# Knowledge Organiser Booklet Year 9 Term 3

Our working memories can only store a limited amount of information, whereas our long term memories can store limitless information. To learn successfully, we need to store core knowledge into our long term memories, so we can retrieve it when we need it.

For instance if you are at work or in the shops and need to work out a 25% discount, you cant memorise 25% of every number, so you need to be able to quickly recall the method for calculating a percentage. Committing core knowledge to our long-term memories is a life-hack. It makes thinking about difficult things easier.

Using a knowledge organiser with regular retrieval activities is a way for you to store core knowledge & subject specific words, into your long term memory so it is there when you need it.

Contents

Clicking on the subjects below will take you directly to the knowledge organisers for each subject. These are to support learning that has taken place this past term. Use these to help reinforce the key knowledge. Use some of the strategies explained in the introduction to help you retain this important information.

Blended Learning Expectations

Make sure you have **access to a computer at home** (If you don't please make pastoral staff aware or email langley.homelearning@taw.org.uk)

Download Microsoft Teams on both your phone and computer. (If you don't know how to do this please ask a member of staff or do this in your next computing lesson)

Spend at least 2 hours a week using teams EVERY WEEK. (Engagement in teams can be tracked and monitored). You need to be accessing each of your class teams and recapping on the previous learning or completing additional tasks set by your class teacher.

If you have any issues with teams (e.g. login problems or missing classes etc then please email langley.homelearning@taw.org.uk)

Teams is a tool to support ongoing learning and should **only be used for educational purposes.**

Download and Install
Microsoft Teams

	LOOK, COVER, WRITE, CHECK	DEFINITIONS TO KEY WORDS	FLASHCARDS	DUAL CODING
STAGE 1	Look at & study an area of your knowledge organiser	Write down the key words & definitions	Write key words, dates/formulae, equations/quotes on one side & answers on the other	Draw pictures/diagrams/ cartoon strips
STAGE 2	Cover up your knowledge organiser and write everything you remember	Cover up the definitions. How many can you remember? Repeat.	Include pictures or diagrams if it helps. Read through them.	Label your pictures/diagrams/ cartoon strips
STAGE 3	Check. Correct mistakes in green and add anything you missed. Repeat	Check. Correct mistakes in green pen. Which ones do you find hard to remember?	Test yourself and get someone to test you.	Explain out loud to yourself or family/friend what your images show

	SELF QUIZZING	MINDMAPS	PAIRED RETRIEVAL	SPEAK, COVER, WRITE, CHECK
STAGE 1	Use your knowledge organiser to create quiz questions.	Create a mindmap of everything you can remember from your knowledge organiser	Give a family member/friend the knowledge organiser to hold	Read out loud the information from the knowledge organiser several times.
STAGE 2	Write down the answers to your quiz	Check your knowledge organiser & use a green pen to make any corrections.	Get them to test you using the knowledge organiser	Cover up your knowledge organiser and write everything you remember
STAGE 3	Keep self-quizzing until you get all the answers correct	Add additional information to your mindmap or make connections to other knowledge	Write down your answers to their questions	Check. Correct mistakes in green and add anything you missed. Repear.

How to complete homework your teacher has set

Retrieval Placemat

Look at your knowledge organiser. Now cover it up and write down
Key vocabulary & definitons from memory:

First time: Look.
Cover. State 3 facts

Second time: Look.
Cover. State 3 facts

Third time: Look.
Cover. State 3 facts

Check & green pen your answers

Look at the knowledge organiser again. Now cover it up and
without looking, explain a concept or idea in your own words

Re-read your answer above. Look at the knowledge organiser
again. Now cover it up and improve on your previous explanation in
green pen.

Retrieval Relay

Look at your knowledge organiser. Now cover it up.

First time: Write down everything you can remember	Second time: Look. Cover. Write down everything you can remember	Third time: Look. Cover. Write down everything you can remember

Write down everything here that you didn't remember:

Vocabulary focus 1

Look at your knowledge organiser. Select a key word and write it here:

Write a definition of the key word in your own words - not the same as the one on the knowledge organiser:	Write a sentence with the key word in it:	Create a question where the key word is the answer:

What other words are connected to this key word?

Draw a picture or diagram to help you remember this key word:

Vocabulary focus 2
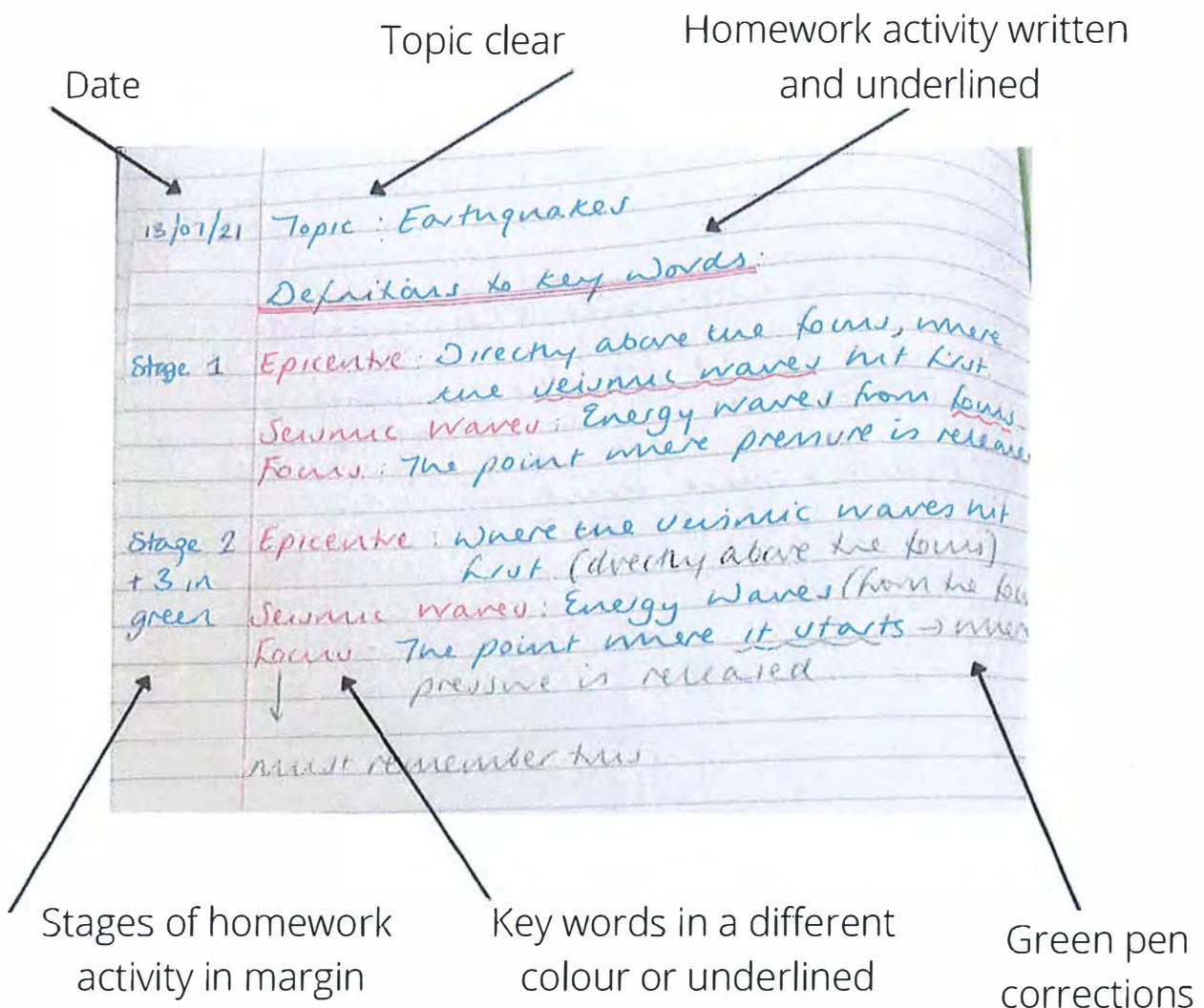
Definition: Characteristics:

Key word:

Examples: Non-examples:

What should my knowledge organiser homework look like?

Date

Topic clear

Homework activity written and underlined

13/07/21   Topic : Earthquakes

Definitions to key words:

Stage 1   Epicentre: Directly above the focus, where the seismic waves hit first
Seismic Waves: Energy waves from focus
Focus: The point where pressure is released

Stage 2   Epicentre: Where the seismic waves hit
+ 3 in   first (directly above the focus)
green   Seismic waves: Energy waves (from the focus)
Focus: The point where it starts → where pressure is released

must remember this

Stages of homework activity in margin

Key words in a different colour or underlined

Green pen corrections

What should my knowledge organiser homework look like?

Date

Homework activity written and underlined

Key words in a different colour

Stages of homework activity as subtitles

Green pen corrections

20/9/21 Retrieval Placemat - Drama

Pitch - How high or low your voice is
Pace - The speed you speak at
Pause - A period of silence

1st line - 3 facts:
1) Power is not the same as volume. You can have a powerful voice at a low volume.
2) Accents are local to an area e.g Welsh
3) Articulation - pronouncing words carefully

2nd line - 3 facts
1) The speed you move your body at is called pace
2) How tightly you hold your muscles is called tension
3) Eye contact is when you look at someone object. Audience member

3rd line - 3 facts.
1) Posture is how you sit or stand - how you hold your body
2) How you walk is called your gait
3) Gesture is a way of moving that means something. - usually the movement of your head, hand e.g thumbs up.

In my own words
There are different vocal + physical techniques that can be used to create different characters.
2nd draft There are different vocal + physical techniques that can be used to create different characters e.g the pace + volume of you your facial expressions.

Art

Year 9: Unit 5: Street Art

Street Art

Threshold Concept (TC39) - Understand the difference between Street Art and Graffiti.
Threshold Concept (TC28) - Understand the main components of an artist research page.
Threshold Concept (TC40) - Knowledge and understanding of the contemporary artist, Banksy.
Threshold Concept (TC41) - Understand that there may be underlying reasons why some art is produced, not just solely for its appearance.
Threshold Concept (TC42) - Knowledge and understanding of the contemporary artist, Jon Burgerman.
Threshold Concept (TC43) - Understand that art can be representational of a person's character.

Formal Elements of Art
Colour, Line, Shape, Form, Tone, Texture Pattern

Bronze
… understand what 'Street Art' is.
… understand what 'transfer' means.
… name a famous Street Artist.
… understand what an artist research page is.
… understand how to cut out appropriate images.
… select basic information and write this on the page.
… recognise Jon Burgerman's art style.

Studying the work of different artists and completing an artists research page helps to give you ideas for your own work perhaps through similar subject matter, theme or style.

Keywords
Street Art
Graffiti
Urban Art
Permission
Commission
Offence
Merchandising
Ellipse
Symmetrical

What is Street Art and Graffiti?

Street art or Graffiti is also known as **Urban Art**.

Street art has a history of approval for improving and uplifting areas of a town or city.

Street art is legal artwork where permission to mark the surface has been granted by the owner of the property and sanctioned by the authorities.

Graffiti is an offence of criminal damage. If prosecuted, the offender could face a fine or even imprisonment.

Urban Art — Graffiti | Street Art

Graffiti is said to be the heartbeat of society

Political or social commentary, slogans of protest, these were the originators of modern graffiti in the 70's, such as tags or names on walls, individuals wanting their names to be visible.

In the 80's, names got bigger, they started using 2 colours and it suddenly exploded into an art movement bringing messages of beauty to a public audience.

Street art is a form of art that is displayed in public on surrounding buildings, trains, bridges and other publicly viewed surfaces. But unless it is commissioned, it is illegal.

Street artist Keith Haring also started merchandising his own art which made it available to the public at affordable prices.

Keith Haring   Jean-Michel Basquiat

SCAN ME

Banksy

SCAN ME Noodling and doodling with Jon Burgerman

Jon Burgerman talking about his work **SCAN ME**

Students design a 'Tag' using their initials and learn 4 different transfer techniques.

Design a '**Tag**' using highlighter pen and fineliner pen

NG → NG
NG ← NG

SCAN ME How to cut neatly using scissors Watch from 1:33 to 2:50

Street Art
Lesson Objective
To learn about the artist, Jon Burgerman and produce an A4 research page.

Keywords
background   title   facts   opinion   research   images   copy
analysis   mood   content   form   context   process
line   tone   colour   pattern   texture   shape   form

Lesson Objective
To learn to different transfer techniques.

Artist – Tom Quigley (Youtube)
Four Transfer Techniques

(1) **Sellotape Transfer**
(2) **Newspaper Text Transfer**
(3) **Carbon Transfer**
(4) **Acrylic Transfer**

https://www.youtube.com/watch?v=k0_WT1sN6xc

SCAN ME

Grade 4 or lower	Grade 5 to 6	Grade 7 to 8
1) A basic **background** is produced.	1) A creative **background** is produced that links to the artist(s).	1) A very effective **background** is produced that links to the artist(s).
2) A basic **title** is produced.	2) A skilful and creative **title** is produced.	2) A very skilful and creative **title** is produced.
3) Keywords linked with **facts** about the artist are researched.	3) Keywords/sentences (**facts**) about the artist are researched.	3) Many interesting **facts** about the artist are researched.
4) There is a basic **opinion** about the artist's work.	4) There is an **opinion** about the artwork with reasons.	4) There is in depth **analysis** of the artwork (MC FC P) with **opinion**.
5) There is limited **research** and selection of images.	5) A range of different images are **researched** and selected.	5) There is evidence of in depth **research** when selecting images.
6) The **images** are arranged with some thought.	6) The **images** are well presented	6) **Images** are presented in a creative way.
7) There is a basic **copy** of the chosen image(s).	7) There is a skilful **copy** of the chosen image(s).	7) There is a very skilful and accurate **copy** of the chosen image(s).

Sellotape transfer

Transfer: to move someone or something from one place to another.

Year 9: Unit 6: Street Art

The Telford Langley School

Street Art
Threshold Concept (TC1) - Understand the elements of art and how these can be used to create a piece of artwork.
Threshold Concept (TC44) - Understand how to research using an internet search engine to enhance artwork.
Threshold Concept (TC45) - Understand that research can be used to develop ideas for a final outcome.
Threshold Concept (TC46) - Understand that a final outcome can be based around a person's identity e.g., personal interests, places, journeys, choices, values, beliefs, culture, hobbies, etc.
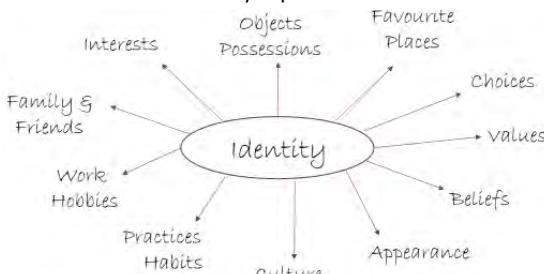
SCAN ME
Colour and emotions

Formal Elements of Art
Colour, Line, Shape, Form, Tone, Texture Pattern

Keywords
Street Art
Graffiti
Urban Art
Permission
Commission
Offence
MerchandisingEllipse
Symmetrical

How to cut neatly using scissors Watch from 1:33 to 2:50
SCAN ME

Bronze
… understand what a 'mindmap' is.
… remember the seven elements of art which are used in art.
… understand what 'composition' means.
… understand the key elements from the artwork of Jon Burgerman to inspire your personal outcome work.
… understand how to cut out images neatly.
… understand what 'acrylic paint' is.

