral medium. They were passed down the generations, because everyone loves a good story! The communication is usually through speech or song and may include folktales, ballads, chants, prose or verses. In this way, it is possible for a society to transmit oral history, oral literature, oral law and other knowledge across generations without a writing system. Eventually they were written down.

Myth

A story that has been created to teach people about something important and meaningful. They were often used to explain the world and major events which, at the time, people were not able to understand such as earthquakes, floods and volcanic eruptions.

Legend

A legend is usually based on a true event in the past. Legends usually have a real hero at the centre of the story and are often set in fantastic places.
- The story will have been passed on from person to person, sometimes over a very long period of time.
- The fact that so many people have taken the trouble to keep the story alive usually tells you that it has some very important meaning for the culture or area in which the story was first told.

Origins and purpose of Mythology

Myths had many purposes in Greek culture; many of which were to teach the Ancient Greeks about the world around them, including:
- Morality – many myths have a moral lesson.
- Good vs. Evil through the protagonist Vs Antagonist conflict.
- Teach about the Gods and Godesses of Ancient Greece.
- To demonstrate superpowers and the supernatural.
- Attempt to understand the world and universe.

Key Word Glossary

Heroine		A woman admired or idealized for her courage, outstanding achievements, or noble qualities
Hero		A person who is admired or idealized for courage, outstanding achievements, or noble qualities:
Moral		Concerned with the principles of right and wrong behaviour and the good or evil of human character
Protagonist		The leading character or one of the major characters in a drama, movie, novel, or other fictional text.
Antagonist		A person who actively opposes or is hostile to someone or something; an adversary
Hubris		Excessive pride or self confidence.

Checklist for effective narratives

- An attention grabbing first sentence
- Clear description of setting
- Well described characters
- Information to establish tone/atmosphere
- Details to allow reader to understand what is happening (plot)
- Use of enigma/mystery – questions that need answering
- A hook – a way to draw the reader in to the story – could be through the use of one of the other features
- Clear sense of genre (genre means what type of story it will be e.g. mystery, horror, bildungsroman, thriller, romance etc.)
- Varied openings
- Varied sentence structure
- Upgraded or ambitious vocabulary
- A sense of pace
- A sense of action – that something is happening
- A moral purpose

freytag's pyramid

climax

rising action

falling action

resolution

inciting incident

exposition

Language and Structural Features

Language	Verb	A word to describe an action or state
	Dynamic verb	A word that describes continuous movement
	Adverb	A word used to describe a verb or an adjective
	Adjective	A word used to describe a noun
	Noun	The name of a person, place or object
	Simile	a figure of speech involving the comparison of one thing with another thing of a different kind often using 'like' or 'as'
	Metaphor	Describing something as something else for effect
	Personification	Giving an object human qualities
	Onomatopoeia	Words used to create sounds. E.g. 'click'
	Alliteration	Words within the same sentence starting with the same letter or sound.
Structure	Exposition	The start of a text or extract
	Rising Action	The presentation of problems that creates suspense.
	Climax	The most intense, exciting part of a text.
	Linear	A text that is written in chronological order
	Resolution	The part of a text where problems are solved.

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Key Concepts

Persuasion: the action or process of persuading someone or of being persuaded to do or believe something.

Point of view/viewpoint: a particular attitude or way of looking at an issue

Line of argument: the reasoning used to support a particular idea or view.

Inequality: when people are treated differently in society and as a result there is difference in the amount of power or influence they have.

Stereotypes: a widely held but fixed and oversimplified image or idea of a particular type of person or thing.

Discrimination: when people are treated negatively especially on the grounds of race, age, or sex.

Rhetoric

	Aristotle said rhetoric is: "**the faculty of discovering in any particular case all of the available means of persuasion.**" In order to persuade effectively, a speaker must appeal to the ethos, logos and pathos of the audience.
Ethos	The character or emotions of a speaker or writer that are expressed in the attempt to persuade an audience.
Logos	The means of persuasion by demonstration of logical proof or reasoning that is real or apparent.
Pathos	The means of persuasion that appeals to the emotions of an audience.

Rhetorical Devices

Device		Description
REPETITION		When a word or phrase is repeated for emphasis or for effect on the audience.
ANAPHORA		Repetition of a word or expression at the beginning of successive phrases, clauses or sentences for rhetorical effect.
EMOTIVE LANGUAGE		Word choices that are intended to get an emotional reaction, e.g. anger, urgency, joy.
ANECDOTE		A short amusing or interesting story about a real incident or person.
OPINION		A view or judgement formed about something, not necessarily based on fact or knowledge.
FACT		Something that is known or proved to be true.
RHETORICAL QUESTION		A question that doesn't require an answer, but instead the answer is implied.
HYPOPHORA		When a speaker asks a question and then answers the question in the following part of their speech.
ASYNDETIC LISTING		A list of words where the conjunction (and) is omitted. And words are separated by a comma.
TRICOLON		A list of three words used for emphasis or effect.

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Grammar and Punctuation

Colons	(:) used to mark a major division in a sentence, to indicate that what follows provides extra detail.	*He got what he worked for: he really earned those GCSEs.*
Semi- colons	(;) used to show a division in a sentence where a more distinct separation is felt between clauses or items. It is sometimes used to replace a connective in a sentence.	*I love ice cream; it is my favourite food.*
Modal verbs	A type of verb that expresses necessity or possibility. *(must, shall, will, should, would, can, could, may, and might)*	*We **must** make a change to the way that we treat our planet so that future generations **will** be able to see how beautiful it is.*
Pronouns	A word that refers to the participants in the conversation or to someone or something mentioned elsewhere (*I, you, she, it, this*)	*I believe that if we work together, this world will be a better place.*

Structure

Counter argument	What someone who disagrees with you might say in response to your ideas/argument.	*Admittedly, it has been argued that global warming is just a myth – but of course, such claims are completely absurd.*
Topic sentence	A sentence that identifies the main idea of the paragraph	*The facts about women and employment are clear.*
Discourse markers	A word or phrase used to organize what we are saying in sections.	*However, although, nevertheless*
Effective openings	Grabbing the audience's attention with techniques that stand out and make people listen (e.g. short successive sentences, rhetorical question, setting the scene)	*Imagine: a world with….*
Bookending	When your speech introduction and conclusion support your speech in a way that provides balance and creates structure.	*Today we are launching a campaign called HeForShe. I am reaching out to you because we need your help. …. It is called HeForShe. I invite you to step forward, to be seen and to ask yourself, "If not me, who? If not now, when?"*
Short sentences	A simple sentence, which often communicates clearly and is easily remembered.	*It's about freedom.*

Women in Society

The Bible: According to the Bible, Eve was created from Adam's rib and, having eaten the forbidden fruit, was responsible for man's expulsion from paradise. In medieval art, the responsibility of women for this 'original sin', is often emphasised by giving a female head to the serpent who tempts Eve to disobey God. The story underlined the belief that women were inferior to men, and that they were morally weaker and likely to tempt men into sin.

Patriarchal Oppression: 'Wives, submit yourselves unto your own husbands, as unto the Lord, for the husband is the head of the wife; even as Christ is the head of the church… therefore as the church is subject to Christ, so let wives be subject to
their husbands in everything.' - Ephesians 5.22 – 24

The Doctrine of Separate Spheres:
- The **public sphere** was the domain of men, so they were able to freely move outside the home and participate easily in public life.
- The **private sphere** was where women belonged, taking care of household matters.

Women in Politics
Before 1918 no women were allowed to vote in parliamentary elections. In the early 20th century there were two main groups active in the campaign for women's suffrage, a term used to describe the right to vote. These two groups were the 'suffragists' who campaigned using peaceful methods such as lobbying, and the 'suffragettes' who were determined to win the right to vote for women by any means. Their militant campaigning sometimes included unlawful and violent acts which attracted much publicity. Women won the right to vote in 1920.

Modern Inequality: According for the Office for National Statistics (ONS), median hourly pay for full-time employees was 7.9% less for women than for men in April 2021.

1. Food Hygiene

Binary Fission

1. Bacteria cell
2. Cell starts to split in two
3. Cell is now two cells

Cooking Zone
- 100 °C Boiling Water — bacteria will be destroyed
- 75 °C Cooking/Reheating
- 63 °C Minimum Hot Holding

Danger Zone
- 37 °C Body Temperature — ideal temperature for bacteria to grow
- 8 °C Food Storage — store food at this temperature or below
- 5 °C Fridge Temperature

Cold Zone
- -18 °C Freezer Temperature — bacteria won't grow but may not die

All the above temperatures are guidelines only

Before Cooking:
1. Put your apron on
2. Roll your sleeves up
3. If you have long hair tie it back with a bobble
4. Wash your hands with warm and soapy water
5. Dry your hands – moisture harbours bacteria

When Cooking:
1. Keep your cooking station neat and tidy

The Tidy Tick List:
✓ Clean and dry dishes
✓ No streaks and residue left on the glass bowls
✓ Clean dry work surfaces
✓ Clean sparkling hobs
✓ Clean cupboard doors and drawers
✓ Clean and dry sinks with no suds or residue food

The 4C's

CLEANING
- Keep yourself and your hands clean
- Wash your hands before handling food, every 30 minutes and always after going to the toilet
- Keep worksurfaces, equipment & utensils clean and disinfected
- Don't forget to clean dishcloths & cleaning equipment

COOKING
- Cook thoroughly
- Cook raw foods to 75°C at the core, check it with a probe thermometer
- Reheat foods to 75°C
- Never reheat food more than once

CHILLING
- Cool cooked food products as quickly as possible to 5°C
- Core temperature of cooked food must reach <10°C within 150 mins of end of cooking
- Food must be protected from contamination while cooling

CROSS-CONTAMINATION
- Prevent cross-contamination
- Always separate raw-food from ready-to-eat food
- Use separate equipment, chopping boards and utensils
- Wash hands thoroughly after handling raw food before ready-to-eat food

Cross-contamination
Transferring bacteria from raw to ready to eat foods. Often through not washing hands or equipment after handling raw foods.

Hygiene
Conditions and practices that prevent disease and illness through the act of cleanliness.

Use By
The term used on products that must be eaten before or by the date stated. This term is used on high risk foods, where consumption past the stated date would cause illness.

Best Before
The term used on products that degrade slowly and can be eaten past the date stated but may not taste or look as good.

2. Kitchen Safety

Kitchens can be dangerous places. To keep safe:
- Be aware of sharp equipment such as knives, peelers and graters- store them carefully and use the bridge hold and claw grip when chopping.
- Take care with hot equipment and food/ liquids- turn pan handles in, always use oven gloves and avoid splashes when stirring or draining foods.
- Wipe up spills quickly so you do not slip over
- Be aware of others in the kitchen
- Report any accident

Claw Grip
Used to hold long and narrow ingredients. Knuckles are used to guide the blade while pressure is pushed downwards to hold the ingredient in place.

Bridge Grip
Used to hold spherical and rounded ingredients. The knife can be placed safely between the arch of the hand.

3. Weighing and Measuring

Weighing and Measuring For good results in most recipes, accurate weighing and measuring is essential. When you are baking with flour, sugar and liquids, you must measure accurately or your cooking will be spoiled. If you weigh out too much sugar or too little raising agent, your cakes would not rise or you could spoil the taste and/or texture. Food can be weighed in Grams (g) and there are 1000g in a Kilogram (kg). Liquid is measured in Millilitres (ml) or litres

Food Technology

4. Allergies Vs Intolerance

A true food allergy causes an immune system reaction that affects numerous organs in the body. It can cause a range of symptoms. In some cases, an allergic food reaction can be severe or life-threatening. In contrast, food intolerance symptoms are generally less serious and often limited to digestive problems.

