

Name and Tutor group:



Year 8 Knowledge Organiser

Term 2

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CORSHAM CHARACTER

INTELLECTUAL VALUES

The pursuit of truth,
knowledge and
understanding.

Be reflective. Be curious. Be
open-minded. Be creative.



PERFORMANCE VALUES

Maximum effort, maximum
focus.

Be resilient. Always Persevere.
Contribute to Teamwork.
Be ambitious.



DREAM BELIEVE ACHIEVE

Knowledge Organiser – Year 8 Art

TOYS

EXAMPLES OF FINAL OUTCOMES:

YOU WILL LEARN:

Skills to produce two accurate still life studies of toys using pencil shading and oil pastels.

You will then produce your own final outcome using layers and paper cutting.

Why am I learning this?

The foundation skills in this project will enable you to tackle the varied concepts, artists, techniques and processes throughout Year 9. You will build on your knowledge and skills with each project as they increase in difficulty, enabling you to express yourself in a confident way.

CONTEXTUAL KNOWLEDGE:

Sarah Graham



Andy Warhol



Andy Warhol collected tin and wind-up toys from around the world. His collection featured toys from Japan, Hungary, China, Germany, Russia, Korea and the US.

Sarah Graham paints in a photorealistic style. Colour and composition are often the focus on her work. She enjoys painting objects that evoke a sense of childhood and joy.

TOY PHOTOSHOOT



Homework tasks: Tick when complete

1. Creative toy photoshoot
2. Retro toys drawing
3. Sarah Graham copy
4. Andy Warhol research

HOW WELL AM I DOING?

Year 9 Progress – Top Project – Term 1&2
TARGETS: MET (M), MET+, EXCEEDED (M/M/ME) How this student has been awarded this target (please include a short explanation)
Met (M) The student has met the target with no significant achievement.
Met+ (M+) The student has met the target with some significant achievement.
Exceeded (M/ME) The student has exceeded the target with significant achievement.
Not Met (NM) The student has not met the target.
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Keywords

Proportion

Tone

Mark-making

Shape

Form

Photography

The relationship of one part of a whole to other parts.

The lightness or darkness of something – this could be shade, or how dark or light a colour appears.

Different lines, patterns and textures.

A shape is an area enclosed by a line. It is 2 dimensional and can be geometric or organic.

Forms are 3 dimensional shapes. They occupy space, like people!

A photograph is an image produced by the action of light onto light sensitive paper.

How to use Oil Pastels to draw texture in toys

How to make your drawings more realistic



SCAN ME

How to make your drawings appear 3D:

1: Key Words	2: Printing	3: Variables
<p>Algorithm: A set of instructions or code used to solve a problem.</p> <p>Syntax: The rules of the programming language that need to be followed in order for it to work.</p> <p>Variables: Data that is stored in memory that is likely to change.</p> <p>Program: Code compiled together to perform a specific function.</p>	<p>To print out a statement or a variable we use the code below:</p> <p>Printing a new message: <pre>print("Hello World");</pre></p> <p>Printing the value of a variable: <pre>print(x);</pre></p> <p>Printing a message with variables included: <pre>print("Hello", name, "your are", age, "years old today");</pre></p>	<p>Variables are simply a place on the computer's memory that is given a name in order for it to remember it.</p> <p>In Python you create a variable by writing the name of the variable followed by an =.</p> <p>Examples: <pre>name = "Spongebob"; age = 14;</pre></p>
<p>4: Data Types</p> <p>String: A Variable data type that can store a combination of letters, characters and numbers.</p> <p>Integer: A Variable data type that can store whole numbers.</p> <p>Float: A Variable data type that can store decimal numbers.</p> <p>Boolean: A Variable data type that stores either TRUE or FALSE.</p>	<p>8: Inputs</p> <p>To allow your Python program to get information from the user you will need to use the input command. Make sure you use the correct command for what you are asking for.</p> <p>String inputs (such as a name): <pre>input("Enter your name");</pre></p> <p>Integer inputs (for whole number responses): <pre>int(input("What is your age?"));</pre></p> <p>Float inputs (for decimal number responses): <pre>float(input("What is your shoe size?"));</pre></p>	<p>6: Selection</p> <p>Selection is used to allow the program to make a choice and take a different path.</p> <p>The keywords used in Python are:</p> <p>if - checks if the condition is true, if so the program runs the indented code below it.</p> <p>elif - if the first if fails then this elif condition is checked, there can be multiple of these.</p> <p>else - if all if and elif statements are not true the the code indented below else will run.</p> <p>Example:</p> <pre>colour = input("Enter your favourite colour"); if colour == "Red": print("Reminds me of tomatoes"); elif colour == "Blue": print("Reminds me of the sea!"); else: print("If it ain't Red or Blue then I ain't interested");</pre>
<p>7: Iteration</p> <p>Iteration is used to repeat a set of instructions or commands in a program. It saves having to write them all out over and over again.</p> <p>There are two loops in Python programming: While - Checks if a condition is true and while it is true will keep repeating it. For - Runs for a specific amount of times and stops when it reaches the desired number.</p> <p>Examples: <pre>while answer != "London": answer = input("What is the capital of London?"); Or for i in range(5): movie = input("What is one of your top 5 favourite movies?")</pre></p>		



Drama Year 8 Knowledge Organiser

Term 2—The Terrible Fate of Humpty Dumpty—Exploring Structure

The 'Terrible Fate of Humpty Dumpty' is a play by David Calcutt.

It is about a boy called Terry Dumpton who is nicknamed Humpty Dumpty. He is bullied in his new school by a gang lead by cruel, cunning Stubbs. Terry's only friend, Sammy, is a coward who can't stand up for himself. As the bullying gets worse, Terry begins to play truant which worries and annoys his working-class parents, but they are powerless in the end.



Vocal Skills		Physical Skills		Techniques
Name	Definition	Name	Definition	
Projection	The ability to speak loudly and clearly enough to be heard by the audience without straining the voice.	Body Language	A range of nonverbal signals that you can use to communicate your feelings and intentions	Pressure Circle A pressure circle in drama refers to a dynamic of heightened emotional tension among characters, often leading to conflict and dramatic revelations. This is an abstract way of presenting the pressure a character may feel. A typical way of staging this is by having actors circle the pressured character saying lines that build pressure and tension until a climax.
Accent	a distinctive way of pronouncing a language, especially one associated with a particular country, area, or social class	Gesture	a movement of part of the body, especially a hand or the head, to express an idea or meaning.	Montage a series of short self-contained scenes grouped immediately after each
Articulation/diction	The clarity and distinctness with which words are pronounced.	Facial Expression	Changing your facial movements to convey an emotion and reaction to different situations.	Marking the Moment a dramatic technique used to highlight a key moment in a scene or improvisation. You can do this in a variety of ways: slow motion, freeze frames, music, narration.
Tone	The emotion you are presenting in the scene.	Eye Contact	The way to look or where you look when reacting to different situations. Do you give eye contact or avoid?	Slow Motion reduce the speed at which a drama is enacted, to highlight a scene or bring a big moment into focus
Pace	The speed at which dialogue is delivered.	Movement	Where and how the actor moves on stage and the impact it has on the character.	World off-stage Reacting to something happening off stage in front of you. i.e. imagining something is there that isn't.
Pitch	How high or low/deep your voice is.	Posture	The position of a person's body when standing or sitting. E.g upright or slouched.	Types of Structure Cyclical structure in literature is when a story starts and ends similarly, often revisiting important themes or events
Pause	Pausing and gaps in your speech. Long pauses to create thought or tension, or short to create a stutter	Gait (Walk)	How a character walks in stage.	Linear Structure Linear structure in literature is when a story is told in a clear, chronological order, moving from start to finish.
Volume	The loudness or quietness of the voice.	Levels	How high or low your character presents themselves on stage.	Episodic Structure Episodic structure in literature is when a story is made up of separate, self-contained episodes, each with its own plot, that are loosely connected. This allows for different themes and a varied pace in the storytelling.
Emphasis	Highlighting certain words or phrases to convey meaning or emotion.	Leading with part of the body	Which part of the body does the character lead by and what does it communicate?	