Objects Possessions
Favourite Places
Interests
Choices
Family & Friends
Identity
Values
Work Hobbies
Beliefs
Practices Habits
Appearance
Culture
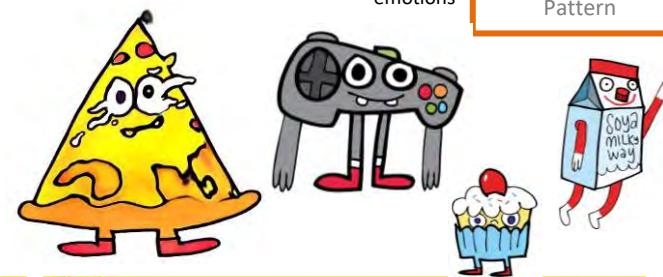
A mindmap helps you to connect ideas and experiences, identifying the relationships relating to a particular topic.
This will help to improve your creativity.

Acrylic paints are water-based but are water resistant when dry. They can be used thick like oil paints or watered down like watercolour paint.

Composition is the way in which different elements are arranged in a piece of artwork.

Task 1: Mindmap
Make a list of things linked to yourself.

Art and Crafts?   Other hobbies?
Sport?   Places?
Favourite Food and drink?   Pets?
Reading?   Personal Possessions?
Computer Games?   Clubs?
Social Media?   Shopping?
Anything else?   Music?   Brands?
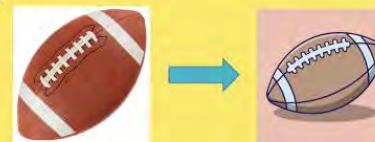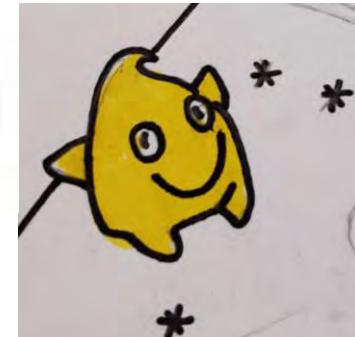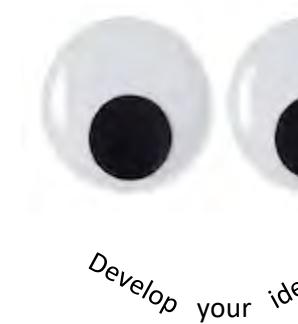
Task 2:
Now find an image for each of your listed words. (Internet? Books?)
For example, if you like sport (e.g. Rugby), you could find an image of a Rugby ball.
Draw each image in the style of Jon Burgerman. It may need to be simplified.

Think about what you have learnt about Jon Burgerman's style having completed the artist research page.

Develop your ideas

Computing

Look

Cover

Write

Check

Read through your knowledge organiser. Next, cover it up or put it away and try tho write down as many of the key facts that you can remember. Use your knowledge organiser to check the fact you have written down. Correct any you may have got wrong.

Computing Year 9 Unit:
Python programming with sequences of data
Part 2

Threshold concept—

- Can understand the fundamental principles of computer science, including abstraction, logic, algorithms, and data representation
- Can analyse problems in computational terms

Keyword	Definition
Sequence	One of the three basic programming constructs. Instructions that are carried one after the other in order.
Variable	A storage location with a name. The data in a variable can be changed after being initially set
Selection	One of the three basic programming constructs. Instructions that can evaluate a Boolean expression and branch off to one or more alterna-
Operators	Used to compare two expressions
Iteration	One of the three basic programming constructs. A selection of code that can be repeated either a set number of times (count-controlled) or a variable number of times based on the evaluation of a Boolean expression
Syntax error	An error that has occurred because the programmer has not followed the rules of the programming language

Lists

A list is a data structure that, in Python, can be used to store multiple pieces of data of the same or different types.

Key points about lists:

- The **append** list method can be used to add some data to the end of a list.

- The **remove** list method can be used to take some data out of a list.
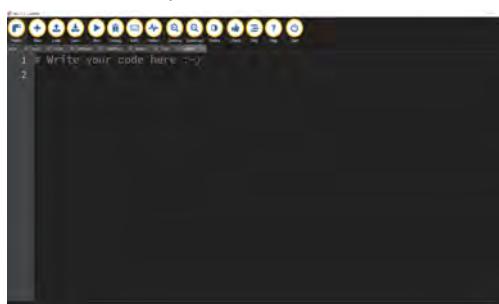
- **List indexing starts from 0** so when you want to access the first item in a list you need to use 0 as the index value (see Example 4 below).

- The **pop** method removes the last item from the list.

- The **insert** method can be used to add an item at a certain position in the list.

- The **sort** method can be used to get the list items in order.

- The **len** function can be used to find out how many items are in a list.

List examples

```
# Example 1 - Creating a new list
myShoppingList = ["Bread", "Apples", "Milk", "Cheese"]

# Example 2 - Adding to a list
myShoppingList.append("Chocolate")

# Example 3 - Removing from a list
myShoppingList.remove("Apples")

# Example 4 - Accessing a list item
print(myShoppingList[0])

# Example 5 - Removing the last item from a list
myShoppingList.pop()

# Example 6 - Adding an item at position 1
myShoppingList.insert(1, "Cake")

# Example 7 - Sorting a list
myShoppingList.sort()

# Example 8 - Checking the number of items in a list
numberOfItems = len(myShoppingList)

# Example 9 - Checking list membership
if "Chocolate" in myShoppingList:
        print("Yum!")

# Example 10 - Changing a list item
myShoppingList[0] = "Banana Bread"
```

Design and Technology

You can make your own questions. This process takes a lot of time, but if you create a study group you can each create a few questions and trade. However it is important that you write what Key facts or knowledge you expect to see in any answer.

All around the world, people choose to eat different food for many different reasons. One very important factor for most people is the cost of the food. There are ways we can cut down on food bills:

- ✓ If the food has been grown or reared locally, travelling and storage costs are reduced
- ✓ Check the price difference between value brands and premium products.
- ✓ Check out the price per 100g or per 100ml when choosing food
- ✓ Check the frozen and canned vegetable section and buy items that are cheaper so you always have a variety in the freezer and the cupboard.
- ✓ Bulk buy meat and fish and freeze in smaller portions until you are ready to use them. Take time to plan your meals and then compile a shopping list of everything you need.
- ✓ Using leftovers is a great way to save money and reduce food waste.

Threshold Concept:

Different food costs different amounts.

The way food is prepared and made, along with customs, and the use of local and seasonal ingredients, often combine to create dishes unique to a particular region. Understanding about global cuisine not only allows us to enjoy a huge range of styles and flavours, but also encourages dialogue around culture and inclusivity.

Threshold Concept:

Food is produced all around the world and that different countries and cultures eat different foods

Threshold Concept:

Allergies to food and food intolerances can cause a person to become unwell and that all prepacked food requires a food label that displays certain mandatory information.

Most people can eat food, without any problems, although they may have different likes or dislikes that influence what they choose. However, some people react to certain food and eating them may cause uncomfortable symptoms or, in rare cases, a severe illness. Food intolerance is the general term used to describe a range of adverse responses to food, including allergic reactions, adverse reactions resulting from enzyme deficiencies, pharmacological reactions and other non-defined responses. Allergy sufferers are protected by Natasha's Law, requiring food businesses to include full ingredients labelling on pre-packed for direct sale foods. This information helps people that have food allergies, intolerances or dietary needs to make safe and informed choices when they are choosing food items.

Threshold Concept:

Wasting food has environmental and economic

Every year in the UK, seven to ten million tons of food are wasted. It is thought that approximately 50% of the food wasted is still edible. The cost of food waste is significant – estimates show that it costs an average family £700 per year. Reducing the amount of food consumers waste not only has financial benefits but also environmental benefits. There are many ways in which consumers can help reduce food waste when buying food, cooking and storing food.

Threshold Concept:

There is a dependent relationship between diet, nutrition and health.

Poor diet is now the biggest risk factor for preventable ill health in England. A healthy diet helps children grow and develop properly and reduces their risk of chronic diseases. Adults who eat a healthy diet live longer and have a lower risk of obesity, heart disease, type 2 diabetes, and certain cancers. as well as affecting our physical health, what we eat may also affect the way we feel. Improving your diet may help to: improve your mood, give you more energy and help you think more clearly.

Unit guiding question: How can we share design ideas with other people?

The threshold concept that is truly essential to enable you to access future learning is …
To understand that ideas can be graphically communicated to other people.

To understand that appropriate 3D drawing techniques can enhance design ideas
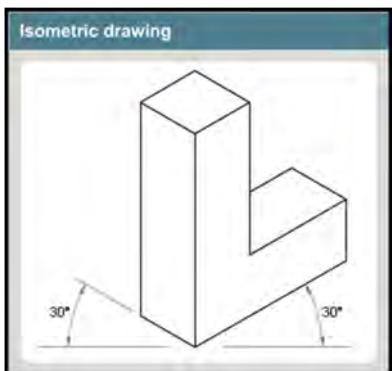
To understand that Computers can streamline the design process.

Follow this Link to tutorials on the Telford Langley School D&T YouTube channel.
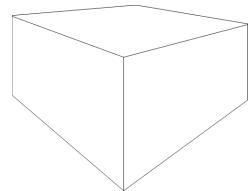
You Will:
- Be able to add simple notes and labels on designs.
- To recognise the different styles of 3D drawing commonly used.
- To be able to use basic rendering techniques.
- To know what CAD is.
- To be able to use CAD to produce simple shapes
- To be able to use drawings and CAD to produce a simple design

There are different ways to

Perspective drawing   **Oblique**

Isometric drawings do not attempt to show any perspective at all. This means that dimensions and proportions are shown accurately.
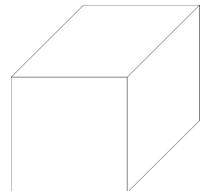
Isometric

Isometric drawing

The only two angles you need in isometric drawing are 30 degrees and 90 degrees. You never draw horizontally.

A grid is used to help you draw. Staying on the grid lines makes sure you are drawing at the correct angles.
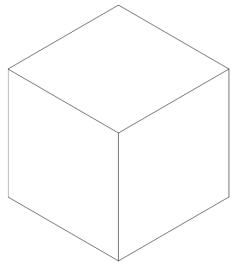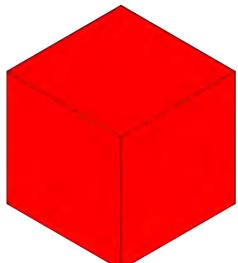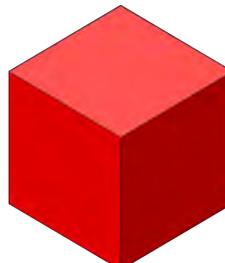
Enhancing drawings. Tone is used to enhance 3D drawings. Tone is how light or dark something is and by showing shadows and highlights we can make drawings look more realistic and 3 dimensional.

Direction of light source
Transitions in tone
Ambient Light
Highlight   Shadow side
Cast shadow
Reflected Light
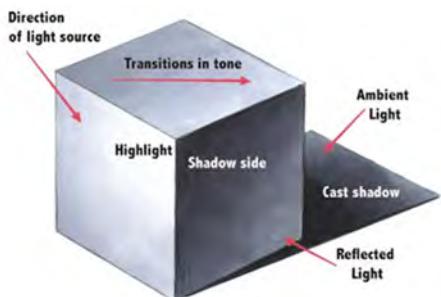
Line Drawing   Coloured   Rendered using shade and tone

THICK AND THIN LINE TECHNIQUE

Applying **thick and thin line technique** to a drawing is one of many ways that a designer can enhance the form (shape) of a design drawing.
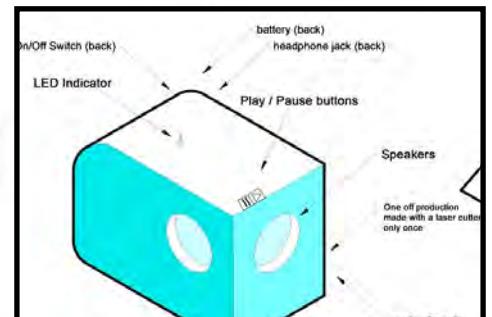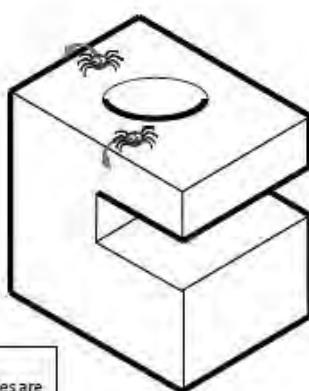
Look carefully at your drawing and imagine a spider walking over the shape.

If the spider is able to disappear around an edge, then this edge will be drawn with a thick line.

If the spider is still visible once it has crawled over an edge, then this edge will be draw with a thin line.

TASK
Go back to the three isometric drawings you did and add thick and thin lines.
Try adding a hole to one of them.

Top Tip!
Follow the spider and make sure the thick lines are correct before you put them in.

On/Off Switch (back)   battery (back)
headphone jack (back)
LED Indicator   Play / Pause buttons
Speakers
One off production made with a laser cutter only once
made of acrylic

Computer Aided Design (CAD) is used to make more accurate drawings and **ANNOTATION** is added to describe parts of our designs and communicate our ideas.

SCAN ME

SCAN ME

Threshold Concept

- To recognise there are different types of forces and these can effect the way a structure is designed to prevent failure.
- Materials are chosen for their physical and mechanical properties.
- How successful a structure is depends on how it is designed, constructed and used.

There are 4 types of structure:

Man made

Natural

_____

Frame

Shell

Any structure can be described using a combination of these

A Natural Frame Structure

A manmade Shell Structure

A Natural Shell Structure

A Manmade Frame Structure

All Structure do the following things:

- They Support something (Like a Pillar)
- They Span a Distance (Like a bridge)
- The Enclose a space (like a house)
- The Protect something (Like a car)
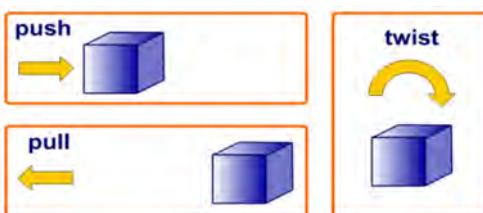
Using this information can you?