THE 14 FOOD ALLERGENS

MOLUSCS – Including land snails, whelks and squid.
EGGS – Can be found in cakes, sauces and pastries.
FISH – Found in pizza, dressings and Worcestershire sauce.
LUPIN – Lupin can be found in bread, pastries and pasta.
SOYA – Various beans including edamame and tofu.
MILK – Butter, cheese, cream and milk powders contain milk.
PEANUTS – Can be found in cakes, biscuits and sauces.
GLUTEN – In food made with flour such as pasta and bread.
CRUSTACEANS – Such as crab, lobster, prawns, shrimp and scampi.
MUSTARD – Can be in liquid or powder form as well as seeds.
NUTS – Including cashews, almonds and hazelnuts.
SESAME – Found on burgers, bread sticks and salads.
CELERY – Including stalks, leaves, seeds and celeriac.
SULPHITES – Found in dried fruit like raisins and some drinks.

5. Healthy Eating

Eatwell Guide

What are the 8 government guidelines for healthy eating?

- 8 TIPS FOR EATING WELL.
- Base your meals on starchy foods.
- Eat lots of fruit and vegetables.
- Eat more fish.
- Cut down on saturated fat and sugar.
- Try to eat less salt- no more than 6g a day.
- Get active and try to be a healthy weight.
- Drink plenty of water.

Fruit and Vegetables
Nutrients- Vitamins and minerals
Examples-Strawberries, apples, carrots and cauliflower
Potatoes, bread, rice, pasta and other starchy carbohydrates Nutrients- Carbohydrates
Examples- Cereals, wholemeal pasta, brown rice
Dairy and dairy alternatives Nutrients- Calcium, Protein Examples- Milk, cheese, yoghurt, almond milk
Beans, pulses, fish, eggs, meat and other proteins Nutrients- Protein Examples- Oily fish, chick peas, soya, eggs
Oils and spreads
Nutrients- Fats Examples- Olive oil, sunflower spread

Scan to view a quick clip about how carbohydrates help athletes when training.

Scan to view a quick clip about how protein helps athletes when training.

Scan to view a clip about how fats work.

Scan to view a clip about how fats help athletes.

6. Electrical Equipment

Oven/Grill

Hob The hob is used for heating sauce pans, frying pans, griddle pans etc.

Dials The dials allow the user to change the settings of the hob, oven and grill.

Grill The grill uses the radiation method of cooking with food placed on a wire rack below. Heat can be increased or decreased using the dials.

Oven The oven uses the convection method of cooking. Food can be placed on different racks within the oven. The dials control the temperature.

Using the Oven Safely
- Preheat the oven to the correct temperature. Use oven gloves to put food in and take food out.
- Set the timer to ensure food does not burn or under cook.
- Remove food using oven gloves.

Salamander

A salamander is a type of grill. Electric or gas heating elements that look like pipes produce a very high heat which cooks the food placed below it.

It is used in catering due to how quick it can cook food. Specific cooking techniques include; grilling, toasting, browning of gratin dishes, melting and caramelising.

Shelf
Food is placed on a baking sheet on this shelf. Handles on the shelf make it safer and easier to place food under the grill.

Hand Mixer

This equipment is used to mix dry and wet ingredients together. The mixer can be set to higher or lower speeds.

Beaters

Using the Electric Whisk Safely
- When inserting the beaters or removing them, make sure the mixer is not plugged into the mains.
- Only switch the mixer on and off when the beaters are submerged in the mixture.
- Keep hands and utensils and the electrical wire way from the beaters when in use.
- When cleaning the device, remove and wash the beaters in hot water. Wipe the body of the mixer with a damp cloth only.

Microwave

Latch Ensures the door is securely closed so that no radio waves escape.

Turn table Turns the food around to ensure radiation waves are evenly distributed.

Dials

Microwaves use radiation method of cooking. Particle's in the food are made to vibrate very fast which causes heat. Metal must never be placed in a microwave.
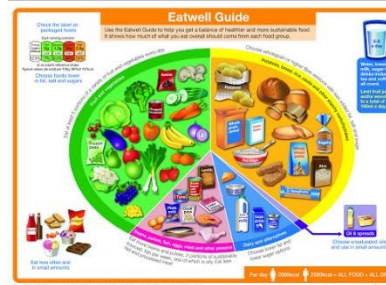
Food Processor

A kitchen appliance that can cut, blend, grate and mince ingredients. A food processor is different to a blender because you can change the blades to complete different tasks. You can also fit more food into a food processor. Little or no water is required to ensure the food particles move around the blade.

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7. Cooking Methods

Braising	Deep Frying	Sautéing	Flambéing	Boiling	Simmering
Wet / **Slow**	**Dry** / **Fast**	**Dry** / **Fast**	**Dry** / **Fast**	**Wet** / **Fast**	**Wet** / **Fast**
Pieces of food are first browned in a little fat, then cooked with some liquid in a closed pan.	Frying pieces of food in a deep pot or fryer with plenty of hot oil or fat.	Cooking small or thin pieces of food in very hot oil or fat. The frying pan is shaken constantly to stop the food from burning.	After frying, alcohol is added to the food in the frying pan and set on fire. This adds another flavour to the food.	Food is cooked in deep boiling liquid (water, stock, wine etc) in an open or covered saucepan.	Like boiling, but the liquid is kept just below boiling point in an uncovered pot.

| Steaming	Stewing	Pan-frying	Broiling/Grilling	Roasting	Baking
Wet / **Fast**	**Wet** / **Slow**	**Dry** / **Fast**	**Dry** / **Fast**	**Dry** / **Slow**	**Dry** / **Slow**
Food is placed in a container and cooked in the steam from boiling water in a covered pan or steamer.	Cooking food in its own juices with a little additional liquid, in a covered pan at simmering point.	Frying food in a little oil or butter using a frying pan over a moderate heat.	Cooking food like steak or fish, over or under open heat, e.g. under the oven grill or on a barbeque or hot plate.	Cooking food like meat or poultry with some fat in a hot oven (between 200-240 degrees centigrade)	Cooking food like cakes, pies, bread etc. in a closed oven at a temperature of between 120-240 degrees centigrade.

Wet or Dry Cooking Methods

Wet or dry refers to the texture of the cooked food so baking and frying are dry cooking methods and boiling and stewing are wet methods.

Fast or Slow Cooking Methods

Fast and slow methods refer to how long it takes. Generally less than an hour is a fast cooking method and over an hour is a slow cooking method.

Conduction
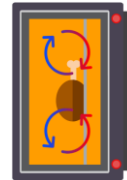
- This only happens in liquids and gases.
- The molecules of liquid or gas nearest the hot base of the pan gain heat energy, and start to rise in the pan.
- As the liquid rises to the top of the pan, it will begin to cool again, so starts to drop back to the bottom, where it will be heated up again.
- There is a convection current moving in the pan. Convection currents also happen in ovens.
- Hot air rises and cooler air falls.
- A convection oven uses a fan to move the heat around, so every part of the oven is approximately the same temperature.

Convection

- This happens when heat is directly touching a piece of equipment, or a piece of food.
- If you put a metal pan on an electric or gas hob, the heat from the hob will heat up the base of the pan.
- There are good conductors of heat, and bad conductors of heat. Metal conducts heat very well, which is why saucepans and frying pans, along with baking trays and cake tins, are made of metal.
- Water is also a good conductor of heat, which is why boiling foods works well and cooks foods quickly Wood, plastic, cloth and glass are poor conductors of heat.

Radiation
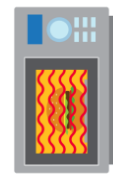
- This occurs through space or air. Radiation transfers energy through space by invisible electro-magnetic waves. The waves are either infra-red or microwaves Infra-red heat waves are absorbed by the food when they reach it, and they create heat inside the food which cooks it.
- This happens when you put food under a grill. Cooking foods in microwaves also uses radiation. The microwaves are created by a magnetron inside the oven. The microwaves are absorbed by the food, making the molecules vibrate and heat up, which then cooks the food. Microwaves pass straight through glass, china and plastic, and do not heat them up. Metal will reflect the microwaves and damage the magnetron so do not put metal object into a microwave oven.

Food Technology

French

Bonjour.	*Hello.*
Salut!	*Hi!*
Comment t'appelles-tu?	
Je m'appelle …	*My name is …*
Comment ça va? (Ça va?)	*How are you? (Are you OK?)*
Ça va (très) bien.	*I'm (very) well.*
Pas mal, merci.	*Not bad, thanks.*
Ça ne va pas!	*Not good!*
Et toi?	*How about you?*
Au revoir.	*Goodbye.*
À plus!	*See you later!*

As-tu des frères et soeurs? — *Do you have any brothers or sisters?*

Oui. J'ai …	*Yes, I have …*
un frère.	*one brother.*
une sœur.	*one sister.*
un demi-frère.	*one half-/step-brother.*
(deux) frères.	*(two) brothers.*
(trois) demi-sœurs.	*(three) half-/step-sisters.*
Je n'ai pas de frères et soeurs	*I don't have any brothers or sisters*
Je suis fils/fille unique.	*I am an only child.*
Quel âge as-tu?	*How old are you?*
J'ai (onze) ans.	*I am (11) years old.*

les nombres

un	1
deux	2
trois	3
quatre	4
cinq	5
six	6
sept	7
huit	8
neuf	9
dix	10
onze	11
douze	12
treize	13
quatorze	14
quinze	15
seize	16
dix-sept	17
dix-huit	18
dix -neuf	19
vingt	20
vingt-et-un	21
vingt-deux	21
trente	30
trente-et-un	31

Les jours de la semaine

lundi	*Monday*
mardi	*Tuesday*
mercredi	*Wednesday*
jeudi	*Thursday*
vendredi	*Friday*
samedi	*Saturday*
dimanche	*Sunday*

As-tu un animal? — *Have you got a pet?*

J'ai …	*I have …*
un chat	*a cat*
un chien	*a dog*
un cochon d'Inde	*a Guinea pig*
un hamster	*a hamster*
un lapin	*a rabbit*
un lézard	*a lizard*
un oiseau	*a bird*
un poisson	*a fish*
un serpent	*a snake*
Je n'ai pas d'animal.	*I don't have a pet.*

Les couleurs

blanc(he)	*white*
bleu(e)	*blue*
gris(e)	*grey*
jaune	*yellow*
marron	brown
noir(e)	black
orange	orange
rose	pink
violet(te)	purple
vert(e)	green
rouge	red

Décris-moi ta famille

la famille	*family*
la famille d'accueil	*foster family*
le (beau-)père	*(step-)father*
le grand-père	*grandfather*
le (demi-)frère	*(half/step-)brother*
le fils / la fille	*son / daughter*
la (belle-)mère	*step-mother*
la grand-mère	*grandmother*
la (demi-)sœur	*(half/step-)sister*
les parents	*parents*

French

C'est quand, ton anniversaire? — *When is your birthday?*

Mon anniversaire, c'est … — *My birthday is on …*
le (15 mars/24 juin) — the (15th March/ 24th June)
le premier — the first
janvier — January
février — February
mars — March
avril — April
mai — May
juin — June
juillet — July
août — August
septembre — September
octobre — October
novembre — November
décembre — December

Tu es comment?