Year 8 Food and Nutrition- Knowledge Organiser

Nutrient/ Food group	Functions - Why do we need it?	Sources - Where they are found
Carbohydrates	These give us energy. Sugary ones give us quick release energy. Starchy ones give us slow release.	Bread, rice, pasta, potatoes
Protein	Needed for the growth and repair of our bodies and can also be used for energy.	Meat, fish, dairy products, tofu, soya, Quorn, nuts, seeds, lentils
Fat	These keep us warm, protect us and provides our bodies with energy	Butter, oil, processed foods e.g. crisps, chips, chocolate, cake.
Water	Keeps us hydrated and keeps our body's working properly.	Fruit and vegetables, water, fruit juices, milk.
Vitamins	These are needed generally to keep us healthy. They allow all the chemical reactions in our body and protect us from diseases.	Fruit, vegetables, cereals, dairy products
Minerals	Helps build bones and teeth and allow muscles to work properly.	Green vegetables, dairy products and red meat
Fibre	These are needed to keep our digestive system working (help us go to the toilet) and helps to fill us up.	Wholegrain cereals, brown rice, pasta, bread, fruit and vegetables

Healthy eating

The Eatwell guide shows how much of what we eat in total should come from each of the five food groups.

Oils and Spreads	Fruits and Vegetables	Meat, eggs and pulses	Starchy foods	Dairy foods
Butter, Vegetable oil, Margarine	Apples, Bananas Oranges, Peppier Carrots, Cabbage Spinach, Frozen peas	Chicken, fish, Lentils Chickpeas, beans	Bread, Potatoes Pasta, Rice, Cereals	Milk, Cheese, Yogurt

Keywords

Hygiene
Safety
Vegetarian
Vegan
Nutrient
Food Allergy

Organoleptic
Cross - contamination
Food Intolerance
Coeliac Disease

What is Energy balance
Energy in = energy out

Why is it important to keep it balanced?
To maintain a healthy weight and allow the body to stay healthy and work efficiently

Special diet	Type	Reason for following diet	Foods to avoid
Lifestyle/ religion	Vegan	<ul style="list-style-type: none"> Religion Don't like the taste Don't want to eat animals 	Anything from an animal, honey
	Vegetarian	<ul style="list-style-type: none"> Ethical reasons Cost of meat Texture of meat 	Meat and fish products
	Pescatarian	<ul style="list-style-type: none"> Intolerance 	Any meat products
Allergy & intolerance	Lactose	<ul style="list-style-type: none"> Intolerance 	milk, cheese, yoghurt, chocolate, butter etc
	Coeliac	<ul style="list-style-type: none"> Allergy 	wheat, bread, pasta, barley, oats
Health	High Fibre	<ul style="list-style-type: none"> Recommended by doctor Healthier 	White rice, pasta, bread, processed foods.
	Low Sugar	<ul style="list-style-type: none"> Weight loss Healthier Diabetic 	Biscuits, cakes, sweets, fizzy drinks, processed food
	Low Fat	<ul style="list-style-type: none"> Weight loss Healthier High Cholesterol 	Crisps, chips, sausage rolls, cakes, biscuits.

Year 8 Graphics: Pop-up book DESIGN AND TECHNOLOGY

Tools, Techniques, Materials and Equipment	
Paper	A compliant material made from wood pulp.
Board	Used for packaging, model making, photography and greeting cards.
Colour Rendering	A colour technique used for professional finish in DT.
Scoring	A method to create accurate folds.
Craft knife	To accurately cut paper.

Robert Sabuda
The American illustrator who creates pop-up books.

Keywords
Robert Sabuda
Product
Image
Analyse
Paper Sizes
Typography
Fonts
Printing
Processes
Story Board
Card
Mechanisms
Card Modelling
Shading
Rendering
Rotary
V-fold
Internal
Stand
Mouth and Slide



Maths in DT:
Multiplication
Divide
Add / Subtract
Measurement conversion
Ratios
Percentages
Surface area

What is good design?
Clear ideas
Annotations
Measurements
Content
Presentation
Balance

Health and Safety in DT:

- Listen to your teacher's instructions
- Always wear an apron
- Long hair should be tied back
- Don't use equipment you are not trained on
- Always stand up during practical lessons
- When using machines, always wear safety glasses
- Only use the stop button in an emergency
- Work quietly and be sensible and careful at all times

KS3 Year 8 Design and Technology CAD CAM: Board Games



CAD: Computer Aided Design
CAM: Computer Aided Manufacture



Adobe Illustrator

Adobe Illustrator is the industry-leading graphic design tool that is a professional vector-based design and drawing program. Used as part of a larger design workflow, Illustrator allows for the creation of everything from single design elements to entire compositions.

TinkerCAD

Is a 3D modelling platform that has been launched by Autodesk – a industry leading program. It allows you to create 3D models on the computer.

Key words

Vector	CAD/CAM	Automation
3D printing	Illustrator	Additive
Graphics	TinkerCAD	ACCESSFM

3D printing

3D printing is an additive technology used to manufacture parts. It is 'additive' in that it doesn't require a block of material or a mold to manufacture physical objects, it simply stacks and fuses layers of material. It's typically fast, with low fixed setup costs, and can create more complex geometries than 'traditional' technologies, with an ever-expanding list of materials. It is used extensively in the engineering industry, particularly for prototyping and creating lightweight geometries.

Tools and Equipment

CAD CAM

3D printer



3D printing or additive manufacturing is the construction of a three-dimensional object from a CAD model or a digital 3D model.

Template



A template is a tool used to mark out shapes repeatedly

Maths in DT:

Multiplication
 Divide
 Add / Subtract
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 Percentages
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KS3 YEAR 8 D&T RESISTANT MATERIALS




Orthographic Drawing

Tools and Equipment

Measuring and marking

Steel rule		An accurate tool for measuring and marking out
Try square		A tool used to check right angles on wood or plastic
Template		A template is a tool used to mark out shapes repeatedly
Jig		A tool used to control the location and/or motion of another tool

Shaping and finishing

Metal file		Used to shape or smooth wood, metal or plastic
Glass paper		An abrasive paper used to smooth the surface or edges of wood
Disc sander		A machine used to smooth the edges of materials

Traditional wood joints:

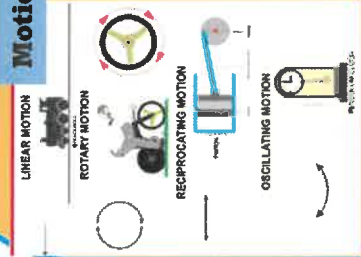
- Butt Joint
- Lap / Rebate Joint
- Finger Joint
- Dovetail Joint
- Mitre Joint

Maths in DT:

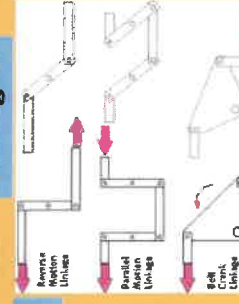
- Multiplication
- Divide
- Add / Subtract
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- Surface area

Mechanical Devices

Motion



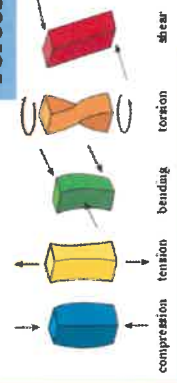
Linkages



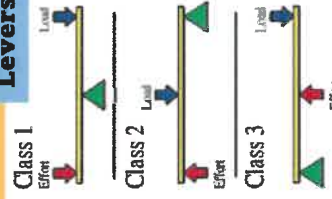
Gears



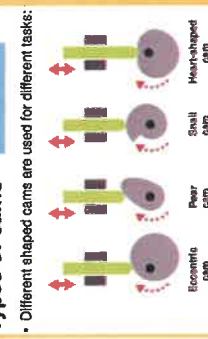
Forces



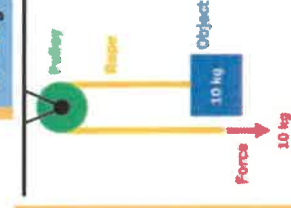
Lever










Types of cams



Pulley



Cutting

Tenon saw		A hand saw with a stiff back used to cut straight lines in wood – back saw action
Coping saw		A hand saw used to cut complex shapes in wood and plastic
Scroll saw		A machine saw used to cut complex shapes in wood and plastic
Bench hook		Held against the front edge of a bench or table to support work
Pillar drill		A machine used to make holes in materials
Chisel		Used for carving or cutting a hard material such as wood, stone, or metal by hand
Laser cutter		CAM: Laser cutting is the use of a high-powered laser to cut, etch and engrave your material

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- Always stand up during practical lessons
- When using machines, always wear safety glasses
- Only use the stop button in an emergency
- Work quietly and be sensible and careful at all times

What is good design?