- Define what a structure is
- Name the different types of structure
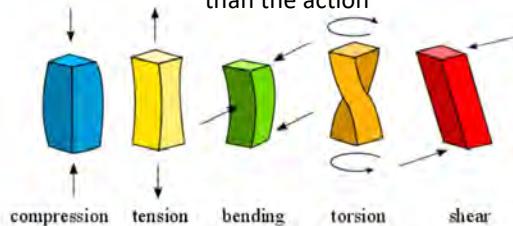
You should be able to use this knowledge to describe any structure. Eg A house is a manmade shell structure to protect people from the weather or a Tree is a natural frame structure to support leaves.
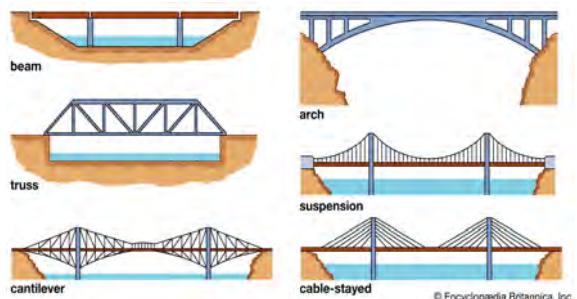
External forces are those that act on a structure to try and make it move. There are three basic forces Push, Pull and Twist. It can be hard to see forces acting on something but you can see the affect
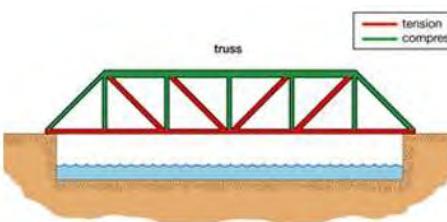
When the forces that push, pull or twist act on structure they can force that structure to change or undergo stress we use more technical language than just push, pull etc. We use language that refers to the effect (the internal forces) rather than the action

push

pull

twist

SCAN ME

compression   tension   bending   torsion   shear

A bridge is a Manmade, frame structure that spans a distance. There are many different types of bridge that all work in different ways

Understanding how forces act on a structure let us design bridges that can support a great deal of weight.

beam

truss

cantilever

arch

suspension

cable-stayed

© Encyclopædia Britannica, Inc.

truss

tension
compress

The parts in tension will have to be able to resist being stretched and those in compression will have to resist being squashed.

SCAN ME

Material Properties

Each material has properties that make them good for specific tasks, eg cotton is **lightweight** and **absorbent**. The properties of materials must be considered when designing a product, eg a steel pan handle would **conduct** too much heat and burn the user, whereas beech would be more appropriate as it is **tough** but a poor **conductor** of heat

These are some examples of material properties you would need to know

Conductivity.

Corrosion Resistance.

Density.

Ductility / Malleability.

Elasticity

Toughness.

Hardness.

Plasticity

SCAN ME
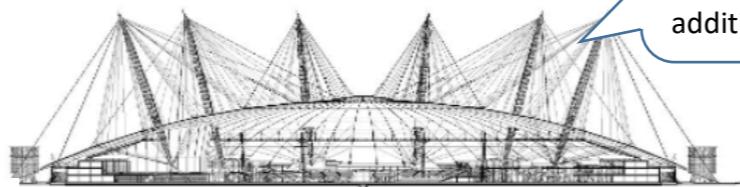
LEXICON Here are some of the words you will use in – Year 9 – RM.

Words can often have more than one meaning.

3D – 3 Dimension. A model is a 3D version of our 2D sketches

Develop – Add extra detail or information to a design or concept. Include fine detail, include additional purpose or function.

Recyclable – Capable of being returned into the raw material

Renewable – Capable of sustained use without running out.

Analyse – A detailed look at an item – to list the positive and negative points

Evaluate – Similar to analyse. Evaluate is to compare the information, detail or components to a set of measured values
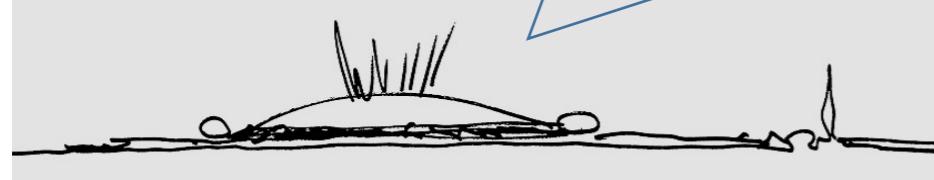
Solution – An answer to a problem. (Note: a liquid can also be a solution)

Annotate – adding a note to a diagram, sketch or drawing. It adds information which cannot be easily seen from the drawing itself. It is more than just a label!

**Extracted** – To remove from. To gain from i.e. "I extracted the information from the paragraph"

Source – Its origin or start. Where something came from originally (a material, a river or an idea).
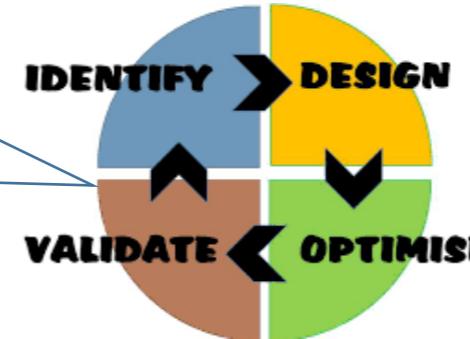
A speech bubble graphic is commonly found in comic books to show which character is talking.

Concept – An idea which at this stage is un-proven. A concept sketch shows the idea but with a basic level of detail
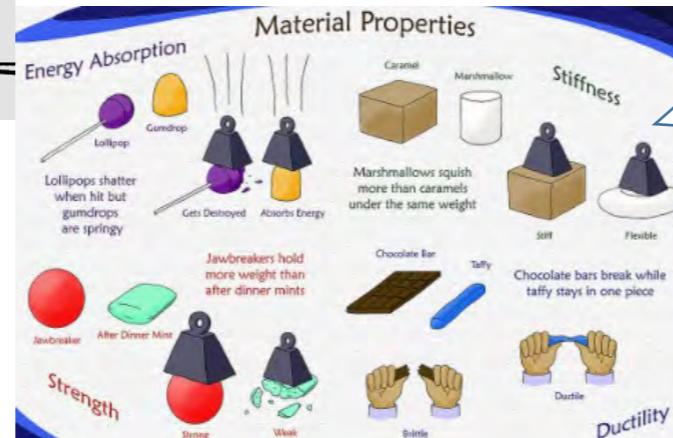
Iteration – Continual improvement. To look for and make improvements to an idea or concept – then to look for improvements to the improvements

IDENTIFY > DESIGN
VALIDATE < OPTIMISE
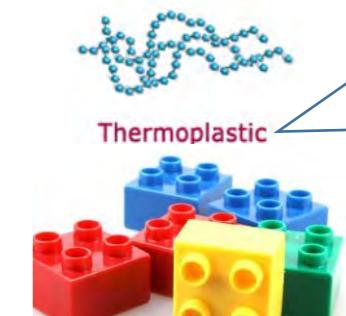
Sustainable – Can be used without running out (see renewable). The supply is manageable. A good example of a sustainable material is wood

Design Brief – The instructions which detail and describe what is required from the task

Material Properties

Energy Absorption

Stiffness

Strength

Ductility

Properties – Physical mechanical components such as; density, mass, hardness, and toughness which the material possesses
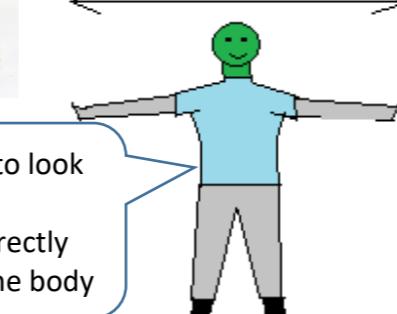
Thermoplastic

Thermoplastic – A polymer with weak cross link bonding, capable of being reheated and reshaped. **(RECYCLABLE)**

Design – An idea or a concept which has been drawn to include details and features

Proportion – Correctly sized to look realistic. I.e. the arms and legs are correctly proportioned to the rest of the body

Arm length

Height

Thermosetting plastic – A polymer with strong cross link bonding. **Cannot** be reheated or reshaped **(NON-RECYCLABLE)**
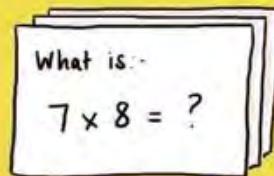
Thermoset

Drama

FLASHCARDS

Create your own flashcards, question on one side answer on the other. Can you make links between the cards?

What is:-

$7 \times 8 = ?$

You need to repeat the Q & A process for flashcards you fail on more frequently & less frequently for those you answer correctly

Create a flash card with all the key facts you want to learn (this can be drawn in your book). On the next page try writing down as many facts or as much of the knowledge as you can. If you find you are getting certain facts wrong then these are where you need to focus and relearn.

Devising and Performance

A. Physical Theatre

Physical theatre is a way of telling a story through physical movement.
It can include other techniques such as mime, gesture, music, dance, and visual art
Performers often use very little or no dialogue at all.
DV8 and Frantic Assembly are practitioners who work within this genre.

B. 5 W's

Who am I?
What am I doing?
Where am I?
When am I here?
Why am I doing it?
How will I show the audience my 5 W's?

C. Levels

Levels refer to the use of different heights, e.g., through standing or sitting, to convey meaning on stage. They can be used to create visual interest, but they can also signal status and character relationships. For example, a more dominant character may stand towering over a vulnerable character.

D. Proxemics

Proxemics is the use of space/distance between characters on stage. This can represent the relationship between characters

.

E. Role Play

Role play is when you are assigned a role and, during a small scenario, act as you think the person, they are being would act in such a situation.

F. Storytelling

Storytelling is the interactive art of using words and actions to reveal the elements and images of a story while encouraging the listener's imagination.

G. Physical Skills

Body Language	How an actor uses their body to communicate meaning. For example, crossing your arms could mean you are fed up.
Posture	The position an actor holds their body when sitting or standing. For example, an upright posture.
Gait	The way an actor walks.
Facial Expressions	A form of non-verbal communication that expresses the way you are feeling, using the face.
Gestures	A movement of part of the body, especially a hand or the head, to express an idea of meaning.
Stance	The way you position yourself when standing to communicate your role. An elderly person would have a different stance to a child!

H. Vocal Skills

Projection	Ensuring your voice is loud and clear for the audience to hear.
Volume	How loudly or quietly you say something. (Shouting, whispering).
Tone	The way you say something to communicate your emotions. (e.g., angry, worried, shocked tone of voice).
Pace	The speed of what you say.
Pause	Moments of pause can create tension or show what you are thinking.
Accent	Use of an accent tells the audience where your character is from.
Pitch	How high or low your voice is.
Emphasis	Changing the way, a word or part of a sentence is said, to emphasise it. (Make it stand out).

I. Stimulus

A stimulus is a starting point to generate ideas. It may be a picture, song, poem, short story, object, or even just a word!

English

You can make your own questions. This process takes a lot of time, but if you create a study group you can each create a few questions and trade. However it is important that you write what Key facts or knowledge you expect to see in any answer.

Threshold Concept- Year 9- Conflict Poetry and Romantic Poetry:

TC1 - Understanding texts

TC2 - Demonstrate an appreciation of the writer's craft through analysis and critically evaluative comments.
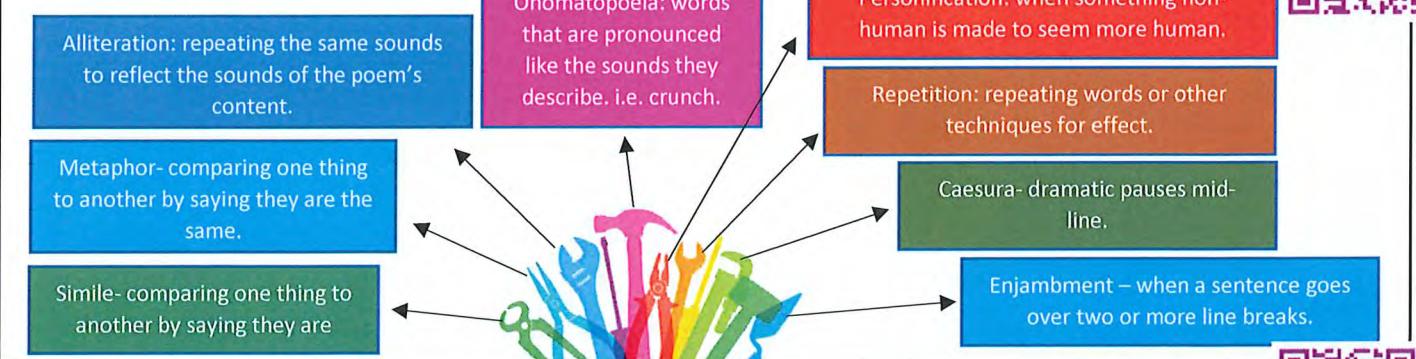
TC3 - Show understanding of the relationships between texts, and the contexts in which they were written.

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1 sentence summaries of each poem: Video of all poems summarised (if on MS Teams) = **Summary of the Poems.**

The conflict poems

The Manhunt – a woman hunts for her husband, who has been come back from war a different man.

The Soldier – a sonnet about the glory of dying in battle.

A Wife in London – a woman receives a letter about the death of her husband who was fighting in The Boer War.

Dulce Et Decorum Est – a soldier writes about how horrible WW1 truly is.

Mametz Wood – a poem about farmers digging up soldiers' bodies in an old battlefield.

The Romantic poems.

Sonnet 43 – a 14 line poem that lists all the way the voice loves someone.

London – the poet writes about the disgusting things he can see and hear in the city.

She Walks in Beauty – the poet writes about the beautiful of a grieving woman.

To Autumn – a poem dedicated to all the greatness of the season.

Ozymandias – a sonnet set in a desert about how powerful people all eventually lose their power.

You should use this info to get the base knowledge needed for each poem.

Using this information can you:
• Recount the main idea from each poem?
• Begin to recount quotations/words/the background in the poems?

E.g. London is a poem about all the wrong things the poet sees in the capital of England.

How to analyse the poet's choices- common poetic features writers use on purpose.

Can you identify these in each of the poems? i.e. Dulce Et Decorum Est uses a simile in the line "like a devil's sick of sin."

Onomatopoeia: words that are pronounced like the sounds they describe. i.e. crunch.

Personification: when something non-human is made to seem more human.

Alliteration: repeating the same sounds to reflect the sounds of the poem's content.

Repetition: repeating words or other techniques for effect.

Metaphor- comparing one thing to another by saying they are the same.

Caesura- dramatic pauses mid-line.

Simile- comparing one thing to another by saying they are

Enjambment – when a sentence goes over two or more line breaks.

Linking the content of the poem to the writer's life/ the history behind it!

This links to the context of the poem, because...

Key terms for conflict poetry:

Patriotism – national pride.

Propaganda – misleading writing that encourages people to think/feel/do something politically.

Shell shock/PTSD – When your mind relives past traumatic events, through memories and nightmares.

What the Romantic poets loved/hated:

Loved	Hated
Nature	Factories
Childhood	Growing up
Everyday people	The Establishment
Religion/God	Science
The Past	Progress
Equality	Inequality

Using this information can you:
• Identify these beliefs/values/ ideas in the poem?
• Explain what the writer's views of those things are?
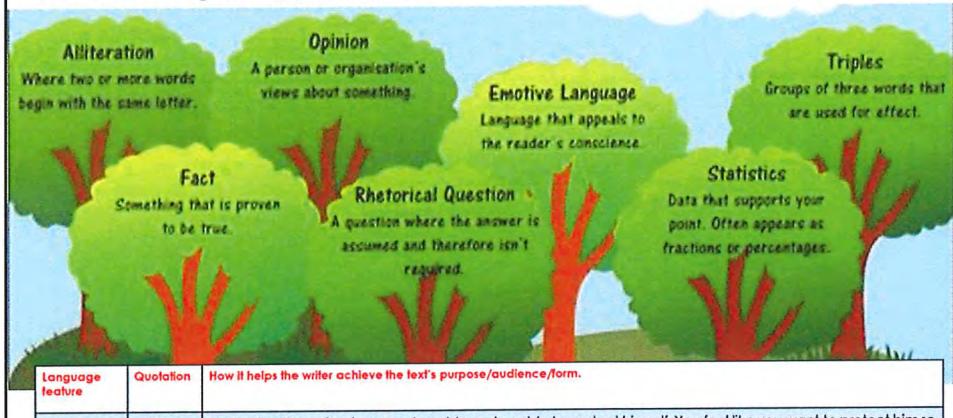
Threshold Concept- Year 9- Language- Non-fiction:

TC2 – Demonstrate an appreciation of the writer's craft through analysis and critically evaluative comments.