Je suis … — *I am …*
Je ne suis pas … — *I am not …*
Il est/Elle est … — *He is/She is …*
amusant(e) — *funny*
arrogant(e) — *arrogant*
bavard(e) — *talkative/chatty*
fort(e) — *strong*
grand(e) — *big/tall*
intelligent(e) — *intelligent*
méchant(e) — *nasty/bad*
patient(e) — *patient*
petit(e) — *small/short*
timide — *shy*

Tu es comment?

il/elle est … — *he/she is …*
petit(e) — *small*
grand(e) — *tall*
de taille moyenne — *medium-sized*
il/elle a les yeux … — *he/she has ... eyes*
bleus / verts / marron — *blue / green / brown*
il/elle a les cheveux … — *he/she has … hair*
noirs / blonds — *black / blond*
roux / gris / bruns — *red / grey / brown*
courts / longs / mi-longs — *short / long / mid-length*
bouclés / raides — *curly / straight*
une barbe — *a beard*
des taches de rousseur — *freckles*
des tatouages — *tattoos*
il/elle porte des lunettes — *he /she wears glasses*

Tu aimes …? — *Do you like …?*

J'aime … — *I like …*
Je n'aime pas … — *I don't like …*
le sport — *sport*
le foot — *football*
le vélo — *cycling*
le collège — *school*
le cinéma — *cinema*
le poisson — *fish*
la danse — *dance*
la musique — *music*
les pizzas — *pizzas*
les serpents — *snakes*
les glaces — *ice creams*
les jeux vidéo — *video games*
les vacances — *holidays*
les BD — *comics*
les mangas — *manga*
les araignées — *spiders*

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Tu es comment?

Je suis (I am) Il est (He is) Elle est (she is)	patient(e) arrogant (e) intelligent (e) de taille moyenne	et	j'ai (i have) il a (he has) elle a (she has)	les yeux	bleus verts gris	et les cheveux	blonds marron noirs roux

As-tu des frères ou des soeurs ou un animal?

J'ai	un frère un demi-frère deux sœurs	qui s'appelle qui s'appellent	Joseph Amy James	et	Sophie Elliot Lucy	Il est… (he is…) Elle est… (She is…)	patient(e) arrogant (e) intelligent (e) de taille moyenne

Décris ta famille

Dans ma famille il y a… (In my family there is…)	ma mère mon beau-père ma grand-mère	et	ma demi-sœur.	Ma mère Mon beau-père Ma grand-mère	a	les cheveux longs Les yeux verts	et	il / elle porte des lunettes il / elle a des tatouages

Tu aimes…?

J'aime	le foot les mangas la danse	mais	je n'aime pas	les pizzas la musique le vélo

French

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INTRODUCTION TO GEOGRAPHY

Geography is… the study of the earth

We split Geography up into 3 categories:

	Definition	Examples
Human Geography	The study of how and where people live	Tourism Population How rich/poor we are
Physical Geography	The study of the earths natural features	Rivers Earthquakes Weather
Environmental Geography	The study of how humans affect their environment	Waste Pollution Global warming

In Geography we like to ask questions about what we are studying:
WHO Lived there?
WHAT Has happened?
WHEN did this happen?
WHERE is this house?
WHY is half of it missing?
HOW is it still standing?

The 7 continents of the world:
1. North America
2. South America
3. Europe
4. Africa
5. Asia
6. Oceania/Australasia
7. Antarctica

Major Oceans:
- Pacific Ocean
- Atlantic Ocean
- Indian Ocean

Highest mountain in:
England : Scafell Pike: 978m
Wales: Snowdon: 1,085m
Scotland: Ben Nevis: 1,345m

Capital of England : London
Capital of Wales: Cardiff
Capital of Scotland: Edinburgh

	England	Scotland	Wales	Northern Ireland	Republic of Ireland
British Isles	☑	☑	☑	☑	☑
United Kingdom	☑	☑	☑	☑	
Great Britain	☑	☑	☑		

Geography

Year 7 - Coasts

How do waves form?

Waves are created by wind blowing over the surface of the sea. As the wind blows over the sea, friction is created - producing a swell in the water.
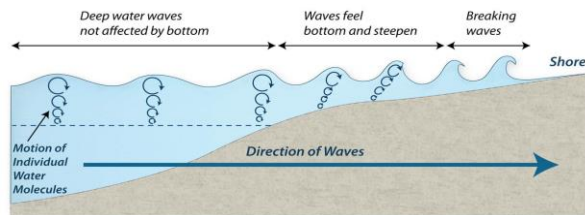
Size of waves

Affected by:
- Fetch how far the wave has travelled
- Strength of the wind.
- How long the wind has been blowing for.

Why do waves break?

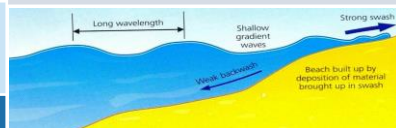| 1	Waves start out at sea.
2	As waves approaches the shore, friction slows the base.
3	This causes the orbit to become elliptical.
4	Until the top of the wave breaks over.

Deep water waves not affected by bottom — Waves feel bottom and steepen — Breaking waves — Shore
Motion of Individual Water Molecules — Direction of Waves

Types of Erosion

The break down and transport of rocks – smooth, round and sorted.

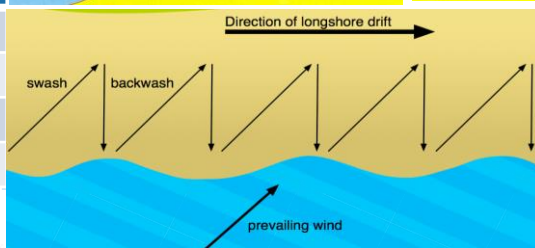| Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolves rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart or scraped against the cliff face.
Hydraulic Action	Water enters cracks in the cliff, air compresses, causing the crack to expand.

Types of Waves

Constructive Waves
This wave has a swash that is stronger than the backwash. This therefore builds up the coast.

Long wavelength — Shallow gradient waves — Strong swash — Weak backwash — Beach built up by deposition of material brought up in swash

Destructive Waves
This wave has a backwash that is stronger than the swash. This therefore erodes the coast.

Steep gradient waves — Tall waves with short wavelength — Weak swash — Strong backwash (beach eroded)

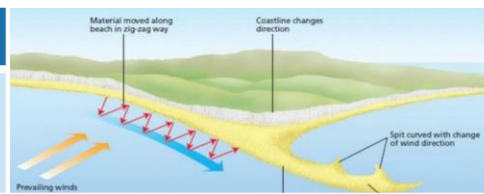Direction of longshore drift — swash — backwash — prevailing wind

What is Transportation?
A natural process by which eroded material is carried/transported. Material is carried along the coastline via a process called Longshore Drift.

What is Deposition?
When the sea loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition. Heaviest material is deposited first.

Material moved along beach in zig-zag way — Coastline changes direction — Spit curved with change of wind direction — Prevailing winds

Formation of Coastal Spits – Depositional landforms

1) Swash moves up the beach at the angle of the prevailing wind.
2) Backwash moves down the beach at 90° to coastline, due to gravity.
3) Zigzag movement (Longshore Drift) transports material along beach.
4) Coast changes direction, but transportation continues out to sea and Deposition occurs, creating a spit.
5) Change in prevailing wind direction (or a flowing river) forms a hook.
6) Sheltered area behind spit encourages deposition, salt marsh forms.

Example: Spurn Head, Holderness Coast.

Erosional landforms

Coastal Defences

Hard Engineering Defences

Groynes	Wood barriers prevent longshore drift, so the beach can build up.	✓ Beach still accessible. ✗ No deposition further down coast = erodes faster.
Sea Walls	Concrete walls break up the energy of the wave . Has a lip to stop waves going over.	✓ Long life span ✓ Protects from flooding ✗ Curved shape encourages erosion of beach deposits.
Gabions	Cages of rocks/boulders absorb the waves energy, protecting the cliff behind.	✓ Cheap ✓ Local material can be used to look less strange. ✗ Will need replacing.
Rock Armour	Piles of large rocks based at the bottom of the cliff to absorb the waves energy	✓ Cheap ✓ Can be used to fish off ✗ Can be expensive to transport

Soft Engineering Defences

Beach Nourishment	Beaches built up with sand, so waves have to travel further before eroding cliffs.	✓ Cheap ✓ Beach for tourists. ✗ Storms = need replacing. ✗ Offshore dredging damages seabed.

Case Study: Holderness Coastline

Location and Background
Located on the North East coast of England. It has one of the highest rates of coastal erosion in Europe. The coast is made up of mainly Boulder clay, with a chalk headland to the north.

Geomorphic Processes
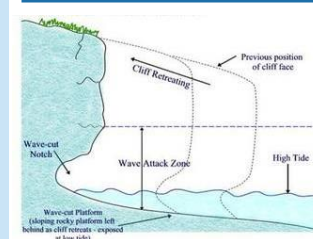- 1.8m of land is lost to the sea every year.
- In Great Cowden the rate of erosion is 10m per year due to management strategies further north in Mappleton (groynes)
- Longshore drift travels from south from Flamborough Head to Spurn Head where it forms a spit. .

Management - Over 11km of the coastline is managed
Mappleton – 450m of coastline protected costing £2million.
- 2 rock groynes to create beach and protect town.
- rock armour along base of cliff to absorb wave power
Hornsea – Seawall and groynes
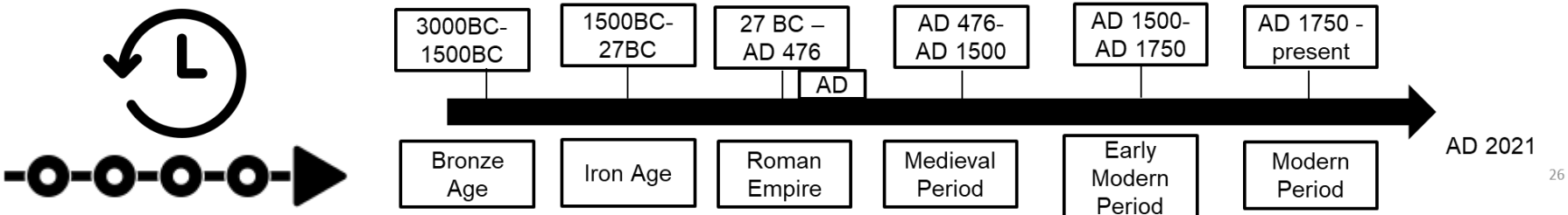Withernsea – Sea wall, groynes and rock armour.

Formation of Bays and Headlands

Bay — Soft rock — Hard rock — Headland

1) Waves attack the coastline.
2) Softer rock is eroded by the sea quicker forming a bay, calm area cases deposition.
3) More resistant rock is left jutting out into the sea. This is a headland and is now more vulnerable to erosion.

Formation of Coastal Stacks

Collapsed arch — Cave — Wave cut platform — Stack
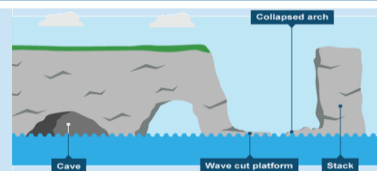
1) Hydraulic action widens cracks in the cliff face over time.
2) Abrasion forms a wave cut notch between high tide and low tide.
3) Further abrasion widens the wave cut notch to from a cave.
4) Caves from both sides of the headland break through to form an arch.
5) Weather above/erosion below –arch collapses leaving stack.
6) Further weathering and erosion eaves a stump.