- Clear Ideas
- Annotations
- Measurements
- Content
- Presentation
- Balance

Keywords

- Research
- Design
- Evaluation
- Wood joint
- Mechanical
- Pulley
- Linkage
- Lever
- Motion
- Force

KS3 YEAR 8

Tools and Equipment

Measuring and marking	
Measuring Tape	Fabric tape measure used to measure
Tailor's chalk	A temporary mark on fabric
Template / Pattern	A template / pattern is a tool used to mark out shapes repeatedly

Constructing

Sewing needle	Helps to sew fabric together
Embroidery needle	A needle with a larger eye to accommodate embroidery thread
Sewing machine	Machine sews fabric together
Pins	A temporary method to hold fabric in place
Tacking stitch	A temporary stitch to hold fabric together

Textiles Dyes:

Natural Dyes

- Plants
- Food / spices
- Grass / tree bark / leaves
- Onions / beetroot
- Cochineal

Chemical Dyes

Dyes which are man-made using chemicals: consistent and vibrant.

Fibre Categories:

Natural Fibres

Plant based natural fibres:

- Cotton
- Linen
- Flax
- Coir (coconut)

Animal based natural fibres:

- Wool
- Angora
- Silk

Man-made Fibre

- Polyester
- Acrylic
- Nylon

Fabric Construction:

- Woven
- Knitted
- Bonded

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- Percentages
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Elements that make up Islamic Design:

- Calligraphy
- Floral
- Geometry

Keywords

- Islamic
- Religion
- Design
- Product analysis
- Research
- Evaluation
- Stitch
- Scissors
- Sewing machine
- Customer
- Environment
- Function
- Material
- Seam allowance
- Hem
- Tie-Dye
- Printing
- Tessellate
- UCD
- Mordant

DT TEXTILES

Cutting

Fabric shears		Scissors used for cutting fabric
Thread scissors		Scissors used for cutting thread
Stitch ripper		Used for removing sewn stitches from fabric
Pinking shears		Creates a zig zag cut edge for decoration to prevent fraying

Adding Colour

Tie-dye		A type of resist dye
Batik		A type of resist dye which uses wax
Block Printing		Engraved wooden blocks to produce repeat patterns
Fabric paint / pens		Paint / pens which can be applied to fabrics

A	is for	Aesthetics
C	is for	Cost
C	is for	Customer
E	is for	Environment
S	is for	Size
S	is for	Safety
F	is for	Function
M	is for	Material



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SENTENCE STARTERS

I **ING** – Whistling, Howling, Glancing

S **SIMILE** – As bright as a diamond, Like a creature from the darkness

P **PREPOSITIONAL** – Up above, Below, Under, Next to

A **ADVERBIAL** – Suddenly, Eerily, Stealthily

C **CONNECTIVE** – Yet, After, Meanwhile

E **ED** – Startled, Terrified, Paused.

KEY THEMES

Darkness	Death and murder
Good 'v' Evil	Humanity and inhumanity
Isolation and loneliness	Life and Death
Psychological breakdown	Remote settings
Supernatural	Terror and horror
The sublime	The Unknown
Violence and cruelty	Wild Landscapes

USEFUL DEFINITIONS

Abstract Noun – An idea, quality, or state rather than a solid object, e.g. truth, danger, happiness.

Antagonist – The villain of the story.

Connotation: the meaning created by association.

Cryptid – A creature whose existence is disputed due to insubstantial evidence.

Epistolary Narrative – A story told in a series of letters.

Emotive Language: Language used to create a particular emotion in the reader.

Figurative Language: Using language techniques to describe something in a non-literal way.

Interrogative Sentence – A sentence which asks a question.

Inference: using observations to reach a conclusion.

Motif – A dominant or recurring idea.

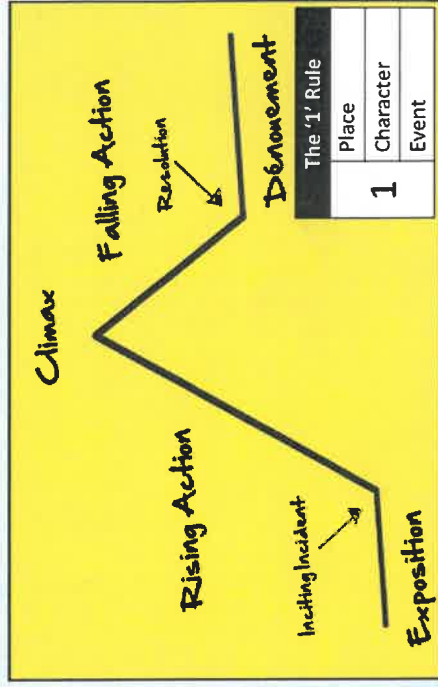
Semantic field: a group of words related in meaning.

Pronouns: a word that can replace a person's name to refer to them.

Verb: a doing word.



NARRATIVE STRUCTURE



FIGURATIVE LANGUAGE DEFINITIONS

Alliteration: use of the same consonant at the beginning of adjacent or closely connected words.

Extended metaphor: series of linked metaphors.

Hyperbole: exaggeration to emphasise a point.

Metaphor: comparing one thing to another, directly, in a way that isn't literally true.

Onomatopoeia: a word whose sound suggests its meaning.

Pathetic Fallacy: giving human emotions and conduct to things found in nature.

Personification: giving human qualities to non-human things.

Sibilance: use of the 's' sounds in quick succession.

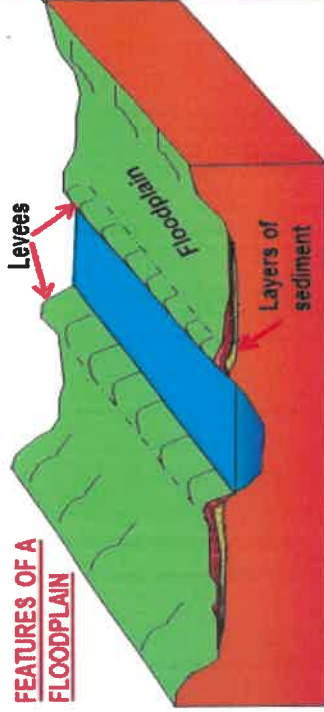
Simile: a comparison of two things that uses the words 'like' or 'as'.

The formation of a spit



Spit formation

1. Longshore drift moves sediment along the coast;
2. Where the coast changes direction, longshore drift continues, creating an arm that projects out into the water;
3. A river flows out to sea, preventing the deposition of sediment across the estuary;
4. River deposits build up behind the spit, forming mudflats which may then evolve into saltmarshes;
5. A secondary wind will create hooked ends (recurve laterals) which, along with the rest of the spit, move over time.



Types of erosion

Hydraulic action – waves crash against the cliff trapping air in cracks. This air is released under pressure eroding the rock as it does so.

Abrasion – sand and pebbles are thrown against the cliffs and scrape away the rockface over time.

Solution – mild acids in the seawater dissolve certain minerals in the rocks.

Attrition – pebbles bang against each other making them smaller and smoother.

Geographic key words this topic:

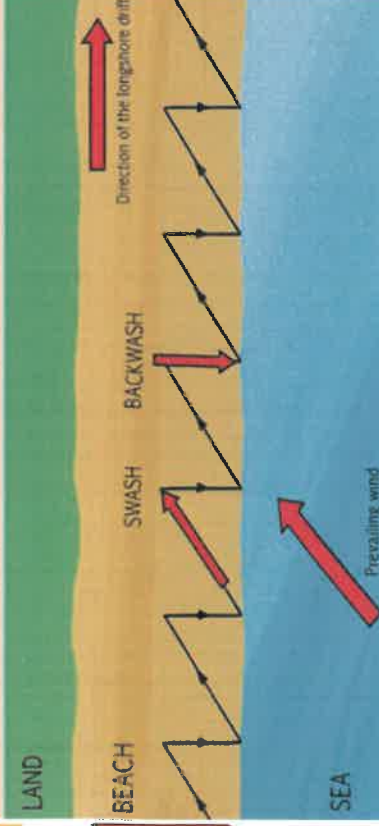
By the end of this topic you should be able to explain these words:

Erosion
Fetch
Geology
More/Less resistant
Hydraulic action
Abrasion
Solution
Attrition
Arch
Stack
Stump
Longshore drift
Deposition
Swash
Backwash
Prevailing wind
Spit
Mudflat
Estuary
Managed retreat
Geo tubes
Hard engineering
Soft engineering
Groynes
Seawall
Gabions
Rip-rap
Beach replenishment
Dune nourishment

Year 8 Topic 2: How important is protecting coasts from erosion?