TC4 – Evaluate writer's craft including comparison skills.

TC5 - Communicate clearly, effectively, and imaginatively, selecting and adapting tone, style and register for different forms, purposes and audiences.

Demonstrating an appreciation of the writer's craft- non-fiction writers often use DAFOREST features:

Alliteration – Where two or more words begin with the same letter.

Opinion – A person or organisation's views about something.

Emotive Language – Language that appeals to the reader's conscience.

Triples – Groups of three words that are used for effect.

Fact – Something that is proven to be true.

Rhetorical Question – A question where the answer is assumed and therefore isn't required.

Statistics – Data that supports your point. Often appears as fractions or percentages.

Use this to get the base knowledge required to identify and analyse the writer's choices.

Before and during reading non-fiction, ask yourself:

- Can I find these features in the non-fiction I'm reading?
- How do these non-fiction features help the writer achieve the text's purpose, audience and/or form?

Language feature	Quotation	How it helps the writer achieve the text's purpose/audience/form.
Emotive language about the cat.	"Little Stevie."	This makes the animal seem vulnerable and unable to protect himself. You feel like you want to protect him so this persuades you to donate to the RSPCA. You feel sorry for him because he has broken his leg and upset as he appears defenceless. You feel angry that someone could have treated an animal this way and hurt something that was innocent. This persuades you to give more money to the organisation so they can bring animal abusers to justice.

Comparing writers' views on a shared topic.

MIKE

JAY

It's how the writers think/feel about the shared topic!

AND HOW THEY CREATE THEM

Snowboarders are the single most frustrating thing for me. They ruin my ski holidays- that's a fact. They weave between skiers as if they have no care in the world and carelessly plunge into innocent skiers regularly. I once saw a fully grown bloke crash at high speeds into a skiing toddler: how can anyone think they're acceptable after seeing that?

I've only snowboarded once, and I definitely got the bug. I'd always desperately wanted to from a young age and it definitely lived up to what I'd dreamt. It wasn't all amazing though: I broke a rib and the pain was like I'd been battered by a professional boxer. 100% I will be doing it again, though.

Mike uses...	Jay uses...
Carelessly - adverb.	I've got the bug- metaphor.
How can anyone think they're acceptable? - Rhetorical question.	The pain was like I'd been battered by a boxer- simile.
I once saw... - anecdote	It wasn't all amazing – opinion.

When writing your comparisons, remember to use comparative connectives, too.

Similarly, | Likewise, | Correspondingly, | In contrast, | On the other hand. | Differently,

E.G. Mike dislikes snowboarding (follow PEEZL). *In contrast,* Jay is much more of a fan of snowboarding (follow PEEZL)

Writing for different <u>purpose</u>, audiences and <u>forms</u>.

Common purposes (and some features to use to achieve these purposes in your writing).

Inform

Facts, statistics, adjectives.

Advise

Imperatives, direct address, positive language.

Persuade

Opinions, rhetorical questions, triples.

Review

Lots of opinions, descriptive language.

Non-fiction forms (and what makes them unique).

Letter	Article	Speech	Review
• Addresses • Signatures • 'Dear sir/madam.'	• Title • Byline • 5 paragraph structure	• Formal tone • 'I am speaking to you...' • DAFORREST features	• Star rating • Descriptions of experiences. • Opinions, opinions and more opinions.

Writing for different forms- try to write a persuasive speech about helping the homeless for these three forms:

Speech for a charity:

Before I begin, I would like to thank Homeless Helpers UK for this opportunity to speak to you today.

I am here in front of you to...

Article for newspaper:

[TITLE]

Picture this (describe life on streets).
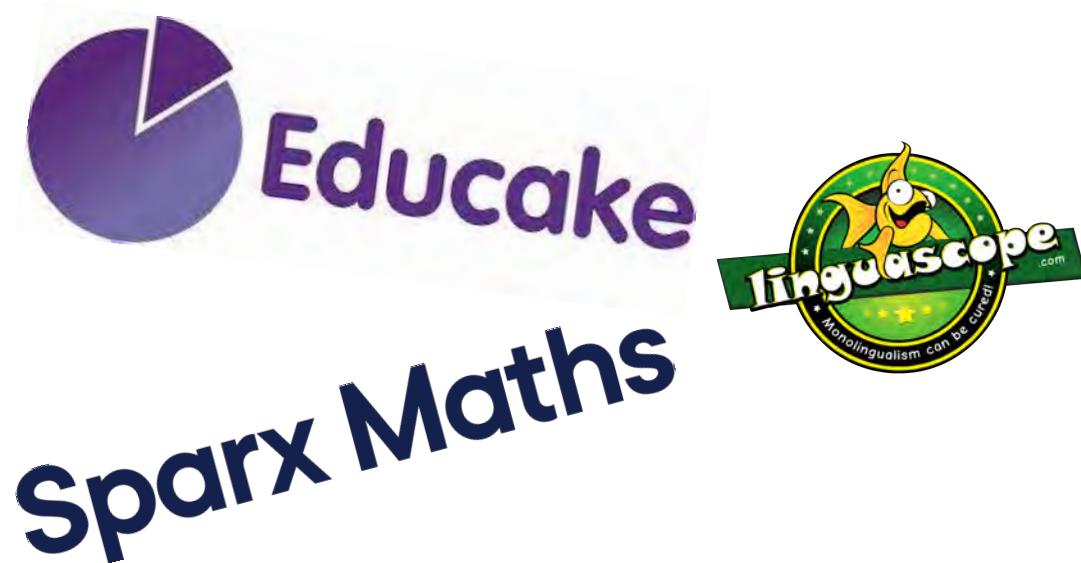
Letter to MP.

Dear Sir/ Madam,

I am writing to you to express my concerns with...

Before and during writing, ask yourself:

- Can/do I change how I write based on the purpose audience and form of the task?
- Can/do my non-fiction texts look and sound like the text I am meant to be writing?

Literacy

Make sure you are regularly testing your knowledge using the resources provided by the school on platforms such as Sparx, Educake and Linguascope. You will have been issued with user names and passwords to access your accounts.

Literacy Knowledge Organiser

Key Punctuation

Full Stop 🔴	**Question Mark** ❓
Full stops are used at the end of a statement.	Use these to indicate a question is being asked.
Comma 🎈	**Apostrophe**
Use commas in lists and to separate extra information.	Use apostrophes to show possession or missing letters.
Colon 🔵	**Semi-colon** ;
Use this to introduce a list or to join two parts of a sentence.	Use this to join two closely related, equally important parts of a sentence.
Exclamation Mark ❗	**Brackets** ( )
Use this to emphasise strong feelings such as shock, surprise or anger.	Use these to add extra, non-essential, information to a sentence.

Frequently Misused Words:

✗	✓
Alot	A lot
Would of	Would have
Eachother	Each other
Aswell	As well
Inbetween	In between

Homophones

There – Place or position.	**Where** – Place or position.
Their – belonging to them.	**Were** – Plural past tense of 'to be'.
They're – They are.	**We're** – We are/We were.
To – Preposition to show motion.	**Your** – belonging to you.
Too – Adverb meaning 'also'.	**You're** – You are.
Two – Number.	

Spelling Strategies

Pictures

H + 🔊 ear = hear

Invent Mnemonics
Accommodation = Cosy Cottages; Magnificent Mansions 🏠

Necessary = 1 collar, 2 socks 🧦

Critical self-checking

Does it look right?

Syllables

Ad – ver - tise - ment

Letter Pattern Links

light   bright   sight

fight   might

Other versions of the word
 definite, finite, finish

Word origins
 satis – enough

 bicycle – two wheels

Dictionary 📖

Words within words
business –

bus in ess

separate –
there's a rat in separate

Look,

Say,

Cover,

Write,

Check
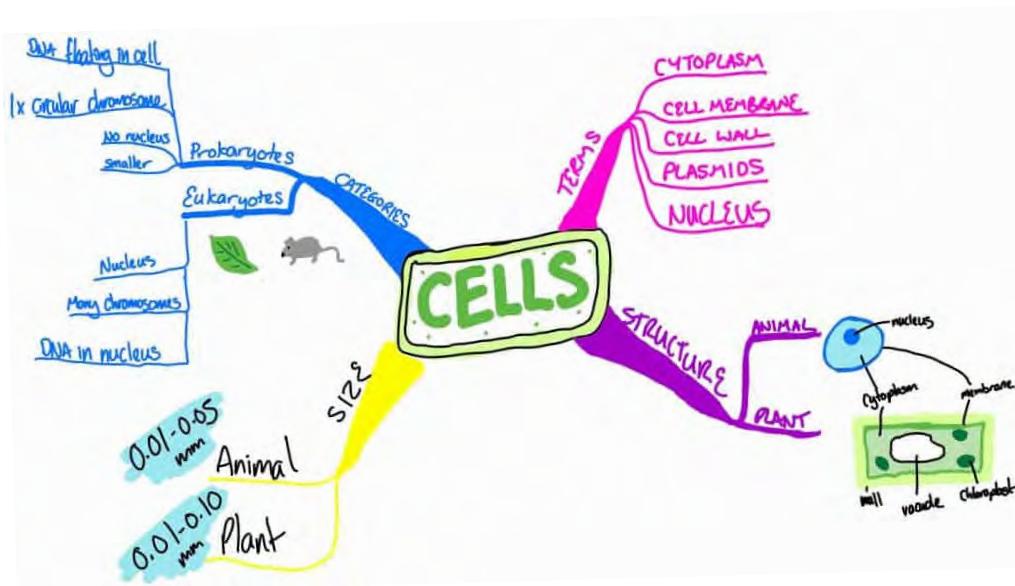
Parts of a sentence: subject, verb, object.	**Examples:** Every sentence must have **a subject** and **verb**.
subject: the person or thing carrying out the action. object: the person or thing that receives the action of the verb.	John ran to the shops. The opera was sung by the soprano.
Active Voice: When the subject of a sentence performs the verb's action, we say that the sentence is in the *active voice*.	**Passive voice:** When the subject is acted on by the verb. The passive voice is always constructed with a different form of *to be* plus the verb's past participle and contains by.
Arthur read an interesting novel.	An interesting novel *was* read by Arthur.
The progressive tense: a verb **tense** used to show an ongoing action in progress at some point in time.	**Examples:** The verbs in **the progressive form** use a **form** of "to be" + the present participle (an -ing verb).
Past progressive: contains **was, were** + an -**ing** verb.	She **was playing** football. We **were eating** dinner.
Present progressive: contains **is, are, am** + an –**ing** verb.	He **is reading** a book. They **are making** a cake. I **am painting** a picture.
Main clause: a clause that can form a complete sentence standing alone. Contains a subject and verb. If the main clause comes first no comma is needed.	**Subordinate clause:** a clause, typically introduced by a subordinating conjunction, that adds extra information and cannot stand alone.
I still had energy for my lessons. **I crept inside the room.**	I still had energy for my lessons **even though I cycled to school.** **Although I was feeling scared,** I crept inside the room.
Synonyms: words that have the same or similar meanings.	**Antonyms:** words that have the opposite meaning
talk-speak big-large	hot-cold light-dark

|	
Hyphens: are used to combine words that have a combined meaning or are linked in the grammar of a sentence. They help avoid confusion.	**Examples:** three-year-old rock-forming minerals long-term
Man eating shark- suggests the man is eating shark.	**Man-eating shark** – suggests the shark eats man.
Semi colons, colons and dashes can be used to separate boundaries between two clauses.	**Example:**
Semi colons(;) separate two main clauses and are normally used instead of a coordinating conjunction.	Some people like sweets; others like chocolate.
Colons(:) are used to introduce related information.	He was missing two things: his hat and his coat.
Dashes- can be used in place of a colon when you want to emphasize the conclusion of your sentence.	The house rule is simple- clean up after yourself.
Semi colons, colons and bullet points can also be used in lists.	**Example:**
Semi colons(;) they are also used to separate items in a list that contain commas already.	My dream band would be: Ray, vocals; Arthur, guitar and backing vocals; Rifat, bass; and Tom, drums.
Colons(:) they are also used to present a list.	I ordered the following: eggs, beans, sausage, bacon and a cup of tea.
Bullet points. make a list easier to read. There are no capital letters or full stops needed.	Remember to: • wash up everything in the sink • dry the dishes with the towel • pack everything away on the shelf
Subjunctive form: it is used to express wishes, hopes, commands, demands or suggestions. Usually it is the third-person **form** of the verb with the -s dropped, but the verb to be is a special case.	**Example:** I wish **I were** able to fly. It is vital that she **attend** the meeting. If I **were** you, I'd accept the offer. I demand that they **be** counted again.

Simple tenses	Example
Past - when an action took place at a specific time and is <u>now finished.</u>	I <u>walked</u> into the monster's cave.
Present - when an action is taking <u>place now.</u>	I <u>walk</u> into the monster's cave.
Future - when an action will take place <u>in the future.</u>	I <u>will walk</u> into the monster's cave.

Progressive tenses	Example
Past progressive - used for a continuous action in the past. **The past tense of 'to be'** + **present participle of the verb (verb ends in –ing).**	I was walking in the monster's cave. He/She was… You/We/They were…
Present progressive - used for an action that is happening at the moment of speaking. **The present tense of 'to be'** + **present participle of the verb (verb ends in –ing).**	I am walking in the monster's cave. He/She is… You/We/They are…
Future progressive - used for an action that is will be continuing in the future. **The present tense of 'to be'** + **present participle of the verb (verb ends in –ing).**	I will be walking into the monster's cave. He/She will be… You/We/They will be…

Perfect tense	Example
Past perfect - is used to say when an action was completed in the past. **The past tense of 'to have'** + **past participle of verb.**	I had walked in the monster's cave.
Present perfect - is used to say when: 1) An action has recently finished using 'just',	I have just walked in the monster's cave.
2) An action that has started in the past and is still going.	I have worked in the bank for five years.
3) The time period has not finished.	I have not seen her today.
4) When the time period is not important or known.	I have studied French, Russian and German.
5) The action is repeated in a period between the past and now. **The past tense of 'to have'** + **past participle of verb.**	I have eaten at that restaurant several times.
Future perfect –is used to say when an action will have been completed in the future. **The future tense of 'to have'** + **past participle of verb.**	I will have walked in the monster's cave.

Word class: Nouns

Proper noun - name, place, month- always starts with a capital letter	e.g. John, South Woodford, March <u>James</u> went to the supermarket.
Concrete nouns - things you experience through your five senses	e.g. table, pencil, chocolate, music In my bag I have many things including an <u>apple.</u>
Abstract nouns - ideas and concepts; you can't touch them	e.g. truth, justice, anger I feel <u>hope</u> for the future.
Pronoun - replaces a proper noun or common noun	e.g. he, she, they, it John had a bookmark; <u>he</u> used it in his book.
Collective noun - a noun that refers to a group of individuals	e.g. herd, class, pack A <u>gaggle</u> of geese were at the pond.