Example: Old Harry Rocks, Dorset

Formation of Wave cut notches and platforms

Cliff Retreating — Previous position of cliff face — Wave-cut Notch — Wave Attack Zone — High Tide — Wave-cut Platform (sloping rocky platform left behind as cliff retreats - exposed at low tide)

1) Waves attack the coastline.
2) Waves cut a notch into the bottom of the cliff face
3) The rock above collapses.
4) This process repeats, leaving a wave cut platform

What is History?	**History**	History is the study of people, places and events that have happened in the past. In History you can learn about the local community, Britain, Europe and the rest of the world.
	Local History	The study and understanding of the area that you live in over time.
Key Skills	**Interpretation**	Someone's view of an event. These points of view can be different depending upon your experiences or situation. Historians form interpretations using sources.
	Source	Sources are pieces of information that help historians to learn about the past. For example, letters, diaries, photographs. They were made at the time.
	Chronology	This is the arrangement of dates or events in time order.
Time	**BC**	BC means 'Before Christ' and refers to the years before 1AD. Also known as BCE which stands for 'Before Common Era'.
	AD	AD means 'Anno Domini' which is Latin for 'in the year of our Lord'. This refers to the years after 1AD.
	Decade	A decade is a period of ten years in time.
	Century	A century is a period of one-hundred years in time.
	Millennium	A period of a thousand years.
	Period	A label used by historians to identify time between two dates. E.g. Early Modern 1500-1750
	Medieval	The Medieval period is also known as the 'Middle Ages'. This was a period between the 5th century to the 15th century.
	Early Modern Period	This is usually seen as the time from the mid-15th century, until the **beginning of** the Industrial Revolution in the late 18th century.
	Modern period	This is usually considered to be 1900- present day
	Industrial period	This is usually considered to the 18th & 19th C (1700-1900). A lot of change and growth happened in towns and cities in this period.
Sources	**Primary Source**	This refers to a source which was made at the time of an event. For example, a diary written by a soldier during the First World War.
	Secondary Source	This refers to a source created after an event has happened. For example, a textbook or film created after the First World War.
	Inference	A conclusion that you can draw from looking at a piece of evidence e.g. something you can 'work out'.

History

3000BC-1500BC	1500BC-27BC	27 BC – AD 476	AD 476-AD 1500	AD 1500-AD 1750	AD 1750 - present

AD

Bronze Age	Iron Age	Roman Empire	Medieval Period	Early Modern Period	Modern Period

AD 2021

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Who wanted to be King in 1066?

William, Duke of Normandy.	Norman Chronicles reported that Edward had promised William the throne in 1051. William was the only blood relative of Edward, but the English throne was not hereditary. The Bayeux Tapestry shows Godwinson swearing an oath of support to William in a visit to Normandy in 1064. William was supported by the Pope.
Harold Godwinson, Earl of Wessex.	Harold was a rich and powerful English nobleman. According to the Anglo-Saxon Chronicle, Edward named Godwinson as his successor on his deathbed. The next day, the Witan (the royal council) declared Harold King.
Harald Hardrada, King of Norway.	Norwegian ruler, Hardrada, based his claim on the fact that his ancestor, King Cnut, had ruled England (1016-1035). He was helped by the brother of Harold Godwinson, Tostig. Harald did a good job leading the Vikings in wrecking northern England. However, he was killed at the Battle of Stamford Bridge by King Harold.

Timeline		WHY DID WILLIAM WIN THE BATTLE OF HASTINGS?
4th Jan 1066	The death of Edward the Confessor, King of England.	
6th Jan 1066	Harold Godwinson was crowned King of England.	
25th Sept 1066	The Battle of Stamford Bridge, near York. King Harold Godwinson's army defeated Harold Hardrada and his army.	
27th Sept 1066	Duke William of Normandy set sail for England with his army.	
28th Sept 1066	Duke William landed at Pevensey on the South Coast of England.	
1st Oct 1066	King Harold received news of the Norman invasion. He began to march his army South to defend England from the Norman invasion.	
Early Oct 1066	The English army arrived in the South.	
14th Oct 1066	The Battle of Hastings began. King Harold was killed.	
25th Dec 1066	William, Duke of Normandy was crowned King William I of England.	
1069-1070	The Harrying of the North	
August 1086	First draft of Domesday Book completed.	
9th Sept 1087	William I died.	

Tactics:
Duke William had **many years of battlefield experience**. The **feigned** retreat that his cavalry used to break the shield wall was a tactic his armies had used before in Normandy.

Leadership:
William was very successful in keeping together his large army in a foreign country**. He planned carefully** and was **experienced**. Harold's army appeared invincible for much of the battle but William and his commanders continued to fight. At important moments in the battle **he boosted his men's morale** and most importantly stayed alive.

Fortune :
William was also **very fortunate**, because: if he had invaded in the summer, as Harold expected him to, he would have fought an English army twice as large but, instead, **the winds stopped William from crossing the channel.** The same wind that brought Harald Hardrada from Norway to York also allowed William to cross from Normandy to Pevensey. This meant **William landed unopposed.**

Harold II's death was also a turning point;
if he had survived then the battle may well have restarted the following day.

History

The Domesday Book	This gave **William** an **accurate record of the state of his land**. He had to know exactly who owned what and how much it was worth, so that he **could tax them correctly**. He also wanted to know how much tax had been paid during the reign of Edward the Confessor. In **1085**, William **sent Royal Commissioners all over the country** to **collect this evidence**. People, animals and land were all counted so that William could see how rich or poor his subjects were.
Harrying of the North	The **most serious rebellion in the north of England in 1069**. The Saxons killed William's trusted friend, Earl Robert & 900 of William's soldiers. **The Earls Morcar & Edwin turned against William**, **helped by** a small force of **Vikings.** They **seized York** and threatened to set up a separate kingdom in northern England. **William ordered villages to be destroyed and people to be killed**. Herds of animals and crops were burnt. Most people who survived **starved to death**; there were stories of **people turning to cannibalism**. The **population was reduced by 75%** and **land** was **covered in salt** to prevent people growing crops in the future. William then placed loyal nobles in charge to look after his lands.
The feudal System	William started by saying that **all land in England belonged to him**. However, he **lent land to trusted followers** in exchange for their loyalty. The **feudal system** meant that William had a **constant supply of money and loyalty**, and still owned the land.
Castles	William had new, loyal **nobles** from Normandy build over **100 castles all over the country**. They were built extremely quickly, some in just eight days! From their castles, the new **Norman** lords could control the local area, and the sight of them **made it clear who was now in control**. The need for quick constructions meant materials such as earth and wood were used and although this sped up the building process, it meant they **didn't last very long**. Over time, the more important ones were **rebuilt from stone.**

Key Term	Definition
Heir	The person who is to be the next king or queen when the current monarch dies.
Monarch	The King or Queen who rules a country.
Conquer	To invade and take over an area by force, often using an army.
Housecarls	Well-trained, full-time, paid, Anglo-Saxon soldiers.
Fyrd	Farmers who fought for the Anglo-Saxons
Cavalry	Knights on horses.
The Bayeux Tapestry	A piece of artwork on cloth that shows the events leading up to the Norman Conquest, including the Battle of Hastings.
Barons	An important person who was wealthy and powerful who was below the King in the Feudal System.
Knights	A man of noble birth, who served his king or lord or baron in battle in return for land.
Peasants/ Serfs	The group of people at the bottom of the Feudal System. They would be ordinary people who would work on a knight's land in return for land/accommodation/food.
Oath	A promise, usually sworn in front of God or on a holy book.

KEY INFORMATION

Christian beliefs	Most medieval people led short lives, dying at the age of around 35. As a result of short life expectancy, most people relied on the church for answers as there was huge fear of what would happen after they died. **Many medieval people believed that if they lived a holy life they would be rewarded in afterlife and reach heaven.** Christianity was extremely dominant across Europe and Christian ideas had a significant impact on medieval ideas in all aspects of life. For most, there was a huge fear of going to hell which would be the result of committing a moral sin, such as murder. For those who had committed a sin, but had not been forgiven there was a belief that these individuals would end up in purgatory which consisted of being tortured until they had made up for their sins. The most desirable place for individuals to reach was heaven, whereby they would be welcomed by God. **In order to reach heaven, Catholics had to ensure all of their sins were forgiven, prayer and religious ceremonies were taken very seriously.**
Role of priests, monks and nuns	**Social hierarchy was very evident in the Medieval Period** with God sitting at the top of the feudal system. Due to the dominance of the church, priests, monks and nuns playing a very significant role within medieval society. Most villages had a priest who ran the local churches and who dedicated their life to helping his community, as well as help his parishioners get to heaven. A priest's primary job was to deliver sacraments which consisted of baptisms and marriage ceremonies, as well as hearing confessions and delivering last rites. Some men decided to become monks and some women chose to become nuns. Both monks and nuns made the vows of poverty whereby they did not own individual property. Both also followed chastity, whereby they could not marry. **Despite there being many different types of monks and nuns, for both, their primary role was to ensure care was provided for the sick, elderly and terminally ill, mostly through the use of prayer and provision of food .**
Crime	Criminality was prevalent in the medieval period, with crimes ranging from drinking alcohol, fighting, stealing and adultery. **Sometimes medieval people asked God to judge a criminal in a trial by ordeal.** The accused would be asked to participate in a physical test to prove their innocence. During the trial, God would show his verdict in different ways to convey whether a criminal was guilty or not guilty. **There were three types of trial by ordeal which were commonly used to determine a person's innocence.** Trial by 'hot water' or 'hot iron', trial by 'cold water' and trial by 'combat'. **It was more common than not that these trials would result in death, which according to medieval people meant that the individual was guilty.**
Warfare	Warfare was very common in the Medieval period and the church did not have the total power to stop people from fighting. In an attempt to stop people from fighting, the church came up with the idea of a 'just war'. **A 'just war' was a church theory which made particular wars acceptable in the eyes of God. A holy war, or crusade was considered just, but it had a religious purpose too.** An example of a 'just war' was in 1066, when the Pope blessed William of Normandy's invasion of England.
Science	Medieval Christians believed that God created the world. Christians believed that God set up natural laws for the world to follow, for example, chickens would lay eggs, sheep would grow wool and trees would grow apples. **A medieval scientist would not ask 'how' they did this, but rather 'why'. Instead of questioning 'how', scientists would explore the purpose behind God creating a particular plant or animal.** Instead of looking for scientific explanations, like evolution and photosynthesis, <u>medieval people looked to God for explanations.</u>
Medicine	Medieval Christians believed that once God created the world, he continued to play an active role. **Many Christians believed that God was responsible for disease. For example, it was a common belief that diseases such as leprosy or the Black Death were sent from God as a punishment for committing a sin**. It was believed that God could cure a headache, give sight to the blind or help a paralysed man walk. In the hope to escape disease and sickness, Medieval people often prayed, visited shrines in the hope to prevent illness.

History

Catholicism	The Christian Church and beliefs which are followed by Catholics.
Pope	Head of the Catholic Church.
Afterlife	The experience some people believe they will have after death.
Purgatory	A place where medieval Christians believed they would be tortured until they had made up for their sins and bad thoughts.
Soul	Christians believe this is a part of a person that can exist after death.
Monastery	The collection of buildings that monks live in.
Mass	A Christian religious service performed by a Catholic priest.
Ten Commandments	A list of rules given to Moses by God, which Jewish and Christian people are expected to obey.
Penance	A punishment for a sin.
Trial by ordeal	The guilt or innocence of the accused was determined by subjecting them to a painful, or at least an unpleasant, usually dangerous experience.
Parishioner	A person who lived in a priest's parish (the area for which he provided services)
Excommunication	When a person is banned from church services. A medieval person thought they were at greater risk of going to hell if they were an excommunicant.
Chancellor	The King's chief servant.