Longshore drift

1. **Prevailing winds** push waves onshore at an angle;
2. The breaking wave (**swash**) pushes sand and pebbles up the beach at an angle;
3. The wave returns directly to the sea (**backwash**) as a result of **gravity**, moving sediment as it goes;
4. This process **repeats**, moving sediment along the coastline.



Writing a developed answer

P E E L

Point	Evidence	Explanation	Link
I strongly believe...	For example...	This shows...	From this we can conclude...
Another point to consider is...	This is illustrated by...	This means... Therefore...	It is clear that...
First of all...	This can be seen by...	As a result...	We can therefore see...

6 Figure Grid references

We can use 6 figure grid references to find an exact location within a grid. Each square is divided up into 10 smaller squares. Remember to still go along the corridor and up the stairs.

6 FIGURE GRID REFERENCES

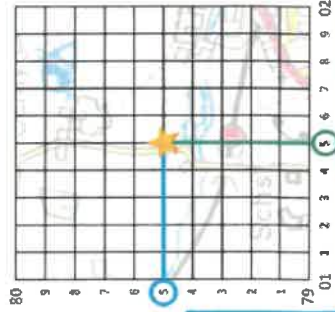
We can use six-figure grid references to find an exact location within a grid square, so they are much more accurate. The grid square is divided into tenths.

Example:

015 795

The first three numbers give the easting which includes the number of tenths.

The last three numbers give the northing which includes the number of tenths.



Remember within each square, 5 is always $\frac{1}{2}$ way along or up.

Social: relating to people's standard of living and access to education, healthcare and jobs.

Economic: how a country's wealth is spent and distributed.

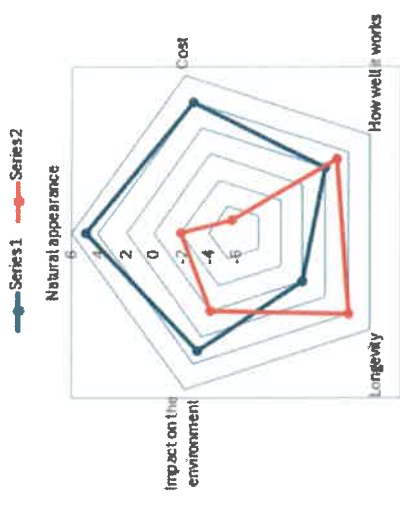
Environmental: relating to nature and natural systems

Radar graphs

Radar graphs can be used to show and compare results of data categories on one graph at the same time.

This radar graph shows the scores given to two sea defences for various categories. The score for each category is plotted and then the points are joined up to form lines.

Comparing sea defences



Yr 8 Term 2: Geographical Skills

How do I decide what is more important when I evaluate?

Time scale – Long term could be more important

How many people are affected – More people – more important

Impact – Social/Economic/Environmental – which is more important?

Scale – Local/National/Global – global could be more important

Remember **THIS!**

Enquiry: Why do Revolutions happen?

Outline: Between the 17th and 20th centuries, all across the globe there were Revolutions happening. The causes of these revolutions frequently had similarities. From the shores of England and as far as the English colonies and beyond.

Date	Event	Description
1642-1649	English Civil War	Sometimes called the English Revolution. King Charles I lost his head after losing his war against parliament and Britain became a republic.
1754-1789	The American Revolution	The 13 American colonies fought a war of independence to break away from British control and set up a new country, the United States of America.
1789	French Revolution	When the French people rose up against their king and set up a republic. This led to The Terror where no rich person was safe and many were guillotined.
1791	Haitian Revolution	The largest rebellion of slaves where they rose up against the slave owners and were led by Toussaint Louverture to freedom. Haiti became a free country.
Feb and Oct 1917	Russian Revolution	When the Russian people rose up against the Tsar and overthrew the government, setting up a republic led by Lenin's communism.

History – Year 8 Knowledge Organiser Topic 2



Key individuals



Maximilien Robespierre
Helped to lead the French Revolution and ended up being guillotined as well.



Vladimir Lenin
Led the Russian Revolutions and became the first leader of the Russian Republic.



Abigail Adams.
Married to American revolutionary John Adams and reminded him to not forget women when creating the US Constitution.



Jean-Jacques Dessalines.
Revolutionary who helped Louverture in the Haitian revolution. Led Haiti and called himself an Emperor.



Furthering learning
Want to find out more about revolutions?



Key vocabulary:

Abdicate: to give up the throne and no longer be a monarch.

Bill of Rights: the main rights guaranteed to American citizens in the US constitution.

Colony: a country ruled by another country as part of an empire.

Communism: an ideology where the aim is for the wealth of the country to be shared with everyone.

Constitution: rules for how a country should be ruled which also guarantee the rights of citizens.

Emperor: ruler of an empire

Empire: many different countries ruled by the leader from one country.

Guillotine: a method of execution used in the French Revolution which was considered to be more humane.

Independence: freedom from restrictions, especially from another country's control.

Republic: a country without a monarch. The leader is instead elected by the people.

Revolution: an overthrow of the previous government, normally violent and dramatic, to set up a new type of government.

Tsar: the leader of Russia before the Revolution.



Prior learning?

Y7: colonisation unit on the start of the British Empire/Rebellions.
Yr8 Slave trade unit.

Enquiry: Why do Revolutions happen?



Historical skill focus: cause and consequence

- Why do events happen?
- What is the impact of these events?

History – Year 8 Knowledge Organiser Topic 2



Can you explain why?

You could write one or two paragraphs to explain.

What to focus on:

One or two reasons why the event happened.

Think about the motives behind the countries and people involved

Think about political reasons or military reasons?

Starting sentences

One cause of...

The most significant cause was...

This cause led to...

Point = A key cause was...

Evidence = This cause led to...

Explain = This is important because...



Explain the reasons why revolutions happen.

Developing

I can describe how an event happened.

I can describe the impact of an event.

Secure

I can explain why an event happened in a PEE paragraph.



Exceeding

I can make a judgement on why an event happened, using causes in a PEEL paragraph.

I can identify long and short term causes and use these in my answers.



YEAR 8 - REPRESENTATIONS...

Representing Data

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Draw and interpret scatter graphs
- Describe correlation and relationships
- Identify different types of non-linear relationships
- Design and complete an ungrouped frequency table
- Read and interpret grouped tables (discrete and continuous data)
- Represent data in two way tables

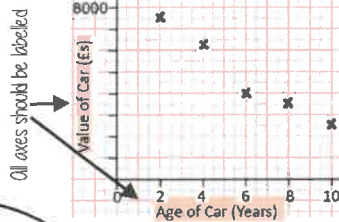
Keywords

- Variable:** a quantity that may change within the context of the problem
- Relationship:** the link between two variables (items). Eg Between sunny days and ice cream sales
- Correlation:** the mathematical definition for the type of relationship.
- Origin:** where two axes meet on a graph
- Line of best fit:** a straight line on a graph that represents the data on a scatter graph
- Outlier:** a point that lies outside the trend of graph
- Quantitative:** numerical data
- Qualitative:** descriptive information, colours, genders, names, emotions etc.
- Continuous:** quantitative data that has an infinite number of possible values within its range.
- Discrete:** quantitative or qualitative data that only takes certain values.
- Frequency:** the number of times a particular data value occurs.