Word class:

Adjective - describes a noun	e.g. blue, small, gentle The <u>white</u> snow blanketed the floor.
Verb - an action, state or occurrence	e.g. run, was, work The sun <u>is</u> hot so I <u>play</u> in the garden.
Adverb - modifies the meaning of an adjective, verb or other adverb. Expresses manner, place, time or degree	e.g. slowly, regularly, soon I liked the cuddly rabbit <u>best</u>.

Word class: Determiner

	A modifying word that determines the kind of reference a noun or noun group has
Article - tells us the definite or indefinite	e.g. a/an, the <u>The</u> tree is beautiful in autumn.
Quantifier - indicates quantity	e.g. few, many, some <u>Lots</u> of fun was had at the party.
Possessives - indicates who it belongs to	e.g. my, its, his That is <u>her</u> coat.
Demonstratives - points to something specific	e.g. this, that, those <u>These</u> computers are for sale.
Numbers - tells us how many	e.g. one, two, three <u>Seven</u> dwarves accompanied Snow White.

Word class:

Prepositions - show the relationship between the noun or pronoun and other words in a sentence. They describe, for example, the position of something, the time when something happens, or the way in which something is done	e.g. after, in, with He moved here <u>after</u> the end of the war.
Co-ordinating conjunction - a conjunction placed between words, phrases, clauses, or sentences of equal importance (main clause)	e.g. for, and, nor, but, or, yet, so I like chocolate <u>but</u> I don't like sweets.
Subordinating conjunction - a conjunction that introduces a subordinating clause	e.g. while, since, although I went to the cinema <u>after</u> I had eaten my dinner.

Geography

Organise your ideas into a concept map, like the one below that summarises 'cells'. In a concept map, you take the main ideas and link them together with phrases that explain the relationship between the concepts. But, always try to make the concept map from memory first! Then check it with the knowledge organiser

YEAR 9 Urbanisation Knowledge Organiser

Key words and terms:

Urban: Towns and cities

Rural: Countryside (areas outside towns and cities)

Urbanisation: When an increasing percentage of a country's population comes to live in towns and cities.

Counter-urbanisation: When an increasing percentage of a country's population moves away from towns and cities.

Migration: when people move from one area to another

Rural to Urban migration: When people move from the countryside to towns or cities.

HIC: High income country

LIC: Low income country

NEE: Newly emerging economies

Megacities: cities with a population over 10 million

▲ A rural area in Japan. A rural area is mainly countryside, with farms. But it may have villages and small towns.

▲ Tokyo, Japan's capital city. It is the world's largest urban (built-up) area, formed by several urban areas joining together.

Urbanisation:

-Urbanisation is the proportion of the world's population who live in cities.

-Urbanisation is growing because of the dramatic increase in the world's population and **rural to urban migration** (moving from countryside to cities).

-Rapid urbanisation happened between 170-1900 due to the **Industrial Revolution** where people changed from farm working to factories.

Urbanisation Case study- Manchester: the growth of a British City

79 CE: A settlement began wit the Romans then became a market town after the romans left.

1760: Industrialisation arrives, this increased factories and the cotton trade for Manchester.

1853: Manchester named a city as **urban to rural migration** increased population.

20th Century: Industry declines causing de-industrialisation and reduces population.

1980: The regeneration of Manchester began.

2001: The population started to rise again.

Manchester slums: The workers of the factories lived in cheap houses crammed onto narrow streets with no running water and shared outdoor toilets. Rubbish piled everywhere and disease was rife. Over half the children born in the slums died before age five.

The regeneration of Manchester: They developed and improved Manchester to the buzzing city it is today by increasing jobs, transport links, housing and activities, culture & shopping.
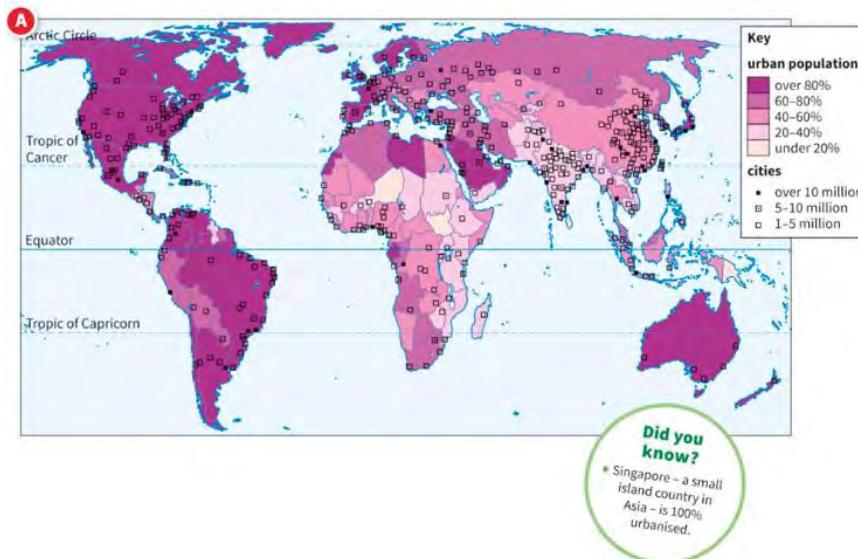
This diagram to the left explains the aim of regeneration.

▲ Manchester has always been connected to Liverpool by water. First by river, and later by canal.

The aims of regeneration

spaces for companies to set up in → 1 bring jobs to the place
education → 2 make it a good place to live
transport →
housing →
shopping →
parks and other green spaces →
sports, music → activities and culture
cinema, theatre
places to eat

YEAR 9 Urbanisation Knowledge Organiser

Global Urban Populations

Key
urban population
- over 80%
- 60–80%
- 40–60%
- 20–40%
- under 20%

cities
- over 10 million
- 5–10 million
- 1–5 million

Did you know?
* Singapore – a small island country in Asia – is 100% urbanised.

Why is urbanisation happening?

The diagram below summarises the process of urbanisation.

As this process continues across a country, the 0% of the population living in urban areas increases.

As wealth increases in a county so does urbanisation as people travel to the cities to work.

A business sets up in a suitable place. It could be any kind of business.

A successful business attracts other businesses, often related.

settlement
population grows because of migration and natural increase
settlement spreads because of things being built

people move in from rural areas
usually to find work – but they may have other reasons too

rural area

Infrastructure is built (water and electricity supplies, a transport network, and so on).

Buildings are built (homes, schools, shops, offices, hospitals, and so on).

Migration Push factors

These are the reasons for why someone would want to move away from a place such as lack of services, war, famine (starvation/food shortages), few Jobs or natural disasters.

Migration Pull factors.

These are the reasons for why someone would want to move to a place such as a higher quality of life (better homes, etc.), access to education, the "Bright Lights" of the city, better healthcare, or better job opportunities

How cities develop

Look at **A**. It shows how cities have been developing over time, to meet more and more of our needs.

a focus on …
food (from markets) shelter latrines
fuel (wood, charcoal)
water (fetched in buckets)

a focus on …
schools hospitals shops
roads and railways
transport (buses, trains, taxis)
water, electricity and gas supplies
sewage and rubbish removal

a focus on …
universities and research
finance and banking
air, sea and rail connections
internet and mobile connections
online shopping
systems run by computers

a focus on …
the environment
culture greening
tackling climate change
reducing waste
leisure

1 basic
providing only what people need for survival

2 improving
city getting organised, more of people's needs are met

3 advanced
more efficient, economy growing, people getting better off

4 sustainable
reducing harmful impacts and improving the quality of life

development within cities

Making Cities more sustainable

A sustainable city has minimum negative impact on the environment, and minimum waste, while still offering its people a high qulaity of life.

-They can do this by cutting pollution from traffic by improving public transport, setting up bike lanes and rent-a-bike stands.
-Building on brownfield sites and reusing water to reduce environmental impact.
-Afforestation to soak up the Co2.

Case study: Lagos, Nigeria

Lagos is a **megacity** with over 21 million people. 100k+ migrants arrive every week hoping for a better life due to jobs, but this creates slums.

Opportunities in Lagos
-Jobs in manufacturing and offices
-Better education
-Better health care
- better transport
-better housing

Challenges in Lagos
-Makoko slum
-Congestion
-Corruption
-The informal sector

Benefits of urban living
great shops
concerts, clubs, cinemas, fun
all kinds of eating places
lots of interesting things to do
all kinds of work
lots of people who share your interests
well-paid jobs
colleges, universities, all kinds of classes
hospitals, doctors, dentists
a choice of districts to live in
buses, trams, trains, airports

But there are disadvantages too. Look:

Disadvantages of urban living
pollution
crime
people don't know their next-door neighbours
anti-social behaviour
many people feel isolated
more expensive than living in rural areas
competition for jobs
noise
competition for housing
traffic congestion
crowds
concrete everywhere

YEAR 9 Development Knowledge Organiser

Key words and terms:

Development: A process of change to improve people's lives

Development Gap: A difference in quality of life and development between the world's richer and poorer countries

Development indicator: A piece of data that helps to show how developed a country is.

Poverty: The state of being poor

Inequality: When wealth and access to services are not shared equally

Life expectancy: How many years a new baby can expect to live for, on average.

GNI (gross national income): The total amount that a country's population and businesses earn in a year.

Human development index (HDI): A score between 0 & 1 that indicates how developed a country is.

Quality of Life: The level of comfort and well-being a person enjoys

Development has many different aspects:

Development is a process of change that improves people's lives.

It involves money, of course. But is not just about getting richer. It has many aspects. Compare the table below:

Aspect	In a highly developed country	In a poorly developed country
poverty	some	a great deal
safe water and sanitation	available to everyone	many have no access to these
education	primary and secondary education for all; a high % go on to college	many children do not even complete primary school; a low % go to secondary school
healthcare	plentiful; easy access to doctors, dentists, hospitals	poor; it may be a very long way to the nearest doctor or hospital – and you may have to pay
roads and other transport links	high quality roads and railways; well connected airports	many roads are just dirt tracks; railways may be rundown; not many flights
employment	low % of workers in farming; high % in services; the key industries produce high value goods	most people live by farming; any industry is likely to produce low value items (like clothes)
% of people living in rural areas	low; most people are urban – they live in towns and cities	high – most people are in farming
fertility rate (average number of children per woman)	low; women tend to have fewer children when they are well educated, and have a career	4 or 5 on average (but the number is falling)
median age of the population	if you line everyone up by age, the person in the middle (the median) is likely to be 40 or over	the median could be as low as 15 (as for Niger in Africa in 2020); a young population

How is development measured?

Data is collected whining countries most years. This data is then converted into tables of development indicators (as shock in the diagram B). These indicators show how developed a country is.

The human development Index

A country's wealth, given as GNI per person (PPP), is often used as a measure of development. The wealth may be shared very unevenly.

So a index called the human development index was created, to compare countries. It compares: Life expectancy, Access to education and a decent standard of living.

B **Development indicators**
- adult literacy rate (%)
- life expectancy (years)
- % of the population with access to clean safe water
- number of doctors per 100 000 people
- under-5 mortality rate (%)
- GNI per person (PPP) ($)
- % of children below age 5 who are underweight

C **How HDI varies around the world**

What if… …all countries had a high level of development?

no data 0 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

The HDI scores rises as a country develops or can fall too. For example, a pandemic, climate change, civil wars, conflict or natural disasters.

YEAR 9 Urbanisation Knowledge Organiser

Development gap

Historic reasons: The industrial revolution led to development alongside trade and exploiting colonies.

Geographical reasons: A countries location, climate and natural resources play a big part in aiding development.

Health and education: A well-educated, skilled, and healthy workforce helps a country to develop.

Conflict and corruption: There are some corruption in every country but in some it is widespread which has a major impact on development.

Relying on a few exports: Countries earn money by selling things to other countries such as cash crops.

Lack of industry: Countries earn more by selling factory good than crops and raw materials. It costs lots to set up factories and in poor countries electricity may be unstable and roads of poor quality. Richer countries make a profit processing from the poorer countries. By processing them they add value and get richer.

Globalisation, development, and TNC's

-Globalisation is the process of creating a more connected world, through flows of trade, money, people, and knowledge.

-Globalisation can help a country to develop e.g., the industrial revolution.

-Globalisation is largely driven by **transnational corporations** or **TNCs**.

-These are companies with branches and operations in more than one country.

In favour of TNC's: Tax to build businesses, industry to develop, build roads & transport links, create jobs, and bring technology.

Against TNC's: Low pay, the profit leaves the country, influence the government, low-skilled jobs, reduce local business increase greenhouse gas emissions.

Putting an end to poverty

Poorer countries can help themselves: development led by a government is called *top-down development.*

Richer countries can help them: richer countries can give aid.

Help from NGOs: This development to help a local community is called *bottom-up development.*

Help from technology: Phones to get weather information for farmers or to transfer money to another mobile.

Manufacturing: This helps a poor country develop and are usually set up by foreign TNCs

Covid-19 and vaccine inequality

-On 11 March 2020, Covid-19 was declared a pandemic.

-It was clear that the only way to end the pandemic was to find a vaccine and by May 2021 there were 13 in use- developed in different countries, including the UK, USA, China, India, and Russia.

The richest countries were first to geth the vaccine.

Poor countries could not compete. But some got free vaccines from China and other countries, who wanted closer ties. This is **vaccine diplomacy!** There will be more pandemics. This is certain. But countries may have learned from Covid-19, and be better prepared.

▲ Packing Covid-19 vaccines at the Serum Institute in India. It is the world's largest producer of vaccines. It makes them on behalf of drug companies – and also develops its own.

Case study: Malawi

Malawi is a long thin country in southeast Africa. It is about half the size of the UK, in area. It has over 19 million people. (The UK has around 67 million.)

Malawi History

- Malawi was once part of Maravi Empire (around 1500-1890).

-In 1891 Britain took control of Malawi. British planters set up plantations there, to grow tobacco, cotton, and other crops.

-But in 1964, after decades of struggle, the country gained independence.

How is Malawi doing?

-Malawi is one of the world's poorest countries. Around 51% of its people live in poverty, with 20% in extreme poverty.

-Nearly 80% of its workers earn a living by farming.