Timeline of the relationship between Henry II and Thomas Beckett

1154: King Henry II appointed Thomas Beckett as his royal chancellor. His job was to look after the church and the King's law courts. During this time Henry and Beckett were good friends and Beckett lived a luxurious life style.	**1162:** Henry asked Beckett to become the new Archbishop of Canterbury. Beckett began to live a more holy life style and studied religion. However, in the same year Beckett resigned as chancellor without Henry's permission. Beckett and Henry began to argue and their relationship weakened.	**1164:** Henry proposes limits on church power. Beckett agrees but refuses to sign the documents. Later on that year, Henry placed Beckett on trial for treason, but Beckett fled to France before his sentence was delivered.	**June 1170:** Henry ordered the Archbishop of York to crown the next king. This was usually the job of the Archbishop of Canterbury. When Thomas Beckett heard this news he was furious. Later on that year, Beckett removed Henry's supporters from the church, but continued to gain support from the Pope, with the Pope giving Beckett the power to excommunicate. Beckett exploited this power and used it against Henry	**November 1170:** After Beckett excommunicated three bishops, the bishops set sail to France to speak directly to Henry. When Henry was informed of Beckett's lack of professionalism. Henry II found out that Beckett had removed his supporters from the church. Henry was outraged by Beckett's decision to do this. Henry stated 'Will no one rid me of this troublesome priest?'	**29th December 1170:** Four knights burst into the Archbishop's Palace in Canterbury. The knights demanded Beckett left England, however, he refused. Monks feared that Beckett's life was in danger. Once again the knights demanded Beckett leave England. Beckett refused, clinging on to a pillar. Realising he would not leave, the knights struck him five times, cutting off the top of his head. On their departure, one of the knights scooped out his brains and smeared them on the floor!

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Computer science Digital literacy HT 1

Famous computer scientists

Name	Description
	Alan Turing played a vital role **in deciphering the messages encrypted** by the German Enigma machine, which provided vital intelligence for the Allies. One of the first Computer Scientists! He created a machine that could help decipher messages sent by the German encryption machine called 'the Enigma'. Turing's invention 'The Bombe' could reduce these possibilities by working out how the Enigma was set up for each message received.
	Charles Babbage (1791-1871) designed the first automatic computing machine. He designed a steam powered calculating device called the 'Difference Engine'.
	George Boole was a mathematician from the 1800s. He believed that "human thought" can be described by means of mathematics." Which lead us to realise that computers (that are simply 'calculating devices') could act, behave and think like humans do! This is known as 'Boolean Logic'
	Timothy John Berners Lee was born on 8 June 1955 and grew up in London. He studied physics at Oxford University and became a software engineer. In 1989, Berners Lee published a paper called 'Information Management: A Proposal' in which he married up hypertext with the Internet, to create a system for sharing and distributing information not just within a company, but globally. He named it the **World Wide Web**. The world's first website, http://info.cern.ch was launched on 6 August 1991. It explained the World Wide Web concept and gave users an introduction to getting started with their own websites.

Inside A Computer

Have you ever wondered what goes on inside that box next to the monitor? Let's have a look at the inside...

Central Processing Unit (CPU) 1
This is basically the brain of the computer. If you ask the computer to do something, it goes to the CPU. Then, it sends the message to where it needs to go enabling your action to happen.

Power Supply 2
The part that takes the electricity from the plug in the wall via a cable and converts it so it can be used by the computer. A power supply for a laptop will do the same but also uses a battery.
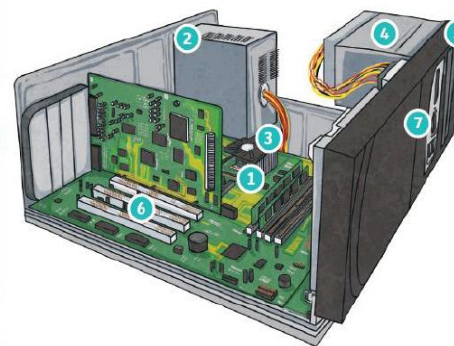
The Fan 3
The fan basically keeps the inside of the computer cool. The inside of a computer can become very hot when all the electrical parts are working. If it gets too hot, it can stop working due to overheating or, in the worst case, even set on fire! So, the fan keeps it cool.

Drive Bays 4
These are like parking spaces for things like DVD or CD drives or other floppy disc drives. Can you see some blank spaces on the outside of the computer where an extra DVD drive could go?

DVD Drive 5
The device where you put in a DVD so the computer can read what's on it or play a film.

Expansion Slots 6
These are parking spaces for extra things you might want to add to your computer to make it do more things.

Memory Card Reader 7
Some computers have a small, thin slot for putting a memory card straight in. This could be from a device, such as a camera. It enables your computer to show photos or videos you have taken.

USB Ports 8
A port is just a plug hole for plugging in devices. A USB connector is found on many devices, from charging a mobile phone to a camera or a memory stick. The USB port these devices to be connected to the computer.

Memory Slots and RAM 9
Your computer needs the CPU and a hard drive, but it also needs 'memory'. This is counted in bytes of RAM which stands for Random Access Memory. Your memory is for remembering things forever (like a hard drive), but computer memory is for doing things quickly or temporarily; remembering things and then forgetting it when the computer is turned off. It uses memory to be able to cut and paste or download something. It's like a 'doing' place for active things rather than a place for storing things safely like the hard drive. A computer has memory slots so that you can add extra memory if you like to do more things at once.

Motherboard 10
This is the circuit board that connects up all the different devices and passes the information between them all. It works just like a circuit for switching on a light bulb with metal links for electricity and information to get through.

Hard Drive 11
This is where everything is stored. Every picture you save, every word document you write, every setting you save, even Windows itself, is all stored here. It's like a massive filing cabinet.

Expansion Cards 12
These cards slot into the expansion slots and connect to the motherboard to make your computer do extra things. For example, a network card will let a computer talk to other computers and a sound card will let your computer produce sound through extra speakers or headphones.

twinkl
visit twinkl.com

CLICK CEOP Internet Safety

THINK U KNOW
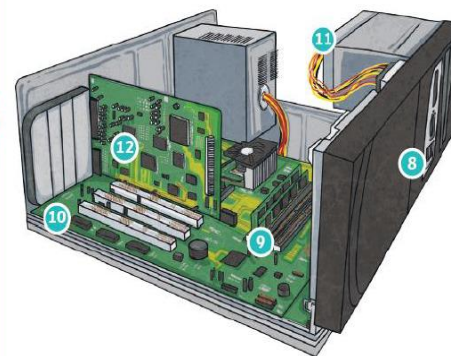
Safe

This is all about keeping your personal information safe.

Meeting

This is about making friends online and thinking about meeting up with them. You should only **ever** meet an online fried with a parent or carer's permission **and** if they can come with you.

Accepting

When you receive an email or instant message with an attachment, you need to think about how safe it is to open it.

Reliable

Remember that people online are not always reliable. Anyone can say anything online.

Tell

If you're every worried, uncomfortable or just have questions about something you've seen online, the number 1 rule is…TELL SOMEONE!

E-safety Rules
- Never give out your password – this doesn't matter who asks!
- Don't give out your contact details
- Don't download any software without permissions!
- Respect people's privacy
- Copying and pasting could be breaking the copyright law – make sure you always reference where you got that information from!

Passwords

✓ A strong password helps keep your information private.
✓ Include: a mixture of lower case and upper case letters.
✓ Use numbers and symbols (@?£$@)
- **Remember!** Don't use easy to guess words like your name.
- **Remember!** Don't share your password with others

Your data – your privacy

➢ **Be aware!** Websites and apps can collect and share information with other sites.
➢ **Be aware!** Many free apps may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others.
➢ **Be aware!** Information can be used to direct adverts to you.
- **Be aware!** Pop ups could direct you to inappropriate sites. Check the links
➢ **Check!** Ask a trusted adult if you are asked about sharing your information.

Check your settings and check the website

✓ Use the settings within apps to increase privacy.
✓ Look at the address bar. Some browsers will show a padlock to show the site is secure.

Secure | https://www.twinkl.co.uk

Google
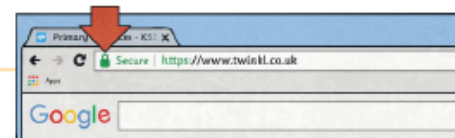
Bullying

- **Verbal bullying**
  This could be teasing, name-calling, making inappropriate comments, taunting or threatening to hurt someone.
- **Social bullying**
  People not to be friends with the victim, spreading rumours, embarrassing someone in public on purpose.
- **Physical bullying** Sometimes the most obvious kind of bullying, this could be: hitting; kicking; pinching; spitting; tripping or pushing; breaking someone's belongings; making rude gestures.
- **Cyberbullying** The bully cannot see the effect on the person and this means they are less likely to feel guilty. Other people can't see that the victim is hurt, and they are less likely to intervene. Don't reply, however tempting
  - Block the sender
  - Keep any evidence
  - Tell somebody
  - Use a 'Report' button

IT : Computer Science

Key Definitions:

Factors: The numbers we can divide by with no remainder. The factors of 12 are: 1,2,3,4,6,12

Multiples: Another word for a times-table. The first 6 multiples of 8 are: 18,16,24,32,40,48, , ...

Primes: Can only be divided by 1 and itself. The first 8 primes are: 2,3,5,7,11,13,17,19 ... (Note: 2 is the only EVEN prime and 1 is NOT prime!)

Integers: Anther word for a whole number: $-100, -5, 0, 27, 462$ etc.

Product: $\times$

Sum/Total: $+$

Quotient: $\div$

Diff. Between/Subtract: $-$

BIDMAS

Brackets
Indices (Powers/Roots)
Division/Multiplication
Addition/Subtraction

Year 7

Half-term 1

Powers and Roots:

A Square number is formed by multiplying a number by itself. We use the notation $1^2, 7^2$ etc.
$$1 \times 1 = 1, 2 \times 2 = 4, 3 \times 3 = 9, 16, 25, \ldots$$
A Cube number is made by multiplying a number by itself and again. We use the notation $6^3, 12^3$ etc.
$$1 \times 1 \times 1 = 1, 2 \times 2 \times 2 = 8, 27, 64, \ldots$$
Higher powers also exist. Eg $3^4 = 3 \times 3 \times 3 \times 3 = 81$

The square root of 25 is 5, since $5 \times 5 = 25$.
We use the notation: $\sqrt{25} = 5$
The cube root of 64 is 4, since $4 \times 4 \times 4 = 64$.
We use the notation: $\sqrt[3]{64} = 4$
The fourth root of 16 is 2, since $2 \times 2 \times 2 \times 2 = 16$
We use the notation: $\sqrt[4]{16} = 2$

Multiplication:

$$391 \times 39$$

First we multiply each of the digits 391 by 9.
$9 \times 1 = 9$
$9 \times 9 = 81$ (put the 1 down; carry the 8)
$9 \times 3 = 27$
$27 + (carried) 8 = 35$

Now we multiply each of the digits 391 by 3. Because it is actually 30, not 3, we put a zero down first.
$3 \times 1 = 3$
$3 \times 9 = 27$ (put the 7 down and carry the 2)
$3 \times 3 = 9$ (plus the 2 which makes 11)

Last of all, we add the results of our calculations to get the answer.
$3519 + 11730 = 15249$

Number Line:
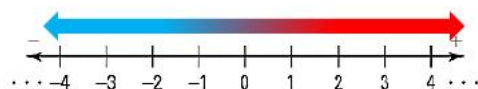
Division with no remainders

1.) Write down the 9 times table: 9,18,27,36,45,54,63,72,81,90

2.) 9 goes into 3, zero times remainder 3. Write a 0 above the division and carry the 3 over

3.) 9 goes into 38, 4 times remainder 2. Write a 4 above the division and carry the 2 over

4.) 9 goes into 20, 2 times remainder 2. Write a 2 above the division and carry the 2 over

5.) 9 goes into 27, 3 times remainder 0. Write a 2 above the division.