Draw and interpret a scatter graph

Age of Car (Years)	2	4	6	8	10
Value of Car (£)	7500	6250	4000	3500	2500

- This data may not be given in size order
- The data forms information pairs for the scatter graph
- Not all data has a relationship



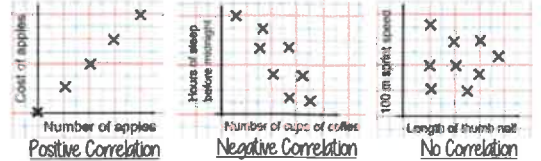
All axes should be labelled

The axis should fit all the values on and be equally spread out

"This scatter graph shows as the age of a car increases the value decreases"

The link between the data can be explained verbally

Linear Correlation



As one variable increases so does the other variable

As one variable increases the other variable decreases

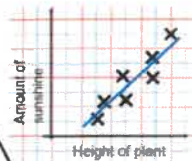
There is no relationship between the two variables

The line of best fit

The Line of best fit is used to make estimates about the information in your scatter graph

Things to know:

- The line of best fit **DOES NOT** need to go through the origin (The point the axes cross)
- There should be approximately the same number of points above and below the line (It may not go through any points)
- The line extends across the whole graph



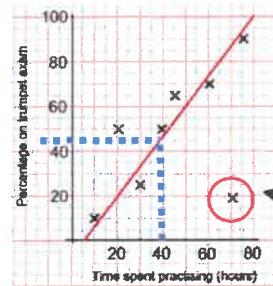
It is only an estimate because the line is designed to be an average representation of the data

It is always a straight line

Using a line of best fit

Interpolation is using the line of best fit to estimate values inside our data point

e.g 40 hours revising predicts a percentage of 45



Extrapolation is where we use our line of best fit to predict information outside of our data

This is not always useful - in this example you cannot score more than 100%. So revising for longer can not be estimated

This point is an 'outlier' it is an outlier because it doesn't fit this model and stands apart from the data

Ungrouped Data

The number of times an event happened

The table shows the number of siblings students have. The answers were 3, 1, 2, 2, 0, 3, 4, 1, 1, 2, 0, 2

2 people had 0 siblings. This means there are 0 siblings to be counted here

Number of siblings	Frequency
0	2
1	3
2	4
3	2
4	1

$$2 + 2 + 2 + 2 \text{ OR } 2 \times 4 = 8$$

$$3 + 3 \text{ OR } 3 \times 2 = 6$$

2 people have 3 siblings so there are 6 siblings in total

Best represented by discrete data (Not always a number)

OVERALL there are 0 + 3 + 8 + 6 + 4 Siblings = 21 siblings

Grouped Data

If we have a large spread of data it is better to group it. This is so it is easier to look for a trend. Form groups of equal size to make comparison more valid and spread the groups out from the smallest to the largest value

Discrete Data
The groups do not overlap

Cost of TV (£)	Tally	Frequency
101 - 150		4
151 - 200		5
201 - 250		4
251 - 300		3

We do not know the exact value of each item in a group - so an estimate would be used to calculate the overall total (Midpoint)

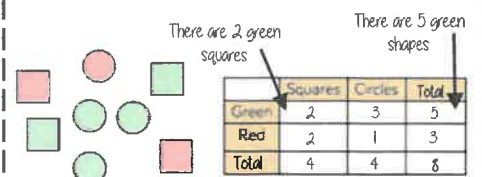
Continuous Data
To make sure of values are included inequalities represent the subgroups

Weight (kg)	Frequency
40 < x ≤ 50	1
50 < x ≤ 60	3
60 < x ≤ 70	5

e.g this group includes every weight bigger than 60kg up to and including 70kg

Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allows you to make conclusions, find probability or find totals of sub groups



Using your two-way table

To find a fraction e.g What fraction of the items are red? 3 red items but 8 items in total = $\frac{3}{8}$

Interlink: Use your fraction, decimal percentage equivalence knowledge

YEAR 8 - REPRESENTATIONS... Tables and Probability

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Construct a sample space diagram.
- Systematically list outcomes.
- Find the probability from two-way tables
- Find the probability from Venn diagrams

Keywords

Outcomes: the result of an event that depends on probability.

Probability: the chance that something will happen.

Set: a collection of objects.

Chance: the likelihood of a particular outcome.

Event: the outcome of a probability – a set of possible outcomes.

Biased: a built in error that makes all values wrong by a certain amount.

Union: Notation 'U' meaning the set made by comparing the elements of two sets.

Construct sample space diagrams



Sample space diagrams provide a systematic way to display outcomes from events

The possible outcomes from tossing a coin

The possible outcomes from rolling a dice

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

This is the set notation to list the outcomes S =

$$S = \{1H, 2H, 3H, 4H, 5H, 6H, 1T, 2T, 3T, 4T, 5T, 6T\}$$

In between the { } are a; the possible outcomes

Probability from sample space

The possible outcomes from rolling a dice

The possible outcomes from tossing a coin

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

This is the set notation that represents the question P

What is the probability that an outcome has an even number and a tails?

$$P(\text{Even number and Tails}) = \frac{3}{12}$$

In between the () is the event asked for

There are three even numbers with tails

Numerator: the event

Denominator: the total number of outcomes

There are twelve possible outcomes

Probability from two-way tables

	Car	Bus	Wak	Total
Boys	15	24	14	53
Girls	6	20	21	47
Total	21	44	35	100

$$P(\text{Girl walk to school}) = \frac{21}{100}$$

The event

The total in the set

The total number of items

Product Rule

The number of items in event a

x

The number of items in event b

Probability from Venn diagrams

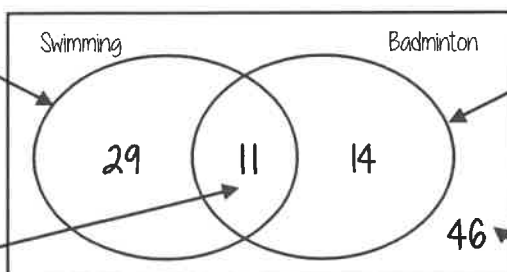
100 students were questioned if they played badminton or went to swimming club. 40 went swimming, 25 went to badminton and 11 went to both.

This whole curve includes everyone that went swimming

Because 11 did both we calculate just swimming by 40 - 11

The intersection represents both

Swimming AND badminton



This whole curve includes everyone that went to badminton.

Because 11 did both we calculate just badminton by 25 - 11

The number outside represents those that did neither badminton or swimming

$$P(\text{Just swimming}) = \frac{29}{100}$$

$$100 - 29 - 11 - 14$$

YEAR 8 - REPRESENTATIONS...

Working in the Cartesian plane

@whisto_maths

What do I need to be able to do?

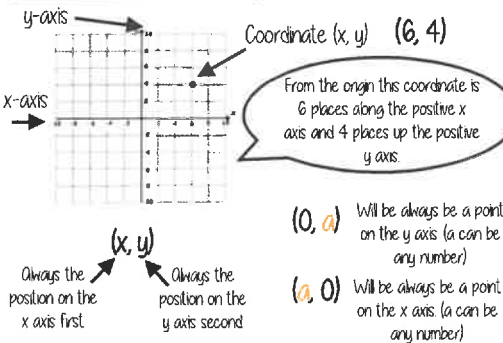
By the end of this unit you should be able to:

- Label and identify lines parallel to the axes
- Recognise and use basic straight lines
- Identify positive and negative gradients
- Link linear graphs to sequences
- Plot $y = mx + c$ graphs

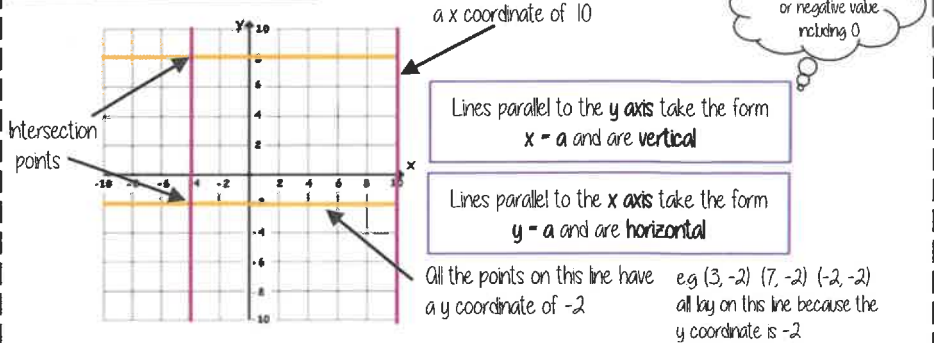
Keywords

- Quadrant:** four quarters of the coordinate plane.
- Coordinate:** a set of values that show an exact position.
- Horizontal:** a straight line from left to right (parallel to the x axis)
- Vertical:** a straight line from top to bottom (parallel to the y axis)
- Origin:** (0,0) on a graph. The point the two axes cross
- Parallel:** Lines that never meet
- Gradient:** The steepness of a line
- Intercept:** Where lines cross

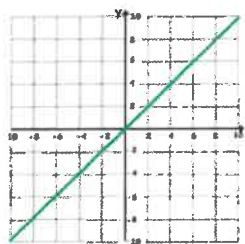
Coordinates in four quadrants



Lines parallel to the axes



Recognise and use the line $y=x$



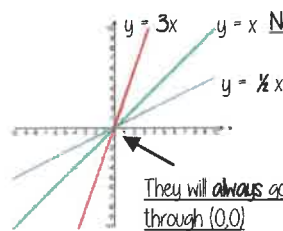
Examples of coordinates on this line: (0, 0) (-3, -3) (8, 8)

The axes scale is important - if the scale is the same $y = x$ will be a straight line at 45°

This means the x and the y coordinate have the same value

Recognise and use the lines $y=kx$

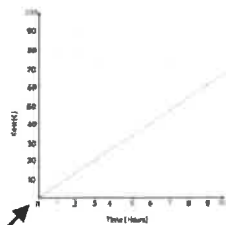
The value of k changes the steepness of the line



The bigger the value of k the steeper the line will be.