-Tobacco is its top export. It also exports sugar, tea, and cotton.
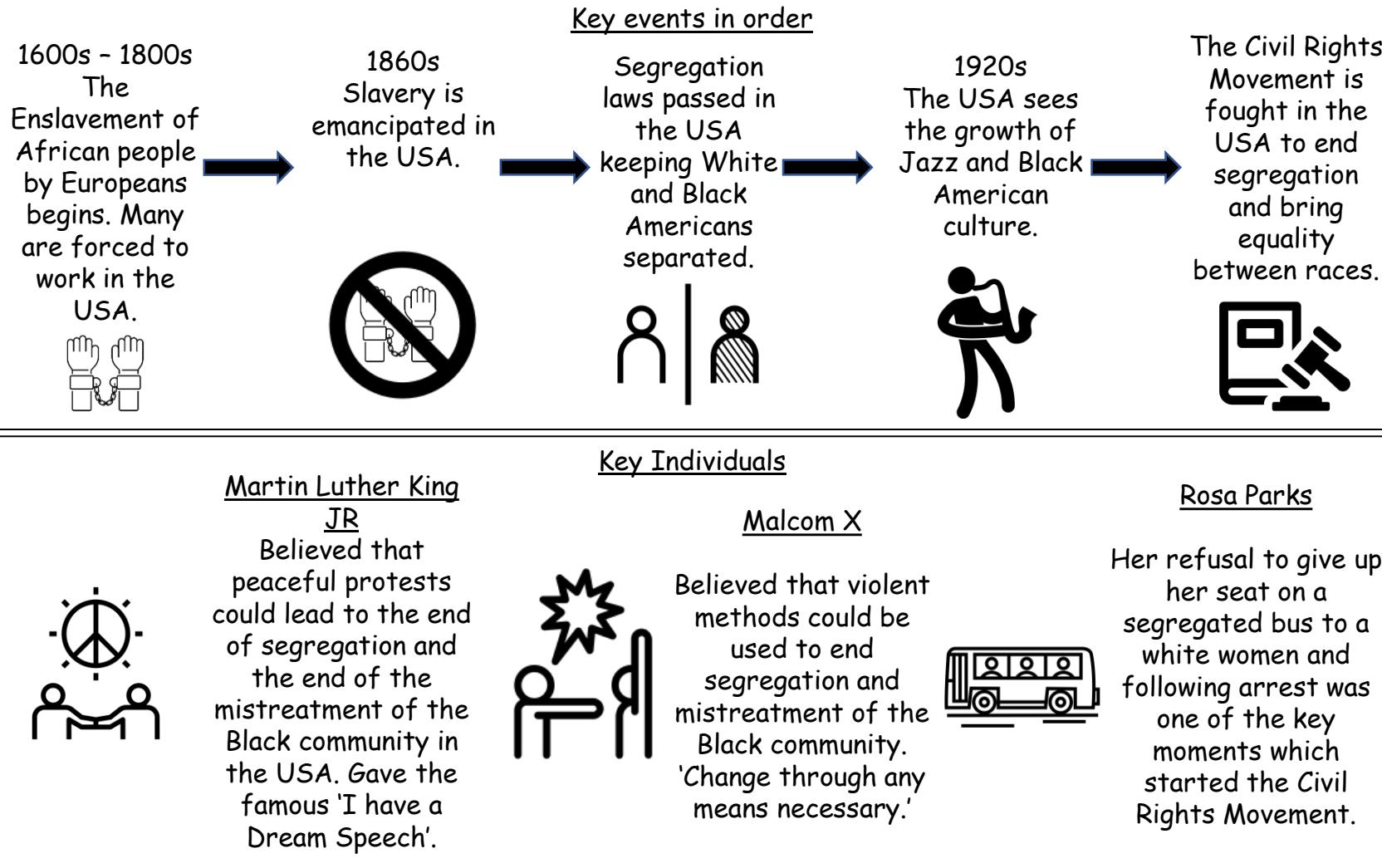
Map of Malawi

AFRICA / MALAWI

TANZANIA

ZAMBIA

MALAWI

Lake Malawi

Lilongwe

ZIMBABWE

MOZAMBIQUE

- high land
- low land
- lake
- capital city
- other cities

History

You can make your own questions. This process takes a lot of time, but if you create a study group you can each create a few questions and trade. However it is important that you write what Key facts or knowledge you expect to see in any answer.

Year 9 – History Knowledge Organiser – Unit 4 – What was the Civil Rights Movement?

Key Terms

Enslaved	Where a person is taken as property of another person and is forced to work for no pay.
Emancipation	The end of slavery and freeing of all enslaved people.
Segregation/ Jim Crow	The separation of Black and White people in a range of different places e.g. on buses and schools.
Civil Rights	Your right to be treated equal to others and given the same chances as others.
Legislation	Laws passed by the government.
Jazz	A type of music made famous by Black Americans in the 1920s.
Ku Klux Klan	A terrorist group which hunted, killed and terrorised Black Americans in the USA.

Key events in order

1600s – 1800s The Enslavement of African people by Europeans begins. Many are forced to work in the USA.

1860s Slavery is emancipated in the USA.

Segregation laws passed in the USA keeping White and Black Americans separated.

1920s The USA sees the growth of Jazz and Black American culture.

The Civil Rights Movement is fought in the USA to end segregation and bring equality between races.

Key Individuals

Martin Luther King JR Believed that peaceful protests could lead to the end of segregation and the end of the mistreatment of the Black community in the USA. Gave the famous 'I have a Dream Speech'.

Malcom X Believed that violent methods could be used to end segregation and mistreatment of the Black community. 'Change through any means necessary.'

Rosa Parks Her refusal to give up her seat on a segregated bus to a white women and following arrest was one of the key moments which started the Civil Rights Movement.

Threshold Concepts linked to this unit:

TC33	The Civil Rights Movement was a significant event globally and its legacy can still be felt today.
TC34	It is important to consider the historical context of events when studying topics such as racism as the views of society and governments have developed over time.

Key fact
The fight for Civil Rights did not just take place in the USA. In the UK racism towards the Black community had been normalised in society. The UK Civil Rights Movement fought to change this at the same time as the American movement.

Year 9 – History Knowledge Organiser – Unit 5 – What is Terrorism?

Key Terms

Planned	An event which has been discussed and look at in advance.
Social	The ability to effect the lives of everyday people.
Political	The ability to change laws or actions taken by the government.
Harm	Actions which cause physical hurt or mental health issues.
Plot	A name given to a planned event intended to cause harm or change.
Revolution	An event which causes a huge change linking to social change, political change or technology.
Extremist	A person whose views are seen as extreme e.g. taking the teaching of the Bible to mean that any non-Christians should be killed.

Key events in order

Gunpowder Plot
Catholic plotters attempted to kill King James I and his parliament.

French Revolution
The people of France rose up and killed the monarchy and lords/ladies.

Suffragettes
Actions taken by women to attempt to get the vote for women in the UK and other countries.

Nationalist terrorists
Groups in Wales and Ireland who carried out terrorist attacks against the English.

War on Terror
Terrorist attacks carried out by extremists groups such as Al-Qaeda and ISIS to cause harm to the 'West'.

Definition of Terrorism

"A planned action intended to cause death or serious harm to civilians with the purpose of achieving political or social change"

The United Nations
17th March 2005

For an event to be classed as terrorism it must meet all parts of this definition. This definition will be referenced throughout the unit to check if each event discussed meets all parts of the definition.

Threshold Concepts linked to this unit:

TC35	Historians have different interpretations about events based on their own focus and heritage e.g. their area of study, their gender, their nationality etc.
TC36	For an event to be classed as terrorism it must be planned with an intention to harm or kill with the aim of achieving social or political change. Religion is not a cause of terrorism.

Key fact
Terrorism has taken place in some form for many centuries. Many events which we now may see as positive changes e.g. votes for women, could be linked to terrorism due to the definition above.

Maths

You can make your own questions. This process takes a lot of time, but if you create a study group you can each create a few questions and trade. However it is important that you write what Key facts or knowledge you expect to see in any answer.

YEAR 9 — REASONING WITH GEOMETRY...
Enlargement & Similarity

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:
- Recognise enlargement and similarity
- Enlarge a shape by a positive SF
- Enlarge a shape from a point
- Enlarge a shape by a fractional SF
- Work out missing sides and angles in a pair of similar shapes.

Keywords

Similar Shapes: shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles.
Scale Factor: the multiple describing how much a shape has been enlarged
Enlarge: to change the size of a shape (enlargement is not always making a shape bigger)
Corresponding: objects (or sides) that appear in the same place in two similar situations.
Image: the picture or visual representation of the shape
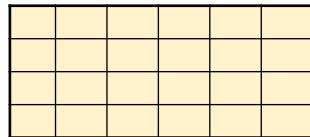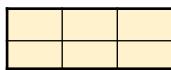
Recognise enlargement & similarity

> Shapes are similar if all pairs of corresponding sides are in the same ratio
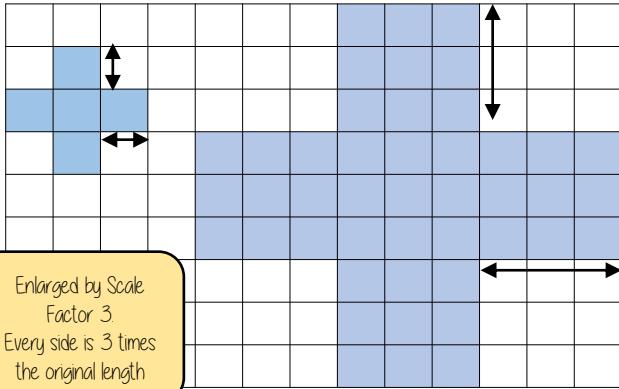
These shapes are similar because all sides are increased by the same ratio

> Enlargements are similar shapes with a ratio other than 1
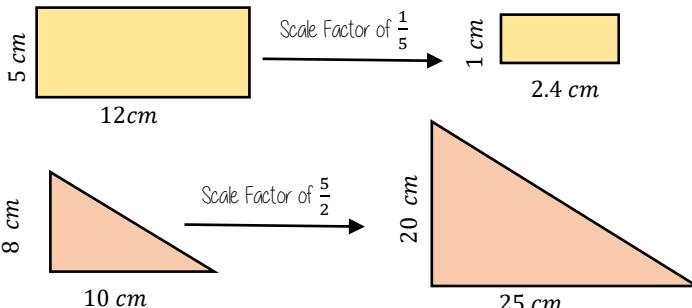
Enlarge by a positive scale factor

> With a scale factor larger than 1 it makes the shape **bigger**

Enlarged by Scale Factor 3.
Every side is 3 times the original length
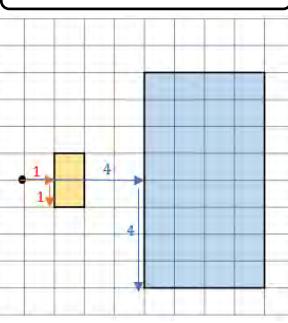
Positive fractional scale factor

> With a scale factor between 0 and 1 it makes the shape **smaller**

5 cm
12 cm
Scale Factor of $\frac{1}{5}$
1 cm
2.4 cm

8 cm
10 cm
Scale Factor of $\frac{5}{2}$
20 cm
25 cm
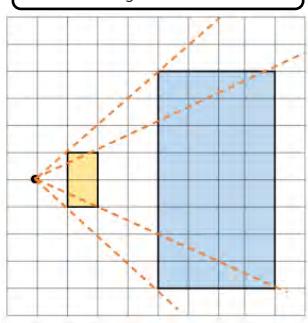
Enlarge a shape from a point

Scaled distances method	Rays method

Scale the distance between the point of enlargement and each corresponding vertices
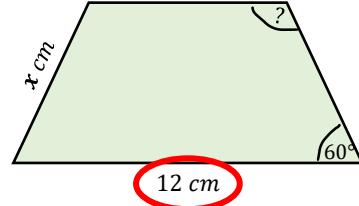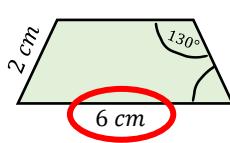
Multiply the distance from the centre of corresponding vertices by the scale factor along the ray

Calculations in similar shapes

> Don't forget that properties of shapes don't change with enlargements or in similar shapes

The two trapezium are similar find the missing side and angle

2 cm
130°
6 cm

x cm
?
12 cm
60°

Corresponding sides identify the scale factor

$$\frac{12}{6} = 2$$

Scale Factor = **2**

Calculate the missing side   Length (corresponding side) x scale factor

$$2cm \times 2$$
$$x = 4cm$$

> Enlargement does not change angle size

Calculate the missing angle   Corresponding angles remain the same
130°

Solving ratio & proportion problems

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:
- Solve problems with direct proportion
- Use conversion graphs
- Solve problems with inverse proportion
- Solve ratio problems
- Solve 'best buy' problems

Keywords

Proportion: a comparison between two numbers

Ratio: a ratio shows the relative size of two variables

Direct proportion: as one variable is multiplied by a scale factor the other variable is multiplied by the same scale factor.

Inverse proportion: as one variable is multiplied by a scale factor the other is divided by the same scale factor.

Direct Proportion
As one variable changes the other changes at the same rate

R

4 cans of pop = £2.40

This is a multiplicative change

x 0.5 → 4 cans of pop = £2.40 → 2 cans of pop = £1.20 ← x 0.5

x 3 → 4 cans of pop = £2.40 → 12 cans of pop = £7.20 ← x 3

This multiplier is the same
In the same way that this would be for ratio
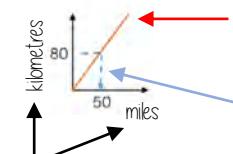
Sometimes this is easiest if you work out how much one unit is worth first
e.g. 1 can of pop = £0.60

Conversion Graphs
Compare two variables

R

kilometres / miles, 80, 50

This is always a straight line because as one variable increases so does the other at the same rate

Labelling of both axes is vital

To make conversions between units you need to find the point to compare – then find the associated point by using your graph.
Using a ruler helps for accuracy
Showing your conversion lines help as a "check" for solutions

Inverse Proportion
As one variable is multiplied by a scale factor the other is divided by the same scale factor

Examples of inversely proportional relationships

Time taken to fill a pool and the number of taps running.

Time taken to paint a room and the number of workers

T is inversely proportional to G. When T=2 then G=20

÷ 2   × 4

T	1	2	8
G	40	20	5

× 2   ÷ 4

Best Buys
Have a directly proportional relationship

To calculate best buys you need to be able to compare the cost of one unit or units of equal amounts

Shop A
4 cans for £1.20
£1.20 ÷ 4

Shop B
3 cans for 93p
£0.93 ÷ 3

Cost per item

1 can is £0.30
Or 30p

1 can is £0.31
Or 3.1p

Shop **A** is the best value as it is 1p cheaper per can of pop

Shop A
4 cans for £1.20
4 ÷ £1.20

3 cans for 93p
3 ÷ £0.93

Cost per pound

£1 buys 3.333 cans of pop

£1 buys 3.23 cans of pop

Shop **A** is still shown as being the best value but pay attention to the unit you are calculating, per item or per pound.

Best value is the most product for the lowest price per unit

Sharing a whole into a given ratio
R

James and Lucy share £350 in the ratio 3:4.
Work out how much each person earns

Model the Question

James : Lucy

3 : 4

James / Lucy / £350

Find the value of one part
Whole: £350
7 parts to share between
(3 James, 4 Lucy)

£350 ÷ 7 = £50

☐ = one part
= £50

Put back into the question

James : Lucy

(x 50) 3 : 4 (x 50)
→ £150 : £200

James = 3 x £50 = £150

£350

Lucy = 4 x £50 = £200
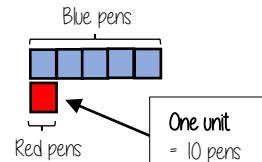
## Finding a value given 1:n (or n:1)
R

Inside a box are blue and red pens in the ratio 5:1.
If there are 10 red pens how many blue pens are there?