Answer = 423

Division with remainders

1.) Write down the 12 times table: 12,24,36,48,60,72,84,96,108,120

2.) 12 goes into 7, zero times remainder 7. Write a 0 above the division and carry the 7 over

3.) 12 goes into 71, 5 times remainder 11. Write a 4 above the division and carry the 11 over

4.) 12 goes into 114, 9 times remainder 6. Write a 9 above the division and carry the 6 over

5.) 12 goes into 65, 5 times remainder 5. Write a 5 above the division and remainder 5

Write the answer as: $595\frac{5}{12}$

Adding and Subtracting Directed Numbers:
Always draw a number line if you are unsure or think of a Thermometer. Subtract means to get colder. Add means get warmer etc.
$$5 - 7 = -2, -2 - 9 = -11, -3 + 9 = 6$$
$$9 + -5 = 9 - 5 = 4$$
$$-12 - -8 = -12 + 8 = -4$$

Multiplying and Dividing Directed Numbers:
$$- \times - = + \qquad + \div - = -$$
$$- \times + = - \qquad - \div + = -$$
$$+ \times - = - \qquad - \div - = +$$
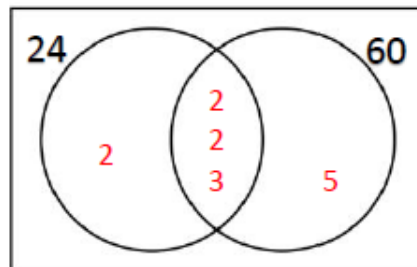$$-7 \times -8 = 56, 6 \times -12 = -72, (-3)^2 = 9$$
$$-42 \div 6 = -7, -32 \div -8 = 4, 9 \div -9 = -1$$

Prime Factor Decomposition

$24 = 2^3 \times 3 \quad$ and $60 = 2^2 \times 3 \times 5$

24 60

2
2
2
3
5

HCF is the product of numbers in the overlapping section
$$HCF = 2 \times 2 \times 3 = 12$$
LCM is the product of **ALL** numbers
$$LCM = 2 \times 2 \times 2 \times 3 \times 5 = 120$$

Writing and Simplifying Expressions

John is x years old. Tom is 4 years older than John. Adam is 5 years younger than John and Carl is 3 times as old as Tom. The sum of their ages is:
$$x + x + 4 + x - 5 + 3(x + 4)$$
$$= x + x + 4 + x - 5 + 3x + 12 = 6x + 11$$

Simplify:

$4x^2 - 7x - 2x^2 - 11 + 5x - 10$

$= 2x^2 - 2x - 21$

$4x^2 - 2x^2 = 2x^2$

$-7x + 5x = -2x$

$-11 - 10 = -21$

Polygons

$Interior\ Angle + Exterior\ Angle = 180°$

$Sum\ Of\ Interior\ Angles = 180° \times (n - 2)$, where n is the number of sides

For Regular Polygons (All sides and angles the same):
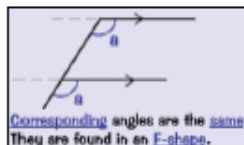
$Exterior\ Angles = \frac{360°}{n}$ and

$Number\ of\ Sides = \frac{360°}{Exterior\ Angle}$

Expanding Brackets:

$3(2x - 7) = 6x - 42$

$4x(5x + 7y - 3z^2) = 20x^2 + 28xy - 12xz^2$

Expanding and Simplifying:

Expand both sets of brackets separately and then collect like terms.

$4(2x - 5) - 2(3x - 1) = 8x - 20 - 6x + 2 = 4x - 18$

Expanding Double Brackets

Use FOIL (First Outside Inside Last) and then collect like terms

$(x + 7)(x - 3) = x^2 - 3x + 7x - 21 = x^2 + 4x - 21$

Angles in Parallel Lines

Alternate Angles are Equal

Alternate angles are the same. They are found in a Z-shape.
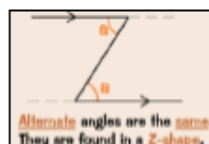
Corresponding Angles are Equal

Corresponding angles are the same. They are found in an F-shape.

Co-interior Angles are Supplementary
(Add up to 180°)

$a + b = 180°$

Factorising:

$10x - 25 = 5(2x - 5)$
$x^2 - 40x = x(x - 40)$
$16x^2y + 24xy^2 = 8xy(2x + 3y)$

Remember to check your answers by expanding the brackets!

To convert between Degrees Fahrenheit ($°F$), and Degrees Celsius($°C$), you multiply the amount in $°C$ by 1.8 and then add 32. Write this as a formula.

$$F = 1.8C + 32$$
(Remember: We write $1.8 \times C$ as 1.8C)

Convert $50°C$ into $°F$:

$$F = (1.8 \times 50) + 32$$
$$F = 122°$$

Convert $140°F$ into $°C$. To do this, we use the inverse operations:
$$C = \frac{(140 - 32)}{1.8} = 60°C$$

Significant Figures

Another way of rounding. Start by finding the first significant figure (Important digits!)
$$352.6 \rightarrow 350(1sf),$$
$$0.0712 \rightarrow 0.07(1sf)$$
$$419562 \rightarrow 420000\ (3sf)$$
$$239.782 \rightarrow 240\ (2sf)$$

Year 7 – Half Term 2 (A)

Algebraic Notation:

$$ab = a \times b$$
$$5x = 5 \times x$$
$$m^2 = m \times m$$
$$t^5 = t \times t \times t \times t \times t$$
$$\frac{x}{y} = x \div y$$
$$1 \times y = y$$
$$-1 \times t = -t$$
$$x^3 y = x \times x \times x \times x \times y$$

Writing Expressions

John is x years old. Tom is 4 years older than John. Adam is 5 years younger than John and Carl is 3 times as old as Tom. Their ages are:
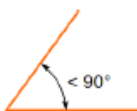
John: x,

Tom: $x + 4$

Adam: $x - 5$

Carl: $3(x + 4)$

Lowest Common Multiple (LCM)

1.) List the multiples (at least 10) of all numbers
2.) Find the numbers in both lists
3.) Select the smallest circled number

8: 8, 16, **24**, 32, 40, **48**, 56, 64, 72, 80, …
6: 6, 12, 18, **24**, 30, 36, 42, **48**, 54, 60, …
$$LCM(6, 8) = 24$$

Year 7 – Half Term 2 (B)

Properties of Quadrilaterals

Quadrilateral	Properties	
Rectangle	4 right angles and opposite sides equal	
Square	4 right angles and 4 equal sides	
Parallelogram	Two pairs of parallel sides and opposite sides equal	
Rhombus	Parallelogram with 4 equal sides	
Trapezium	Two sides are parallel	
Kite	Two pairs of adjacent sides of the same length	

Angle Properties:

Acute angle: Less than 90°

$< 90°$

Obtuse angle: Greater than 90°, but less than 180°

$> 90°$
$< 180°$
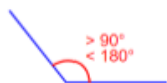
Reflex angle: Greater than 180°

$> 180°$
$< 360°$
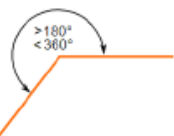
Vertically Opposite angles are equal

x y y x
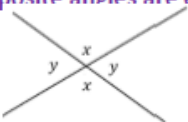
Angles on a straight line add up to 180°

$w + x + y + z = 180$ degrees.
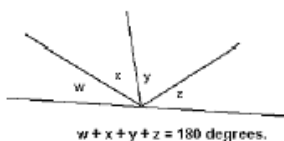
Angles inside a triangle add up to 180°

$$A + B + C = 180°$$

Angles around a point add up to 360°

$53°$ $80°$ $87°$ $140°$
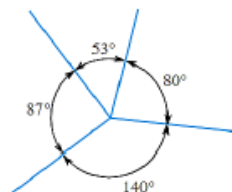
Angles inside a quadrilateral add up to 360°

$A + B + C + D = 360$
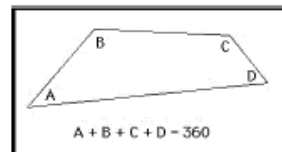
Substitution

Find the value of $a^3 + 2b$, when $a = 2, b = 3$,
$$2^3 + (2 \times 3) = 8 + 6 = 14$$
If $y = 5x - 7$, find the value of y when $x = 1$
$$y = (5 \times 1) - 7 = 5 - 7 = -2$$
Find the value of $3xy^2$ when $x = 2, y = 4$
$$3 \times 2 \times 4^2 = 96$$

Types of Triangles (3 Sided Shapes)

Scalene triangle
All 3 sides have different lengths. Its angles are also all different.

Isosceles Triangle
2 sides have equal lengths. 2 of its angles also measure equal.

Equilateral Triangle
All 3 sides are of same length. All three angles are equal, 60°

Highest Common Factor (HCF)

1.) List Factors of all Numbers
2.) Find the numbers in both lists
3.) Select the largest number in both lists

24: **1, 2, 3, 4**, **6**, 8, **12**, 24
36: **1, 2, 3, 4, 6**, 9, **12**, 18, 36
$$HCF(24, 36) = 12$$

Names of Polygons

Triangle (3 Sides), Quadrilateral (4 Sides), Pentagon (5 Sides), Hexagon (6 Sides), Heptagon (7 Sides), Octagon (8 Sides), Nonangon (9 Sides), Decagon (10 Sides)
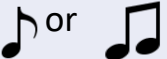
Maths

Y7 Music HT1 & 2 - Rhythm, Metre, and Tempo

Tempo - The **tempo** is the speed of the music, whether it's fast or slow.

Pulse - The tempo creates a **pulse**, which is the music's heartbeat.

BPM – Beats per minute, the rate of the pulse.

Rhythm - is music's pattern in time. Rhythms tell us how many notes to play, and how long to hold each note for (duration).

Notes	Name	Value	Drink Name
	Crotchet	1	Tea
	Minim	2	Juice
	Semi-breve	4	Soup
or	Quavers	½ each	Milkshake
	Semi-quavers	¼ each	Coca-Cola

Rests - There are rests for every rhythmic duration. So, a crotchet rest is worth one whole beat.

Samba - Samba is a Brazilian musical genre and dance style, often heard in street festivals. Samba music relies heavily on rhythmic drumming.

Percussion - A percussion instrument is a musical instrument that is sounded by being struck by a beater, by hand, or struck against another similar instrument.

Music

Y7 Music HT1 & 2 - Rhythm, Metre, and Tempo

Dotted Rhythms - A dot after a note **increases** its value by **half** of whatever the value was**.** So, a dotted crotchet lasts for one and a half crotchets (1.5) but a dotted minim last for one and a half minims (3).

| Symbol	Name	Duration
o.	Dotted semi-breve	6
♩.	Dotted minim	3
♩.	Dotted Crotchet	1 ½
♪.	Dotted quaver	¾
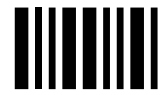
Metre - Pulses (beats) are often emphasised - **strong** beats. Pulses are **grouped** according to how often there is a strong beat, and we call this the metre.

Time Signature - When music is written down, we call the metre the Time Signature, and we use **bars** to show the grouping.