The closer to 0 the value of k the closer the line will be to the x axis.

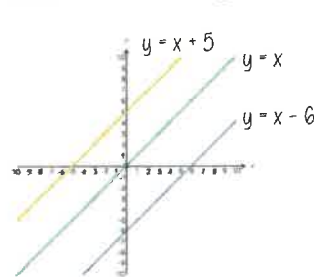
Direct Proportion using $y=kx$



The line must be straight to be directly proportional - variables increase at the same rate k

Direct proportion graphs always start at (0,0) as they are describing relationships between two variables

Lines in the form $y = x + a$



All the lines are parallel because the gradients are the same

$$y = x + a$$

This is the line $y=x$ when the y and x coordinate are the same

This shows the translation of that line e.g. $y = x + 5$ is the line $y=x$ moved 5 places up the graph

5 has been added to each of the x coordinates

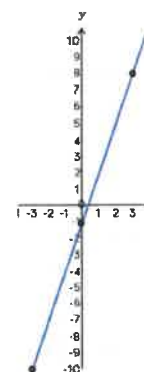
Plotting $y = mx + c$ graphs

$y = 3x - 1$ → 3 x the x coordinate then - 1

x	-3	0	3
y	-10	-1	8

Draw a table to display this information

This represents a coordinate pair (-3, -10)

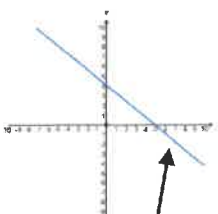


You only need two points to form a straight line

Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

Lines with negative gradients



Any straight-line graph with a negative x value has a negative gradient

Eg $y = -2x$
 $y = -x$ $y + x = 12$

Direction of all negative gradients



Samba is a musical genre and dance style with its roots in Africa via the West African slave trade and African religious traditions. Samba is an expression of Brazilian cultural expression and is a symbol of carnival. Samba schools formed and compete bringing people together.

SAMBA

A. Key Words and Terms in Samba Music

- CALL AND RESPONSE** – one person plays or sings a musical phrase, then another person/group responds with a different phrase or copies the first one.
- CYCLIC RHYTHM** – a rhythm that is repeated over and over again.
- IMPROVISATION** – making up music as you go along, without preparation.
- OSTINATO** – a repeated pattern. Can be rhythmic or melodic; usually short.
- PERCUSSION** – Instruments that are mostly hit, scraped or shaken to produce sound. Samba uses many percussion instruments which together are called a **BATERIA**.
- POLYRHYTHM** – the use of several rhythms performed simultaneously, often overlapping each other to create a thick texture.
- PULSE** – a regular beat that is felt throughout music
- RHYTHM** – a series of notes of different lengths that create a pattern. Usually fits with a regular beat or pulse.
- SYNCOPATION** – accenting or emphasising the weaker beats of the bar (often a half beat (quaver) followed by a full beat (crotchet)) giving the rhythm an **OFFBEAT** feel.
- SAMBISTA** – the leader of a Samba band or ensemble, often signalling cues to the rest of the band when to change sections within the music with an **APITO** (Samba whistle)

B. Form and Structure of Samba

Samba music often starts with an **INTRODUCTION** often featuring **CALL AND RESPONSE RHYTHMS** between the Samba Leader and ensemble. The main **Ostinato** rhythm of Samba is called the **GROOVE** when all the instruments of the Samba Band play their respective rhythms over and over again (**CYCLIC RHYTHMS**) forming the main body of the piece. The **GROOVE** is broken up by **BREAKS** – 4 or 8 beat rhythms providing contrast and **MID SECTIONS** – one or two instruments change the rhythm of their ostinato and the others stay the same or stop. Sometimes **BREAKS** and **MID SECTIONS** feature a **SOLOIST** who “shows off” their rhythms. The **SAMBISTA** must signal to the group when to change to a different section which is normally done with an **APITO** (Samba Whistle – loud!). A piece of Samba can end (this section is called the **CODA**) with either a **CALL AND RESPONSE** pattern or a pre-rehearsed ending phrase of rhythm. The **FORM AND STRUCTURE** of a piece of Samba may look like the following:



C. Texture of Samba Music

Texture varies in Samba music, often **MONOPHONIC** where a single rhythm is heard as in **CALL AND RESPONSE** sections, sometimes **POLYPHONIC** where sections of the Samba band play different rhythms (**OSTINATOS**) creating **CROSS-RHYTHMS** (when two rhythmic patterns that “conflict” with each other occur simultaneously) creating a thick texture of interweaving and interlocking rhythms – a **POLYRHYTHM** or a **POLYRHYTHMIC TEXTURE**.

D. Dynamics of Samba Music

The dynamics of Samba music are normally **VERY LOUD** – it is music designed to be performed outdoors at carnivals and is played by large numbers of instrumentalists and to accompany dancers and processions with large audiences watching and listening. Sometimes, a **CRESCENDO** is used at the end of a piece of Samba music for dramatic effect.

E. Tempo of Samba Music

Samba music is generally **FAST** at around 104 bpm and keeps a constant tempo to assist the dancers or professional nature of the music. Sometimes the **SAMBISTA** (Samba leader) uses **(TEMPO) RUBATO** – tiny fluctuations in tempo for expressive effect.

F. Instruments, Timbres and Sonorities of Samba

SURDO 	REPINIQUE 	TAMBORIM 	CHOCOLO 	RECO-RECO 	APITO 	AGOGO BELLS 	CAIXA DE GUERRO 
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BUDDHISM



KNOWLEDGE ORGANISER

Overview

Buddhism is one of the world's major religions. It is the world's 4th largest religion, with about 520 million followers.

Buddhists are the people who follow Buddhism. They follow the teachings of a man named **Siddhartha Gautama**, who became known as the **Buddha**.

The religion began when **Gautama**, a prince who had lived a life of luxury, realised that there was **suffering in the world**, and committed himself to understanding why.

This happened in **India** around 2,500 years ago.

The holy book in Buddhism is called **Tipitaka**. **Buddhist Temples** are buildings designed for Buddhist worship.

Image of the Buddha, known in life as Siddhartha Gautama, whose teachings founded Buddhism.



Buddhist Beliefs



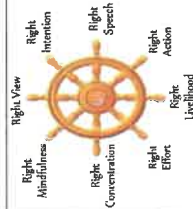
Siddhartha Gautama's Story

-Siddhartha was a rich prince of an area north of India. His mother and father treated him well, and protected him from the suffering in the world.

-As a young man, Siddhartha left the palace for the first time, and was upset by the things that he saw: old age, sickness and death. He decided to leave his comfortable life to see if he could find an answer to the suffering.
-After many years of trying, he sat under a tree (the Bodhi tree) by a full moon and started meditating. In doing this, he became Enlightened – he saw the meaning in all things. He was then known as the Buddha.

The Four Noble Truths

- The Buddhist teachings are known as Dharma. They include the Four Noble Truths and the Eightfold-Path. Buddhism's Noble Truths are:
 1. Life always involves suffering (dukkha).
 2. Suffering happens because people are greedy and never satisfied with what they have.
 3. Greed and selfishness can be overcome.
 4. The way to overcome them is to follow the Eightfold Path.