Model the Question

Blue : Red

5 : 1

☐ = one part
= 10 pens

Blue pens

Red pens

One unit
= 10 pens

Put back into the question

Blue : Red

(x 10) 5 : 1 (x 10)
50 : 10

Blue pens = 5 x 10 = 50 pens

Red pens = 1 x 10 = 10 pens

There are 50 Blue Pens

What do I need to be able to do?

By the end of this unit you should be able to:
- Solve speed, distance, time questions
- Use distance time graphs
- Solve density, mass, volume problems
- Solve flow problems
- Use flow graphs
- Interpret rates of change and their units

Keywords

Convert: change
Mass: a measure of how much matter is in an object. Commonly measured by weight.
Origin: the coordinate (0, 0)
Volume: the amount of 3D space a shape takes up
Substitute: putting numbers where letters are — replacing numbers into a formula
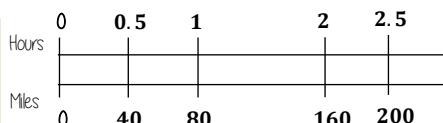
Speed, Distance, Time
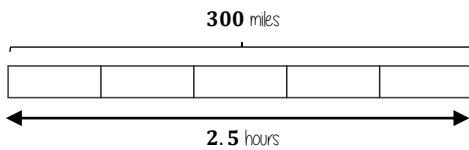
"per" for every
e.g. 80 miles per hour (mph)
Travel 80 miles every hour

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

You can use a double number line to help you calculate distance

Hours	0	0.5	1		2	2.5
Miles	0	40	80		160	200

e.g. A boat travels at a constant speed for **2.5** hours
It travels 300 miles.

300 miles

Bar models can help to calculate mph

2.5 hours
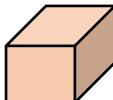
Each part is half an hour
Each part is 60 miles

Speed, Distance, Time

Before calculations — make sure you are working in the same units as the speed

minutes ÷ 60 → hours
hours × 60 → minutes

Learn or learn how to rearrange the formular for speed, distance and time

Substitute in the variables given

$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

$$\text{distance} = \text{speed} \times \text{time}$$

Density, Mass, Volume

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

$$\text{volume} = \frac{\text{mass}}{\text{density}}$$

$$\text{mass} = \text{volume} \times \text{density}$$

volume of prism = Area of cross section × Depth

(R)

Distance — Time graphs

The steeper a gradient the faster the speed

Gradient = speed

$$\frac{10}{5} = 2 \text{ metres per min}$$

Horizontal lines represent staying still

The distance coming closer to home shows the return journey

Units are important. Meters per minute

(graph: Distance from home (metres) vs Time (minutes))
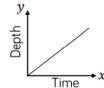
Flow problems & graphs

This will fill at a constant rate, then as the space decreases it will speed up and the neck of the bottle fill at a faster constant speed
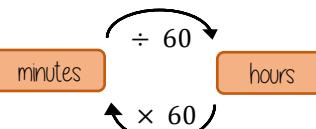
The cylinder will fill at a constant speed

(graph: Depth vs Time)

Units are important. Ensure any volume calculations are the same unit as the rate of flow

Rates of change & units
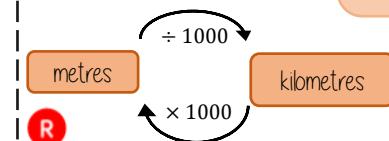
Common rates of change relationships

Revisit your conversions between units of length and capacity

Speed: miles **per** hour
Exchange rates: euros **per** pounds
Density: mass **per** volume

metres ÷ 1000 → kilometres
kilometres × 1000 → metres

(R)

YEAR 9 – REPRESENTATIONS...

Probability

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:
- Find single event probability
- Find relative frequency
- Find expected outcomes
- Find independent events
- Use diagrams to work out probabilities

Keywords

Probability: the chance that something will happen
**Relative Frequency**: how often something happens divided by the outcomes
Independent: an event that is not effected by any other events.
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.
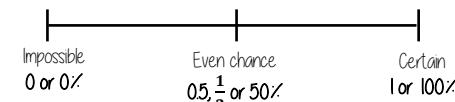
The probability scale ®

Impossible
0 or 0%

Even chance
$0.5, \frac{1}{2}$ or 50%

Certain
1 or 100%

The more likely an event the further up the probability it will be in comparison to another event
(It will have a probability closer to 1)

There are 2 pink and 2 yellow balls, so they have the same probability

There are 5 possible outcomes
So 5 intervals on this scale, each interval value is $\frac{1}{5}$

Single event probability ®

Probability is always a value between 0 and 1

The probability of getting a blue ball is $\frac{1}{5}$
∴The probability of **NOT** getting a blue ball is $\frac{4}{5}$

The sum of the probabilities is 1

The table shows the probability of selecting a type of chocolate

Dark	Milk	White
0.15	0.35	

P(white chocolate) = $1 - 0.15 - 0.35$
= 0.5

Relative Frequency

$$\frac{\text{Frequency of event}}{\text{Total number of outcomes}}$$

Remember to calculate or identify the overall number of outcomes!

Colour	Frequency	Relative Frequency
Green	6	0.3
Yellow	12	0.6
Blue	2	0.1
	20	

Relative frequency can be used to find expected outcomes

e.g. Use the relative probability to find the expected outcome for green if there are 100 selections.

Relative frequency x Number of times
$0.3 \times 100 = 30$

Expected outcomes

Expected outcomes are estimations. It is a long term average rather than a prediction.

Dark	Milk	White
0.15	0.35	0.5

The sum of the probabilities is 1

An experiment is carried out **400** times.
Show that dark chocolate is expected to be selected **60** times

$0.15 \times 400 = 60$

Independent events

The rolling of one dice has no impact on the rolling of the other. The individual probabilities should be calculated separately.

Probability of event 1 × Probability of event 2
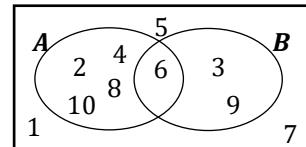
$$P(5) = \frac{1}{6} \qquad P(R) = \frac{1}{4}$$

Find the probability of getting a 5 and a red

$$P(5 \text{ and } R) = \frac{1}{6} \times \frac{1}{4} = \frac{1}{24}$$

Using diagrams ®

Recap Venn diagrams, Sample space diagrams and Two-way tables

A: 2, 4, 8, 10
6
B: 3, 9
5
1
7

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

The possible outcomes from tossing a coin

The possible outcomes from rolling a dice

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

Algebraic Representation

@whisto_maths

What do I need to be able to do?

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

- Draw quadratic graphs
- Interpret quadratic graphs
- Interpret other graphs including reciprocals
- Represent inequalities

Keywords

Quadratic: a curved graph with the highest power being 2. Square power.

Inequality: makes a non equal comparison between two numbers

Reciprocal: a reciprocal is 1 divided by the number

Cubic: a curved graph with the highest power being 3. Cubic power.

Origin: the coordinate (0, 0)
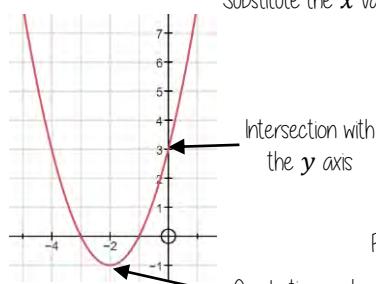
Parabola: a 'u' shaped curve that has mirror symmetry

Quadratic Graphs

$$y = x^2 + 4x + 3$$

If x^2 is the highest power in your equation then you have a <u>quadratic graph</u>.

It will have a parabola shape

Intersection with the y axis

Substitute the x values into the equation of your line to find the y coordinates

x	-4	-3	-2	-1	0	1
y	3	0	-1	0	3	8

Coordinate pairs for plotting $(-3, 0)$
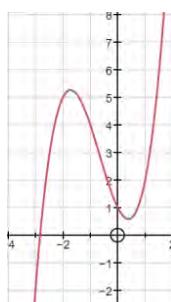
Plot all of the coordinate pairs and join the points with a curve (freehand)

Quadratic graphs are always symmetrical with the turning point in the middle

Interpret other graphs

Cubic Graphs

$$y = x^3 + 2x^2 - 2x + 1$$
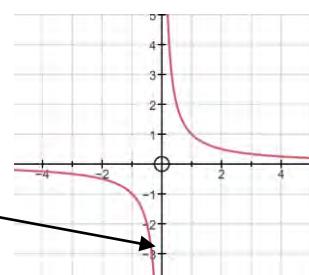
If x^3 is the highest power in your equation then you have a <u>cubic graph</u>

Reciprocal Graphs

$$y = \frac{1}{x}$$

Reciprocal graphs never touch the y axis.
This is because x cannot be 0
This is an <u>asymptote</u>

Exponential Graphs
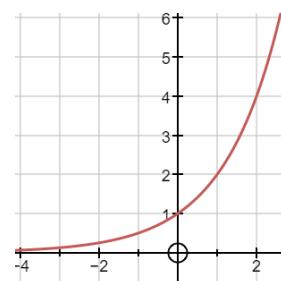
$$y = 2^x$$

Exponential graphs have a power of x
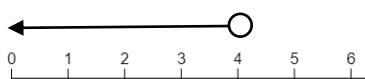
Represent Inequalities
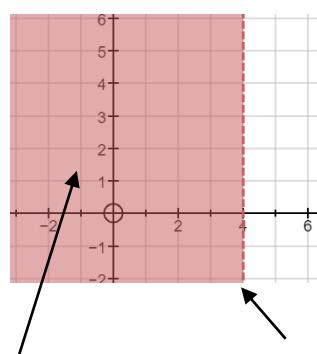
Multiple methods of representing inequalities

$$x < 4$$

All values are less than 4
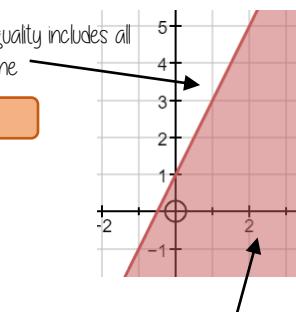
The shaded area indicates all possible values of x

The dotted line shows that the inequality does not include these points

The solid line shows that the inequality includes all the points on this line

$$y \geq 2x + 1$$

The shaded area indicates all possible solutions to this inequality

Numeracy

Make sure you are regularly testing your knowledge using the resources provided by the school on platforms such as Sparx, Educake and Linguascope. You will have been issued with user names and passwords to access your accounts.

Numeracy Knowledge Organiser

Multiplication and Division Facts:

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Prime Numbers up to 100:

2	3	7	11	13	17	19	23	29	31	37	41
43	47	53	59	61	67	71	73	79	83	89	97

Finding Percentages by hand:

Find 50%	Divide by 2
Find 10%	Divide by 10
Find 1%	Divide by 100

Fraction, Percentages and Equivalents:

Fraction	Decimals	Percentage
1/2	0.5	50%
1/4	0.25	25%
3/4	0.75	75%
1/3	0.3	33.3%
2/3	0.6	66.6%
1/5	0.2	20%
1/10	0.1	10%
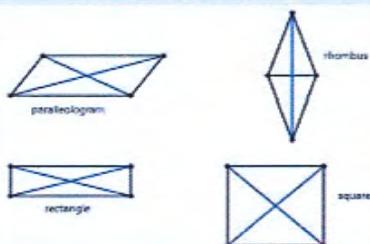
Place Value Table

Million	H Th	T Th	Th	H	T	U	•	Tenths	Hundreths	Thousandeths
1,000,000	100,000	10,000	1000	100	10	1		1/10	1/100	1/1000
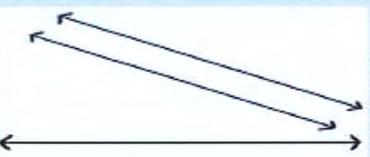
# 2D Shapes

Properties of shapes
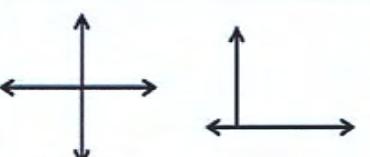
Diagonal: A diagonal is a straight line that joins any two corners which are not adjacent. Diagonals do not always cut a shape in half or go through the middle.

Parallel lines: Parallel lines are the same distance apart no matter how long they are. Parallel lines can never cross each other.


Perpendicular lines: Lines are perpendicular if they meet at right angles.

Triangles

Equilateral:
- Three sides are the same length
- Three equal angles
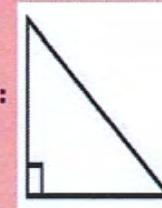
Isosceles:
- Two sides are the same length
- Two angles are equal
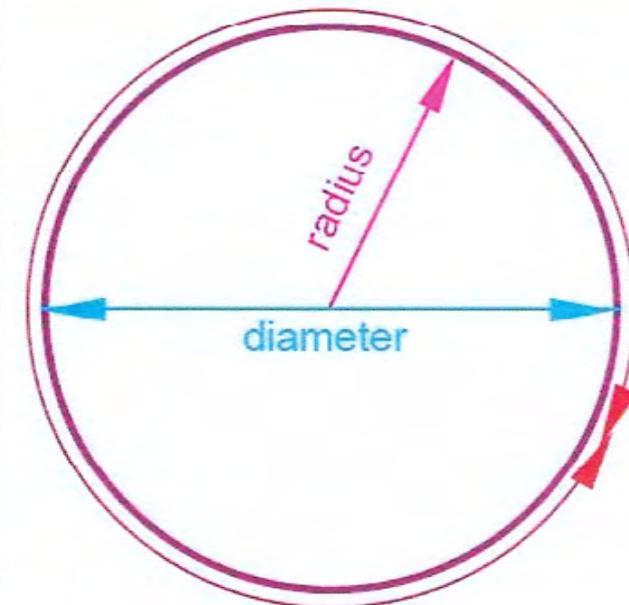
Scalene:
- No sides are the same length
- All angles are different sizes