Tempo Terms – are Italian words to describe the speed of the music, such as **Allegro** for fast and **Lento** for very slow.
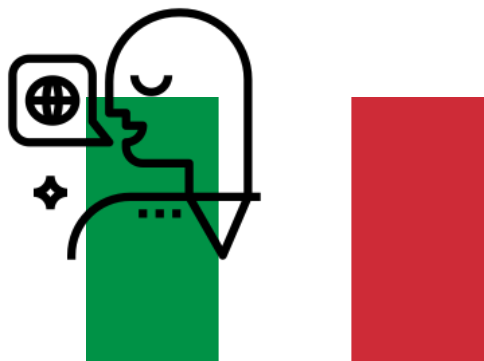
Italian Word	Meaning	BPM
Largo	Very Slow	Less than 60 bpm
Adagio	Slow	60 – 80 bpm
Andante	Walking Pace	80 – 100 bpm
Moderato	Moderately	100 – 120 bpm
Allegro	Fast	120 – 140 bpm
Presto	Very Fast	More than 140 bpm

Music

What is Religion, Philosophy & Ethics?
Religion, Philosophy & Ethics - Year 7 Topic 1

Key Terms	Definition
Supreme Spiritual Being	Belief in a god or gods / goddess or goddesses; supreme being or divine spiritual principles which is the focus of a religion
Cult	A religious, political or self-help movement often with extreme ideas that cause physical, emotional or financial harm to the person
Alternative Religion	A new modern religious movement with a small number of followers
Atheist	Someone who holds the view that there are no Gods or God
Agnostic	Someone who holds the view that is impossible to know the truth about something such as the existence of God
Philosopher	A person who seeks wisdom
Ethics	The study of what is right and wrong and what governs human behavior

"Faith is taking the first step even when you don't see the whole staircase" Martin Luther King (Christian)

"I am against religion as it teaches us to be satisfied with not understanding the world" Dawkins (atheist)

"Religion is the opiate of the masses" Marx

"The essence of all religions is one. Only their approaches are different." Gandhi (Hindu)

What is a religion?
According to UK Law, for an organisation to be defined as a religion it must have the following three features:

1. **Supreme Spiritual Being:** Belief in a god or gods, goddess or goddesses, a supreme being or divine spiritual principle which is the object or focus of the religion.
2. **Sense of Seriousness and Importance**: A relationship between the believer and supreme being or entity by showing worship and/or a sense of clear seriousness and importance.
3. **Positive Moral Values (set of ethical laws or rules):** An identifiable positive, beneficial, moral or ethical framework.

These key features can be easily identified in all main world religions, for example in Christianity

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Alternative religion is a new religious movements with modern origins with a small number of followers, examples include Jediism.

- Jediism originates from the 1977 Star Wars films and books produced by George Lucas. In 2008, Daniel Jones founded the 'International Church of Jediism'. Its core beliefs center on the idea of 'The Force' an energy that flows through all things and joins the universe together. They also believe that humans can tap into the Force to unlock greater potential. A census was held in 2001 and In total: 390,127 claimed they were part of the Jedi religion.

*Issues: Many alternative religions are ridiculed and not respected despite great importance to the believer.

Arguments Against Religion and Religious Ethics
Some believe religion is a form of social control, this means humans created religions to control those who are poor, weak or unhappy by promising them a better life or afterlife. **Karl Marx** was a prominent **sociologist** who argued that religion is meant to create misleading fantasies for the poor. Lack of money prevents them from finding true happiness, so religion tells them this is ok because they will find true happiness in the next life.

37

What is Religion, Philosophy & Ethics?
Religion, Philosophy & Ethics - Year 7 Topic 1

Why are religious, philosophy and ethics lessons important?

- To better understand the world around you and the people in it
- To develop empathy, tolerance and understanding to different situations or belief systems
- To develop your critical thinking and problem solving skills
- To improve community cohesion and prevent religious, political or other discrimination
- To help you develop your own sense of self and know what is important to you
- Because all jobs require some level of working with others and RPE educates you in how to do so well
- To develop your written and verbal communication skills
- Because the skills you learn, such as the ability to debate well and identify good ethics, means there are many jobs open to you such as doctor, lawyer, manager etc.

Creativity and Spirituality

Art, music and literature have been used throughout history to express one's beliefs, and to help focus on practices such as prayer, worship and meditation. Beautiful words, images and objects have played a big part in many world religions however, some religions do not agree with some creative religious imagery.

- Muslims do not use images and statues of God as part of their faith because the Qur'an teaches them to not worship false idols and in the past people have falsely worshiped such creative objects.
- However, in other faiths such as Buddhism art is important; the mandala is a picture starting in the center and expanding outwards. Buddhists believe the mandala symbolizes the entire universe and creating, viewing or imaging a mandala can help a Buddhist focus during meditation.

Above is a Buddhist mandala used to help Buddhist focus during meditation. This one is made of coloured sand but they can be made of anything or just imagined in one's head.

Muslims do not have a duty to use henna but many do as the Prophet Muhammad did. Henna is often used at time of celebration to beatify one's self
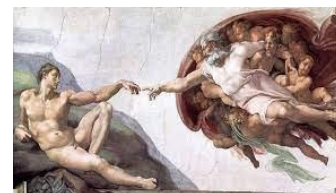
Artist Michelangelo painted the Sistine Chapel in the Vatican (center of Catholic Christian Church). His work reflects Christian beliefs and teachings four the Bible. It took four year to pain the chapel ceiling.

Banksy is a famous artist but know one knows who he or she is or what he/she uses for inspiration yet the art is famous for the powerful messages it portrays. .

Philosophies of Life

- **Nihilist**, Friedrich Nietzsche, 19th century philosopher, believed in Nihilism. – the belief that all values are baseless and that nothing can be known. A true nihilist would believe in nothing, have no loyalties, and no purpose. Nietzsche would argue that religion is just the creation of humans desperate to give life meaning, when in fact there is no meaning at all.
- **Materialists** do not believe in the existence of non-material objects (anything you cannot directly observe e.g. a God) as such only material things can bring comfort and happiness thus material things give life purpose.
- **Hedonist** do not believe in an Gods, they believe that, in life, we should seek pleasure and not pain.
- **Existentialist** also do not believe in an Gods, they believe life is what you make of it thus we give our own life purpose. Often this means hedonists seek whatever brings them happiness.
- **Humanists** believe life is about the needs of others. They do not believe in a God but believe life is better when we are each concerned with respecting and supporting one another. To some Humanists, a life is only someone who is able to think and reason for themselves.
- **Religious** people believe their faith views them purpose – their belief in a God or set of religious teachings gives them purpose and duties in life.

Key Terms	Definition
Creation	The action or process of bringing something into existence.
Big Bang	The scientific theory which explains the beginning of the universe 14 billion years ago.
Evolution	The process of change in a species over time which explains the existence of humans.
Literal Christians	The belief that the Bible is all historical fact including that the world was created in 7 actual days.
Design Argument	A philosophical argument which suggests God must exist and be the creator of the world because only He could design something so complex.
Causation Argument	A philosophical argument which suggests the only possible first cause of the universe is God.

"I am against religion because it teaches us to be satisfied with not understanding the world" Richard Dawkins (atheist)

"Nothing can come from nothing" St Thomas Aquinas (Christian)

"There cannot be design without a designer" William Paley (Christian)

"Would you waste time and breath, by asking who shot the arrow" written in the Tripitaka (Buddhist holy text)

Science VS *Religion*

Fr. Georges Lemaitre was a Catholic Priest who first proposed the Big Bang and hung out with Einstein

Science Atheism
Atheist may argue that there is no need to believe in the existence of God because science has all the answers we need that explain how everything exists by chance.

According to atheists, the **Big Bang** was an explosion almost 14 billion years ago that caused the universe to exist. A single compressed point exploded causing atoms and particles to form that make up our universe today. Scientists evidence the Big Bang by observing "red shift" which is radiation that proves the universe's age and where the bang happened.
Darwin's theory of **evolution** explains how humans came to exist too. His observations in 1859, that species change over time through natural selection enabled humans to evolve to suit their environment.

Christianity
Religious people, such as Christians, would disagree and believe we need God to explain science.

Literalist Christians believe the Bible is historically accurate. Because the first book of the Bible (Genesis) states God create the world in seven days God must exist and beliefs about evolution and the big bang are false.
Most Christians believe religion and science go together. These Christians believe the Genesis creation stories are not factual but intended to teach us about the nature of God. Most Christians believe God create the world through science – as Catholic Christian, Pope Francis said "God is not a magician" by this he meant God used science to create the world.

Buddhism
Buddhists **do not believe in a God** nor do they know the origins of the universe. The Buddha refused to answer questions about the origins of the earth, as a result Buddhists focus on the concerns of the present and how to avoid suffering now.

The parable of the poisoned arrow explains that a foolish man was shot with a poisoned arrow and insisted on finding out about the person who shot the arrow before removing it, but by the time this information was known he was dead. This reminds Buddhists to focus on now and not waste time questioning things we cannot know.

Religious Studies

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Causation Argument for the Existence of God

Christian St Aquinas is famous for basing his beliefs on the observation of cause and effect. He believed that "nothing can come from nothing" so there must be a First Cause of the universe which could only possibly be God. Many Muslims agree with this argument too.

The argument's premises are…
- Nothing happens by itself, everything in the world needs a cause
- Anything caused to exist must have something that caused it; nothing can cause itself!
- The universe must have a cause - the First Cause.
- The only thing powerful enough to have caused the Universe is God.

Therefore, God must exist!

Criticism 1. If everything needs a cause then what caused God?

Criticism 2. Why must the First Cause be the God of Christianity or Islam?

Design Argument for the Existence of God

This argument proves the existence of God by using the order and purpose in the universe as evidence.

When we observe the universe we notice that everything works with a purpose and order that is very complex. For example, the human eye is very complex – it works in a specific orderly way with the purpose of seeing. Christians and Muslims believe that the only being capable of creating such complexity is an omnipotent (all-powerful) God thus God must exist.

William Paley, 18th century philosopher, used the 'watch analogy' to evidence this argument; if we had never experienced a watch but found one amongst some stones in a field we would assume it had been designed and not occurred natural due to its' complexity. In the same way, the universe is complex and so it too must need a designer. So just as a watch needs a "watch-maker" the universe (which is hugely more complex than a watch) must need a "universe maker".

Criticism 1. If the world is designed by God, who is omnipotent (all-powerful) why are there flaws. For examples, blind people do not have eyes that work with purpose and order?
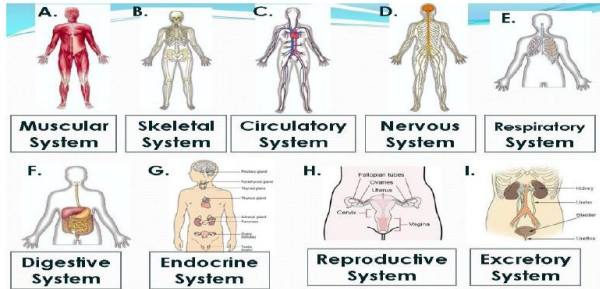
Criticisms 2. Evolution explains that life has adapted to survive on earth and not that life was designed for earth.

Religious Experience for the Existence of God

Some people believe in God due to direct or indirect revelations from God known religious experiences..
- **Numinous feelings -** The feeling of the presence of something greater than yourself.
- **Miracles** - Something which breaks the laws of science and can only explained by the existence of God. E.g., Jesus raising from the dead in the Bible
- **Answered prayers** which can only be explained by the existence of God.
- **Vision** – seeing a direct image of God or divine representation. E.g. Muslims may believe in God because the Prophet Muhammad was taken through the heavens to meet Allah (God)

Criticism 1. Miracles are often only experienced by one or a small number of people, one could question the integrity of that person – were they lying, mentally unwell or drunk?

Criticism 2. The God Helmet experiment – the helmet manipulated the brain scientist Persinger believed to be responsible for religious experiences. Some of his volunteers saw angels and said they experienced God whilst wearing the helmet.

5 functions of the Skeletal System

1. Framework gives **shape** & **support** to the body.

2. Bones **protect** the **internal** organs.

3. Major **muscles** of the body are attached to the bones for **movement**.

4. **Blood** cells are formed in **marrow** of some bones.

5. Skeleton is a place where **calcium** and **phosphorus** compounds are **stored.**


A. Muscular System
B. Skeletal System
C. Circulatory System
D. Nervous System
E. Respiratory System
F. Digestive System
G. Endocrine System
H. Reproductive System
I. Excretory System

Muscles

Muscles are the **organs** that **move** body parts2. Bones **protect** the **internal** organs.