The Eightfold Path

- Siddhartha created a way of life which ensured that his basic needs were covered, but didn't require any extra comforts. Buddhists try to live following the Eightfold Path:
 1. Right viewpoint
 2. Right values/ thought
 3. Right speech
 4. Right actions
 5. Right livelihood
 6. Right effort
 7. Right concentration
 8. Right mindfulness

Answers to Important Questions and Key Vocabulary

Where and how do Buddhists worship? Why?		-Buddhists worship either in temples or at home, often sitting or kneeling facing a shrine of Buddha. -They may listen to monks reciting religious texts, take part in chanting, or meditate. -Buddhists hope to achieve Enlightenment. They believe that there is a cycle of birth, life, death and rebirth. If a person gains Enlightenment (like the Buddha) they can break out of this cycle, to a place of eternal peace that is known as 'Nirvana.'	Key Vocabulary Buddha Buddhist Siddhartha Gautama Tipitaka Temple Wesak 4 Noble Truths Eightfold Path Lotus Flower Theravada Mahayana Tibetan
What is the Tipitaka?		-The Tipitaka is believed to be Buddha's teachings. It is written in an ancient Indian language known as Pali. It is a very large book, that takes up about forty volumes when translated into English! The Tipitaka is made up of three sections of wisdom.	
Where do most Buddhists live in the world?		-About 7% of the world's population are Buddhists. -China has the most Buddhists – about 250 million Buddhists live there. -However, Cambodia has the highest proportion of Buddhists – about 97% of its population are Buddhists. There are also lots of Buddhists in Thailand, Sri Lanka, and Japan. -Many Buddhists in the far east devote their lives to Buddhism, living in isolation in temples.	
How many different types of Buddhists are there?		-Buddha's teachings spread far across the Asian continent. As it spread, different peoples formed their own approaches of Buddhism. -The three main types are called Theravada, Mahayana and Tibetan Buddhists. -Although they differ slightly, they all still keep the basic features of Buddhism.	

Top 10 Facts!

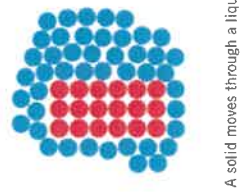
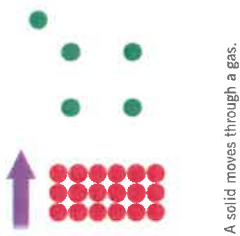
1. Buddhists don't believe in a God who made the world and everything in it.
2. Siddhartha's family were Hindu.
3. The lotus flower is an important symbol in Buddhism. It is a symbol of enlightenment.
4. The name 'Buddha' means 'the enlightened one' or 'the one who knows.'
5. Some Buddhists have shrines at home where they are able to worship.
6. The teachings of Siddhartha Gautama were not written down until about 400 years after his death.
7. Siddhartha Gautama died around age 80.
8. 'Puja' is the name for worship in Buddhism. People often light candles as they worship.
9. In images of Buddha, faces are always made to look calm and serene, to show that he has a peaceful mind.
10. Wesak is an important festival in Buddhism.

Buddhism Timeline

- 490BCE: Siddhartha Gautama is born.
- 461 BCE: Siddhartha leaves home to find an end for suffering.
- 455 BCE: Gautama is enlightened – becomes the Buddha.
- 454 BCE: People begin to follow the teachings of the Buddha.
- 410 BCE: Gautama dies.
- 386 BCE: Buddhism separates into two different lines.
- 269 BCE: Emperor Asoka begins to spread Buddhism across India.
- 200 BCE – 1200CE: Buddhism spreads along trade routes, reaching many other countries, including Sri Lanka, China, and Indonesia.

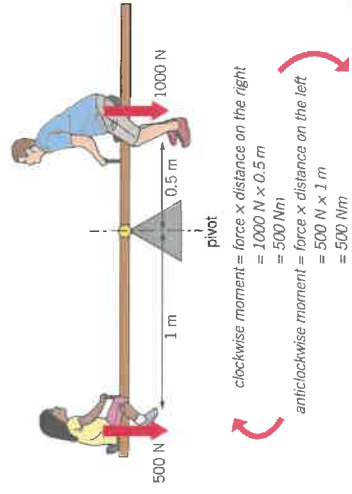
Friction and drag

- **Friction** is a force which will slow down a moving object due to two surfaces rubbing on one another
- The greater the friction, the faster an object will slow down, or the greater the force it will need to overcome the force of friction. For example, it is easier to push a block on ice than on concrete, as the ice is smoother and causes less friction
- When an object is moving through a fluid, either liquid or gas, the force which slows it down is known as **drag**
- The fluid particles will collide with the moving object and slow it down, meaning that more force is needed to overcome this
- Both drag and friction are **contact forces** as the two surfaces in friction, and the object and fluid particles in drag, come into contact with one another
- Both drag and friction are forces so they are measured in **Newtons (N)**



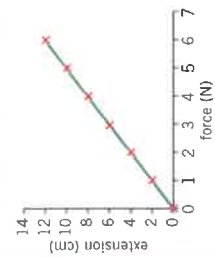
Turning forces

- A **moment** is the turning effect of a force, it is measured in Newton meters
- We can calculate a moment with the equation:
moment (Nm) = force (N) × distance from the pivot (m)
- The size of the moment will increase as the distance from the **pivot** or the size of the force increases
- When an object, such as a seesaw, is balanced, the clockwise and anticlockwise moments will be equal and opposite, which is known as **equilibrium**
- When forces are equal and opposite to each other, there is no **resultant force**

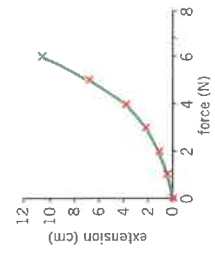


Hooke's law

- Some objects, like springs, can be stretched, the amount that they stretch is known as their **extension**
- A force needs to be applied to the spring for it to be stretched, we can achieve this by adding masses which exert the force weight
- A spring will continue to stretch until it passes its **elastic limit**
- If an object obeys **Hooke's law** it will have a **linear relationship**: if the force applied to the spring is doubled, the extension will double too
- If an object does not obey Hooke's law, it will not have a linear relationship



This graph shows how the extension of a spring changes as you pull it



This graph shows the relationship between force and extension

Gas pressure

- **Gas pressure** is caused by the particles of a gas colliding with the wall of the container which they are in
- The more often that the particles collide with the wall of the container, the higher the pressure of the gas will be
- Gas pressure can be increased by:
 - Heating the gas so the particles move more quickly and collide with the container with a higher energy
 - Compressing the gas so there are the same amount of particles within a smaller volume meaning that there are more collisions
 - Increasing the amount of particles within the same volume so there are more collisions
- **Atmospheric pressure** is the pressure which the air exerts on you all of the time, nearer the ground there are more particles weighing down on you so the pressure is greater
- The higher you go, the smaller the atmospheric pressure, this is because there will be less particles weighing down on you

Pressure in solids

- The pressure which is exerted on a solid is known as **stress**
- The greater the area over which the force is exerted over, the lower the pressure, this is why snowshoes have a large area to prevent you sinking into the snow
- **Pressure** can be calculated using the following equation:
pressure = $\frac{\text{force}}{\text{area}}$

Pressure in liquids

- Liquids are **incompressible**
- The particles in a liquid are already touching, meaning that there is little space between them to compress
- Liquids will transfer the pressure applied to them, this is seen in hydraulic machines
- As the ocean gets deeper, the pressure will increase, this is because the pressure depends on the weight of the water above
- The greater the number of water molecules above, the higher the pressure will be

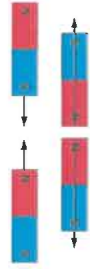
Key terms

Make sure you can write definitions for these key terms.

- air resistance
- atmospheric pressure
- contact force
- drag
- elastic limit
- equilibrium
- extension
- friction
- gas pressure
- Hooke's law
- incompressible
- linear relationship
- moment
- newton
- pivot
- pressure
- resultant force
- stress

Magnets

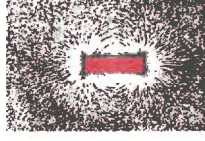
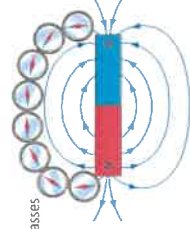
- A **magnet** has two poles, a north and a south pole
- North poles **attract** south poles
- South poles **attract** north poles
- North poles **repel** south poles
- South poles **repel** north poles



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

Magnetic fields

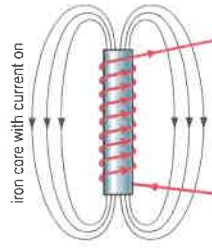
- A **magnetic field** is an area where a magnetic material will experience a force
- A **permanent magnet** will have its own magnetic field
- Magnetic field lines** represent the field, these always travel out of the north pole of the magnet, and into the south pole
- The closer together the magnetic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



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

Electromagnets

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



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

Key terms

Make sure you can write definitions for these key terms.

attract core circuit breaker electromagnet electric bell loudspeaker magnet magnetic pole magnetic field lines magnetic material permanent magnet repel

Using electromagnets

Electric Bells

The electromagnet attracts the iron armature
 When it moves, it breaks the circuit, no longer allowing current to flow



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

The bell is rung once

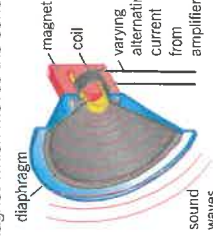
The circuit is complete again, restarting the process

Circuit breakers

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

Loudspeakers

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



Elements and atoms

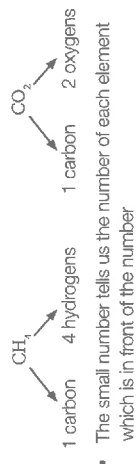
- An **element** is a substance that only contains one type of atom, it is found on the **Periodic Table**
- Each element has its own unique chemical symbol which is the same in every language, these are also found on the Periodic Table
- An **atom** is the smallest part of which an element can be broken down into
- As there are around 100 types of elements that can occur naturally, there are around 100 different atoms

Groups and periods

- **Groups** are the columns in the Periodic Table, they go downwards
- **Periods** are the rows in the Periodic Table, they go sideways
- Elements in the same group normally follow the same trends in properties such as melting point, boiling point and reactivity
- By placing these elements into these groups, scientists can make predictions about their properties

Compounds

- **Compounds** are formed when two or more different elements chemically bond together
- The compound will have different **physical properties** to the elements which make up the compound, for example water is a liquid, but it made from oxygen and hydrogen which are both gases
- Compounds are hard to separate and need a chemical reaction to do this
- When naming a compound, we always mention the metal first and the non metal second
- The name of the metal will not change but the name of the non metal will, for example oxygen can change to oxide
- Chemical formulae tells us how many atoms of each element are in the compound in relation to each other



Polymers

- **Polymers** are long chains of groups of atoms which are repeated many times
- Natural polymers are not man-made and include wool, cotton, starch and rubber
- Synthetic polymers are man-made and include polythene, polystyrene and nylon

Key terms

Make sure you can write definitions for these key terms.

atom alkali metals

compound

noble gas

displacement reaction

period

group

physical properties

polymer

Group 0

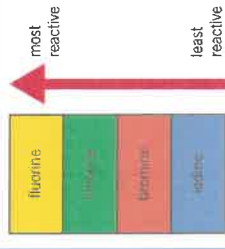
halogen

	1	2	3	4	5	6	7	0
	H	He						
	Li	Be	B	C	N	O	F	Ne
	Hf	Mg	Al	Si	P	S	Cl	Ar
	K	Ca	Sc	Ti	V	Cr	Mn	Fe
	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru
	Cs	Ba	La	Hf	Ta	W	Re	Os

Group 0

- **Group 0** elements are known as the **noble gases**
- They are all non metals with low melting and boiling points, meaning all are gases at room temperature
- The boiling point decreases going down the group
- All of the group 0 elements are unreactive
- When electricity is passed through the gas, they emit a brightly coloured light, this can be seen in neon signs

Halogens



Group 7

- **Group 7** elements are also known as the **halogens**
- They share similar properties with other non metals such as:
 - Having low melting and boiling points
 - Not conducting electricity
 - Moving down the groups the elements have an increased melting and boiling point
- The halogens also react in a similar way to one another, for example with iron:
 - iron + chlorine → iron chloride
 - iron + bromine → iron bromide
- Halogens can undergo **displacement reactions**, this is where a more reactive halogen will take the place of a less reactive halogen
- The most reactive halogens are at the top of the group, and the least reactive halogens are at the bottom of the group
- If the most reactive halogen is on its own, it will take the place of the less reactive halogen in a compound
$$\text{calcium bromide} + \text{chlorine} \rightarrow \text{calcium chloride} + \text{bromine}$$

Group 1

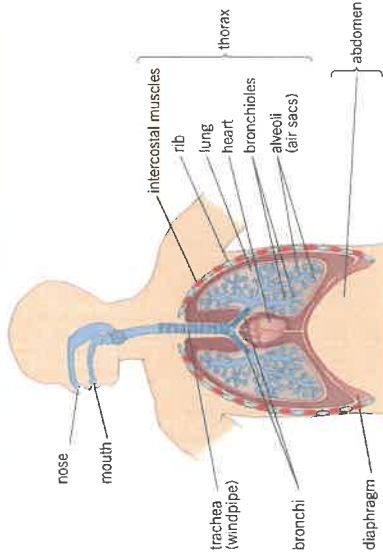
- **Group 1** elements are also known as the **alkali metals**
- They share similar properties with other metals such as:
 - Being shiny when freshly cut
 - Being good conductors of electricity and heat
 - Group 1 metals are much softer than other metals and also have much lower melting and boiling points
 - Group 1 elements react with water to form alkali solutions
 - lithium + water → lithium hydroxide + hydrogen
 - metal + water → metal hydroxide + hydrogen
- The further down the group that the metal is, the more vigorous the reaction will be. This is called a **trend**
- Another trend seen in Group 1 is with the boiling and melting points: the further down the group, the lower the boiling and melting points are

B2 Chapter 8: Organisms

Knowledge organiser

Gas exchange and breathing

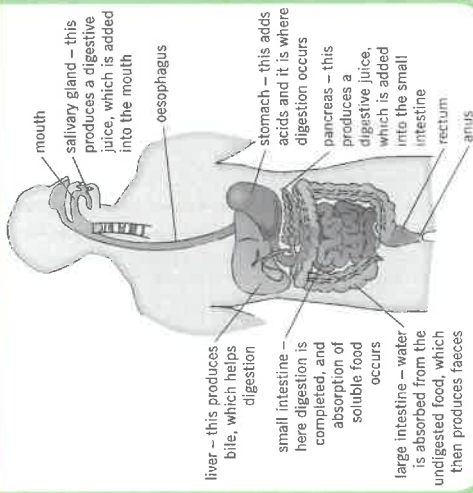
- **Gas exchange** is the process of taking in oxygen and giving out carbon dioxide
- This occurs in the **respiratory system**
- The proportions of gases in the air we **inhale** and **exhale** changes due to **respiration** and producing carbon dioxide



What happens when you breathe in and out

when you breathe in (inhale)	<ul style="list-style-type: none"> • muscles between the ribs contract • ribs are pulled up and out • diaphragm contracts and flattens • volume of the chest increases • pressure inside the chest decreases • air rushes into the lungs
when you breathe out (exhale)	<ul style="list-style-type: none"> • muscles between ribs relax • ribs are pulled in and down • diaphragm relaxes and moves up • volume in the chest decrease • pressure inside the chest increases • air is forced out of the lungs

The digestive system



Enzymes

- **Enzymes** are biological **catalysts**, they speed up the digestion of **nutrients**
- Each enzyme is specific to each nutrient
- The way the enzyme and nutrient bind with each other is called a **lock and key model**
- **Carbohydrases** break **carbohydrates** down into simple sugars
- **Proteases** break **proteins** down into amino acids
- **Lipase** breaks **lipids** (fats) down into fatty acids and glycerol



Drugs

- **Drugs** are chemicals that affect the way that our body works
- **Medicinal drugs** are used in medicine, they benefit health
- If medicinal drugs are not taken in the correct way they can harm health
- Examples include antibiotics and pain killers
- **Recreational drugs** are taken by people for enjoyment
- Recreational drugs normally have no health benefits and can be harmful for health
- Examples include alcohol and tobacco
- **Drug addiction** is when your body gets so used to a drug, it feels it cannot cope without it
- If someone who has an addiction stops taking the drug, they will experience **withdrawal symptoms**

Nutrients

- A **balanced diet** involves eating the right amount of nutrients for your body to function
- Not eating enough of a nutrient means you have an **unbalanced diet**, and this can lead to a **deficiency**

Nutrient	Role in your body
carbohydrates	main source of energy
lipids	fats and oils provide energy
proteins	growth and repair of cells and tissues
vitamins and minerals	essential in small amounts to keep you healthy
water	needed in all cells and body fluids
fibre	provides bulk to food to keep it moving through the gut

Key terms

Make sure you can write definitions for these key terms.

- addiction balanced diet carbohydrate nutrient medicinal drug mineral protease protein recreational drug respiration respiratory system withdrawal symptoms
- enzyme exhale fibre gas exchange inhaled lipid
- deficiency drug enzyme fibre gas exchange inhaled lipid
- carbohydrases catalyst deficiency drug enzyme fibre gas exchange inhaled lipid