Two Groups of Muscles:

Voluntary—You **can** control these. Arms, legs, hands, face

Involuntary—You **can't** control these; you don't have to decide to make these muscles work. Muscles around the **heart**

Antagonistic muscles occur in pairs. These pairs of muscles work **together** to create movement. As one muscle **contracts** (shortens) the other muscle **relaxes** (lengthens). They swap actions to reverse
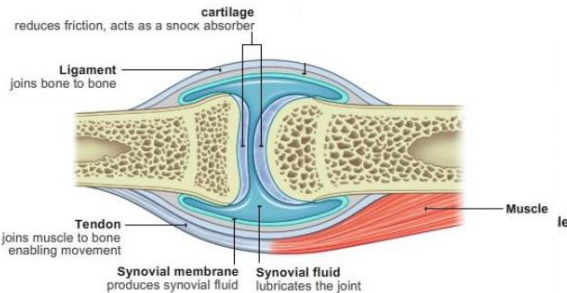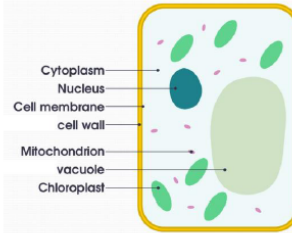

Animal cell
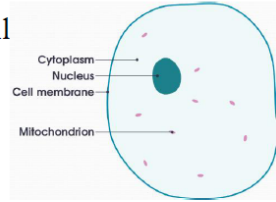
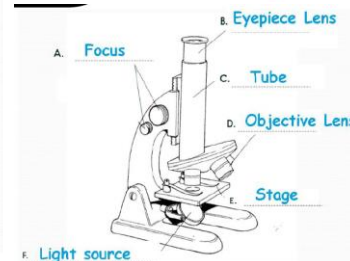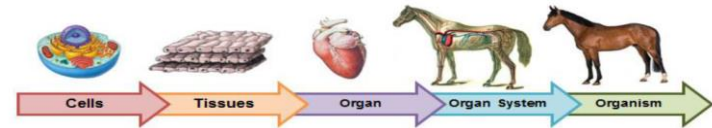| Cell Part	Function
Nucleus	• **Controls** the cell • It contains **DNA**
Cytoplasm	• Where **chemical reactions** take place
Cell membrane	• Controls the **passage** of substances into and out of the cell
Mitochondrion	• Where **energy is released** by **respiration**

Plant cell

Cell Part	Function
Cell wall	• Gives the cell **structure**
Vacuole	• Contains **water & nutrients**
Chloroplast	• **Absorbs light** for **photosynthesis**

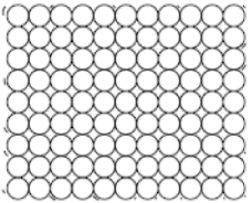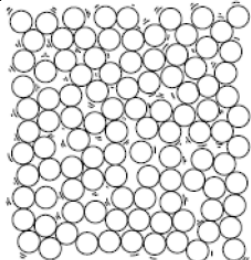| Drawing of the cell	Function	Specialised Features
Red blood cell	Transports oxygen around the body	-No nucleus so can carry more oxygen -A biconcave shape so is flexible to squeeze through small blood vessels
Nerve cell (neurone)	Transmits nerve impulses	-Long and thin -Contains fibres which connect to other nerve cells -Surrounded by a cover which insulates it and speeds up transmission of nerve impulse
Muscle cell	Contracts (to provide muscle movement)	-Contain many mitochondria to provide energy for movement
Sperm cell	Fertilises the female egg	-Has a long tail to swim to the egg. -The mid piece is packed with mitochondria to provide energy for movement. -Streamlined shape to help it swim -Head contains enzymes to break into the egg

Drawing of the cell	Function	Specialised Features
Palisade cell	Absorbs light for photosynthesis	-Packed with chloroplasts which contain the pigment chlorophyll. -Packed together to absorb as much light as possible
Root hair cell	Absorbs water and minerals from the soil	-Thin membrane -Large surface area which enables the cell to absorb more water from the soil
Guard cell	Allows gases in and out the leaf	-Able to change their shape -Found in pairs
Sieve cell	Transport water, nutrients and minerals through the plant	-Hollow -Form long tubes

Cells → Tissues → Organ → Organ System → Organism

Humerus
Ulna
Radius

Femur
Patella
Tibia
Fibula

B. Eyepiece Lens
A. Focus
C. Tube
D. Objective Lens
E. Stage
F. Light source

Scientific Drawing rules

• Use simple clear lines
• Draw only what you see (in proportion).
• Ensure diagram is the right size.
• No shading
• Draw labelling lines using a ruler (NO crossing)
• Include a scale or magnification

$$Magnification = \frac{Eyepiece}{lens} \times \frac{Objective}{lens}$$

Science

State	Particle arrangement	How the particles move	Properties
Solid		Particles are held in a fixed position and vibrate on the spot.	Solids cannot be squashed, do not flow, have a fixed shape and volume, and have a high density.
Liquid		Particles are free to move past each other but are still very close.	Liquids cannot be squashed, flow quite easily, and have a fixed volume but no fixed shape.
Gas		Particles are far apart and can move anywhere by themselves.	Gases are quite easy to squash, flow easily, have no fixed volume and no fixed shape.

Key words

Particle The tiny pieces that everything is made out of.

Pure a substance made up of only one type of particle.

Mixture a substance made up of two or more different types of particles that are not chemically joined.

Melting when a solid changes state to a liquid.

Freezing when a liquid changes state to a solid.

Condensing when a gas changes state to a liquid.

Boiling when a liquid changes state to a gas.

Sublimation a solid changing straight to a gas.

Melting point the temperature at which a solid turns into a liquid, this is the same as the temperature that a liquid turns in to a solid.

Boiling point the temperature at which a liquid turns into a gas, this is the same as the temperature that a gas turns in to a liquid.

Separation technique	What it separates	diagram	How it works
Filtration	Insoluble solid from a liquid		The particles of the liquid and any dissolved particles are small enough to fit through the filter paper, however any solid particles cannot pass through and become trapped in the paper.
evaporation	Soluble solid from a liquid		The boiling point of the liquid is much lower than that of the dissolved solid, the liquid evaporates when heated and the solid is left behind.
Distillation	A liquid from a solution		The liquid is heated and evaporates, the vapours are trapped and cooled, condensed and collected.
Chromatography	A mixture of dyes or colours		The different colours in the inks have different solubilities and are transported different distances up the paper.

Science

Y7 Chem T1- Particles

Changing State

Substances must be heated to make them melt or boil and cooled to make them condense or freeze.

Heating makes particles move faster and weakens the forces of attraction between the particles. Cooling slows the particles down and strengthens the forces of attraction between the particles. Substances melt and boil at different temperatures called the melting point and boiling point. These are different for each substance.

Solutions

A **solution is** a liquid containing dissolved substances. The substance being dissolved is called the solute and the liquid in which it is being dissolved is the **solvent.**

Solute + solvent → solution

A substance that will dissolve is **soluble**, one that will not is **insoluble**.

The amount of solute that will dissolve is effected by the type of solute, the type of solvent and the temperature.
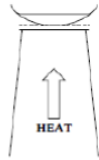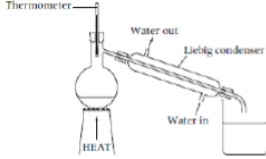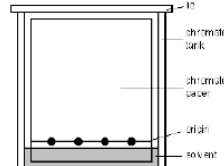
When no more of a substance will dissolve in a solvent the solution is **saturated**.

Diffusion

The natural mixing of substances is called **diffusion**. Diffusion occurs because particles in a substance are always **moving** around. Diffusion is fastest in **gases**, and slower in liquids. Diffusion in solids is extremely slow.

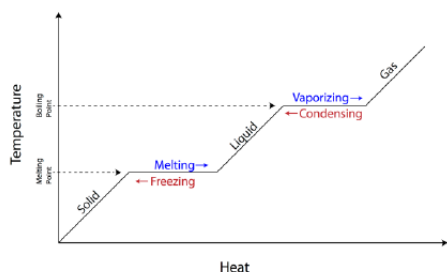Brownian motion is the random movements of particles in liquids and gases.

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Y7 Phys T1- Forces

A force is something that causes a change in the position of an object.

A force can be described as a push, a pull or a turn.

Forces have both size (magnitude) and direction.

The unit of measurement of a force is the Newton (N)

Forces can be measured using Newton meters.

Forces can be categorised as contact or non-contact forces.

Contact forces require physical interaction for the force to be exerted (e.g. friction)

Non-contact forces can act at "a range". For example gravity and magnetism.

Distance time graphs show the distance that an object is travelling and the time it is taking to do so.

The gradient of a distance time graph (the change in the y-axis divided by the change in the x-axis) is a measurement of distance divided by time, which is speed.

Section A shows a speed of 2m in 20s = 0.1m/s

Section B shows no change in distance which means it is stopped.

Section C shows a greater speed than section A because the gradient of section C is steeped than section A. Section C shows 2m travelled in 5s = 0.4m/s

Section D also shows a stopped object.

Friction is a contact force. Friction occurs when an object is moving and is in contact with another substance.

For example, if you push a book across a table, friction acts in the opposite direction to this motion.

Adding a lubricant can decrease the effect of friction. Friction can generate heat.

Air resistance is also a form of friction. When a plane flies through the air, the air particles collide with it and apply a force in the opposite direction to the motion of the plane.

Air resistance can be decreased by making an object more streamlined/aerodynamic. This works by decreasing the size of the force acting on the object.

Friction can be investigated by dragging friction blocks across a table.
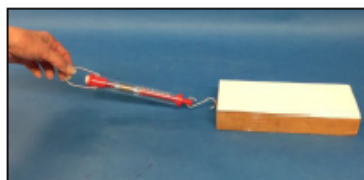
Adding more mass to the block will increase the amount of friction generated. This means a greater force needs to be applied to move the block.

Changing the surface of the block and/or the table will also change the amount of friction generated.

Mass and Weight are two different things.

The mass of an object is its ability to resist change (inertia). Mass is measured in kilograms (kg)

The weight of an object is the force that the object exerts straight downwards because of both its mass and because of the strength of gravity.

Weight is measured in Newtons (N) because it is a force.

Weight (N) = mass (kg) x gravitational field strength (N/kg)

Gravitational field strength on earth is 9.8N/kg, so to find the weight of a 6kg box on earth: Weight = 6kg x 9.8N/kg = 58.8N.

6kg

Weight = 6kg x 9.8N/kg
Weight = 58.8N

Mass   Gravity

Weight

Speed is a measurement of how much distance is travelled in a certain amount of time.

$Speed = \dfrac{Distance}{Time}$

$Distance = Speed \times Time$

$Time = \dfrac{Distance}{Speed}$
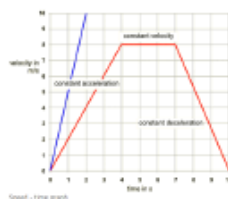
Distance
Speed | Time

Distance is measured in metres (m)

Time is measured in seconds (s)

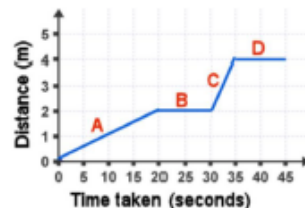Speed is measured in metres per second (m/s)

Speed/velocity time graphs show how the speed of an object varies over time. The gradient (line) of the speed time graphs shows an object speeding up, slowing down or going a constant speed. This is therefore a measurement of the acceleration of the object.

Acceleration is measured in m/s^2

Science