Right-angled:
- Contains one right angle
- Can be isosceles or scalene

Parts of a circle

|	
Radius:	A straight line from the centre of a circle to the circumference.
Diameter:	A straight line from one side of a circle to the other. It must go through the centre.
Circumference	The distance all the way round a circle. It is the perimeter of a circle.
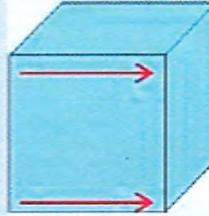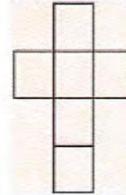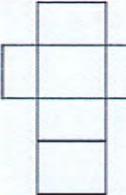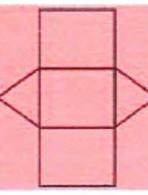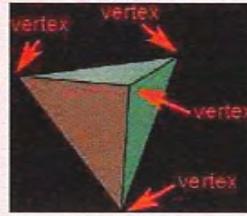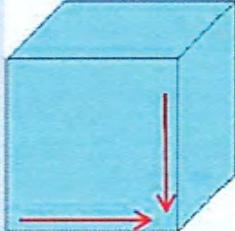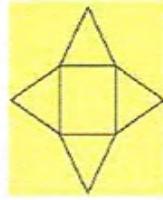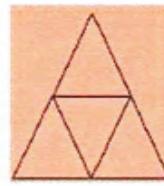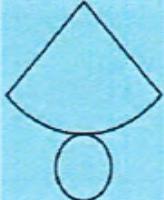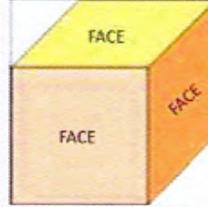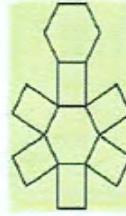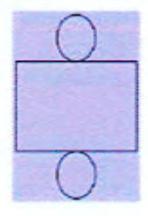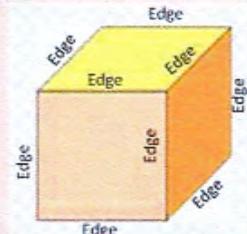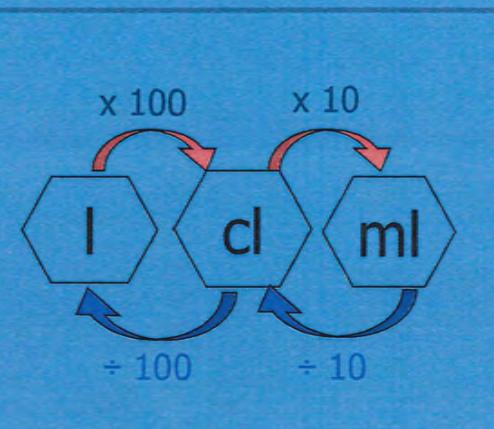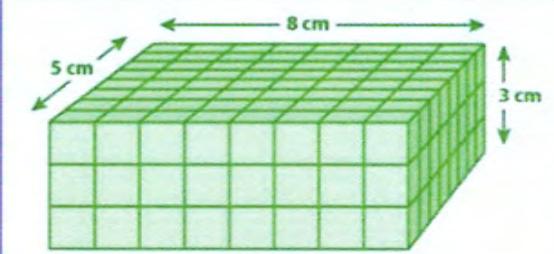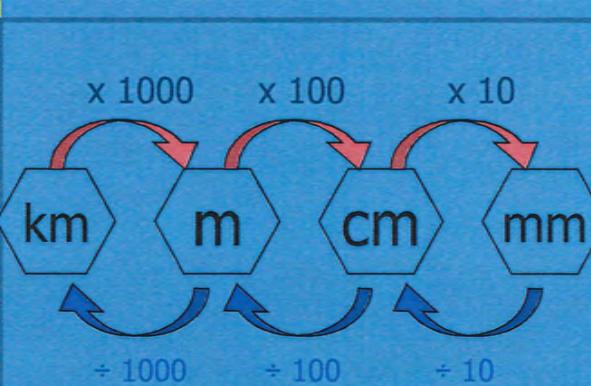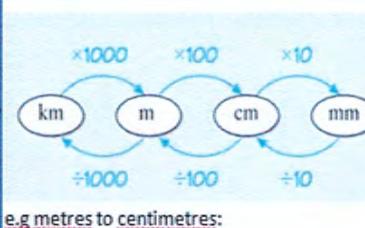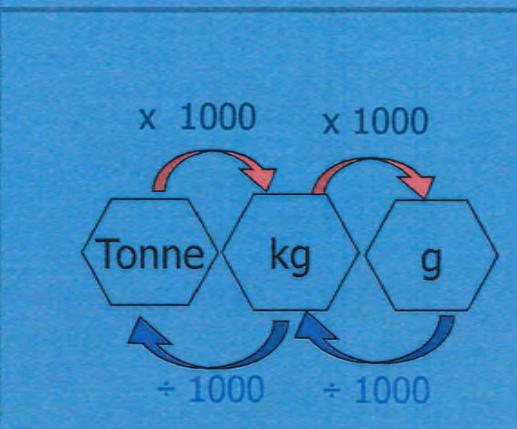
3D Shapes

Edges

Parallel edges: Parallel edges are the same distance apart no matter how long they are.


**Perpendicular edges:** Edges are perpendicular if they meet at right angles.


Nets of 3D shapes

Cube
Faces: 6
Edges: 12
Vertices: 8

Cuboid
Faces: 6
Edges: 12
Vertices: 8

Triangular Prism
Faces: 5
Edges: 9
Vertices: 6

Square-based Pyramid
Faces: 5
Edges: 8
Vertices: 5

Tetrahedron
(Triangular-based Pyramid)
Faces: 4
Edges: 6
Vertices: 4

Cone
Faces: 2
Edges: 1
Vertices: 0 or 1

Hexagonal Prism
Faces: 8
Edges: 18
Vertices: 12

Hexagonal Pyramid
Faces: 7
Edges: 12
Vertices: 7

Cylinder
Faces: 3
Edges: 2
Vertices: 0

Vocabulary

Vertex: A vertex is a point at which two or more lines meet in an object or shape.


Face: A face is the side of a solid shape. It usually means flat faces. The base of a shape is also a face.


Edge: The edge of a shape is where two faces meet. An edge can be curved or straight.

Conversion facts: Capacity

1 litre = 1000 ml

1 cl = 10 ml

Some key vocabulary- word origins

Milli	one thousand	Mass	How heavy something is
Centi	one hundredth	Capacity	How much something can hold
Kilo	one thousand	Length	How long or wide something is

Key Vocabulary

Convert	Change from one metric to another. For example: changing from seconds to minutes.
Conversion fact	A fact used to help you convert between metrics. For example: there are 60 minutes in an hour.
millilitre	A unit of measure used to measure a small capacity or volume
litre	A unit of measure used to measure a large capacity or volume
centilitre	A unit of measure used to measure a small capacity or volume

Example question

There are two containers. One of them holds 750 millilitres and other 0.5 litres.
Which container holds the greater amount? How much more does it hold? Give your answer in millilitres.

- **Step 1:** Ensure all units are the same. Convert all to millilitres.
- **Step 2:** Use the conversion fact that will help you. In this case it would be that there are 1000ml in 1 litre.
- **Step 3:** Now you are ready to select the correct operation required

Measurement: Capacity

x 100   x 10

l   cl   ml

÷ 100   ÷ 10

Volume

Volume = Length x Width x Depth
= 8 cm x 5 cm x 3 cm
= 120 cm^3

- To calculate volume: length x width x depth
- What is it?: the amount of space that a substance or object occupies

What is appropriate to measure with...

| Litres	bottles of water, a bath
Millilitres	a jug of milk, medicine on a spoon, toothpaste
Centilitre	a small glass of liquid

Describing positions

When identifying or plotting points on a coordinate grid, the first number will always represent the **x axis** and the second number will always represent the **y axis.**

E.g. The location of point A is (1, -4)
The location of point B is (4, -4)
The location of point C is (4, -2)
The location of point D is (1, -2)

Coordinates

| Quadrant	The axes of a graph divide the graph into four quadrants.
x-axis	The horizontal axis of a graph is called the x axis.
y-axis	The vertical axis of a graph is called the y axis.
Coordinates	Coordinates are two numbers or letters that describe a position on maps, graphs and charts.

Reflection

When you reflect a shape, you draw its mirror image in a different quadrant/quadrants. The reflected shape will have different coordinates.


Translation

When you translate a shape, you slide it to a different position. You do not turn or rotate the shape. In the example below, shape A has been translated 2 squares up and 5 squares right.

Conversion facts: Length	Some key vocabulary- word origins			
100cm = 1 m	Milli	one thousand	Mass	How heavy something is
10mm = 1cm	Centi	one hundredth	Capacity	How much something can hold
1 km = 1000 m	Kilo	one thousand	Length	How long or wide something is

Key Vocabulary

Convert	Change from one metric to another. For example: changing from seconds to minutes.
Conversion fact	A fact used to help you convert between metrics. For example: there are 60 minutes in an hour.
Perimeter	The measurement around the outside of a shape
Area	The amount of space inside the boundary of a flat (2-dimensional) object such as a triangle or circle
Composite shape	A shape that can be divided into more than one of the basic shapes is said to be a composite shape
Metres	the unit of length in the metric system, equal to 100 centimetres
kilometres	a metric unit of measurement equal to 1,000 metres
miles	a unit of linear measure equal to 1,760 yards
metric	A system of measurement using centimetres, metres, kilometres
imperial	Non-metric units: ounce, pound, stone, inch, foot, yard, mile, acre, pint, gallon

x 1000   x 100   x 10

km m cm mm

÷ 1000   ÷ 100   ÷ 10

Measurement: Length

Example conversion

×1000   ×100   ×10

km m cm mm

÷1000   ÷100   ÷10

e.g metres to centimetres:

0.8m = 0.8 x 100   0.06m= 0.06x100

= 80 cm   = 6 cm

What is appropriate to measure with…

Millimetres	a staple, a pile of papers
Centimetres	a rug, a table, how tall we are
Metres	width of a room, playground
Kilometres	the distance from one city to another, the distance a plane flies

Conversion facts: Mass

1 kg = 1000 grams

1 tonne = 1000 kilograms

Some key vocabulary- word origins

Milli	one thousand	Mass	How heavy something is
Centi	one hundredth	Capacity	How much something can hold
Kilo	one thousand	Length	How long or wide something is

Key Vocabulary

Convert	Change from one metric to another. For example: changing from seconds to minutes.
Conversion fact	A fact used to help you convert between metrics. For example: there are 60 minutes in an hour.
gram	A metric unit of mass equal to one thousandth of a kilogram.
kilogram	A metric unit of mass equal to one thousand grams
tonne	A tonne is a metric unit used to measure mass or weight. A tonne equals 1000 kilograms

x 1000   x 1000

Tonne   kg   g

÷ 1000   ÷ 1000

Measurement: Mass

Example conversion

A pineapple has a mass of 2.12 kg.
Find the mass in grams.

1 kg = 1000 g

2.120 →

- Make sure you know your appropriate conversion fact
- Multiply or divide as needed
- Ensure you are using the correct metric units (grams, kilograms)

Example question

A box contains bags of crisps. Each bag of crisps contains 25 grams. Altogether, the bags of crisps inside the box weight 1 kilogram. How many bags of crisps are inside the box?

- **Step 1:** Ensure all units are the same. Convert all to grams.
- **Step 2:** Use the conversion fact that will help you. In this case it would be that there are 1000g in 1kg.
- **Step 3:** Now you are ready to select the correct operation required

What is appropriate to measure with...

Milligrams	Medicine, vitamins and other small objects
Grams	paperclips, a loaf of bread
Kilograms	people, a bag of sand
Tonnes	car, truck, a large cargo box

1. Conversion facts: Mass

1 kg = 1000 grams

1 tonne = 1000 kilograms

What is appropriate to measure with...

Grams	paperclips, a loaf of bread
Kilograms	people, a bag of sand
Tonnes	car, truck, a large cargo box

x 1000   x 1000

Tonne   kg   g

÷ 1000   ÷ 1000

2. Conversion facts: Capacity

1 litre = 1000 ml

1 cl = 10 ml

What is appropriate to measure with...

Litres	bottles of water, a bath
Millilitres	a jug of milk, medicine on a spoon, toothpaste
Centilitre	a small glass of liquid

x 100   x 10

l   cl   ml

÷ 100   ÷ 10

3. Conversion facts: Length

100cm = 1 m

10mm = 1cm

1 km = 1000 m

What is appropriate to measure with...

Millimetres	a staple, a pile of papers
Centimetres	a rug, a table, how tall we are
Metres	width of a room, playground
Kilometres	the distance from one city to another, the distance a plane flies

x 1000   x 100   x 10

km   m   cm   mm
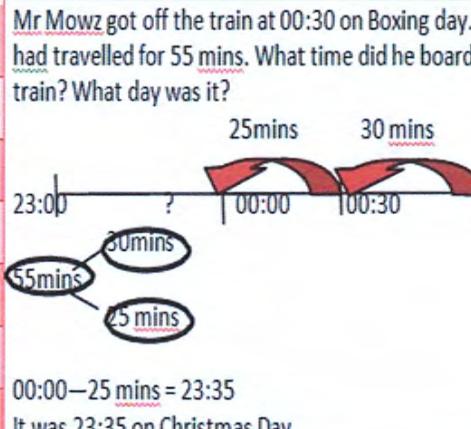
÷ 1000   ÷ 100   ÷ 10

4. Some key vocabulary- word origins

|			
Milli	one thousand	Mass	How heavy something is
Centi	one hundredth	Capacity	How much something can hold
Kilo	one thousand	Length	How long or wide something is

Important ideas

%

Percent
This is the symbol given to show 'how much' out of 100.

To find 1% divide by 100   To find 10% divide by 10

Percentage to fraction

10%

10 /100 simplified to 1/10

out of 100

Percentage to decimal

Divide the percentage by 100
How many times does the number fit into 100
100 ÷ 10 = 0.1

Percentage of an amount question

55% of 640

55% =
10% + 10% + 10% + 10% +
10% + 5%
OR
(10% X 5) + (10%/2)

Find 10%
640 ÷ 10 = 64

Find 5%
(this is half of 10%)
5%=32
55% = (5x64) + (32) =352
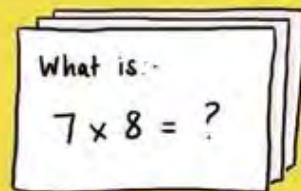
Pie charts represent 100% of an amount

This model is made with 20 cubes.

What percentage of the cubes in the model is black?

Count the total. 20
Count the black cubes 7.
Represent as a fraction 7/20.
make denominator 100
35%

Important equivalences to remember

Percentage	Fraction	Decimal
100%	100 /100	1
75%	75 /100=15/20	0.75
50	50 /100 = 1/2	0.5
25%	25/100 = 1/4	0.25
20%	20/100 =1/5	0.2
10%	10/100 = 1/10	0.1
5%	5/100= 1/20	0.05
1%	1/100	0.01

Key Vocabulary

'of' means multiply	To find 10% divide by 10	Increase rise	Decrease Fall, less

Decimal to percentage

0.1 = 10% = 0.10, 0.9=0.90=90%
One decimal place is out of 10

0.01 = 1%, 0.03 = 3%, 0.09=9%
Two decimal places is out of 100

Fraction to percentage

1/5   Multiply whole fraction to make denominator 100

20/100   Take numerator and place % sign
20%

Large Roman Numerals

50 + 70	L + LXX
100 + 350	C + CCCL
150 + 340	CL + CCCXL
1000 + 3000	M + MMM
500 + 600	D + DC
2018 + 1990	MMXVIII + MCMXC
2550 + 190	MDL + CCXC

Example question

Mr Mowz got off the train at 00:30 on Boxing day. He had travelled for 55 mins. What time did he board the train? What day was it?

00:00 — 25 mins = 23:35

It was 23:35 on Christmas Day.

Time conversion graph

Measurement: Time

- This time conversion graph compares time with the distance travelled in miles
- For example, after 2.5 hours the distance travelled is 150 miles
- Always use a ruler to ensure accuracy

4. Key Vocabulary

|	
Convert	Change from one metric to another. For example: changing from seconds to minutes.
Conversion fact	A fact used to help you convert between metrics. For example: there are 60 minutes in an hour.
Timetable	A chart showing arrival and departure times
Schedule	A plan for carrying out a process or procedure
Conversion graph	a line graph used to convert one unit to another
Duration	How long something lasts for
Leap year	a year, occurring once every four years, which has 366 days including 29 February
Millenium	a period of a thousand years
Century	a period of one hundred years.

Conversion facts

There are 24 hours in one day

There are 365 days in one year

There are 10 years in a decade

There are 100 years in one century

There are 1000 years in a millennium

To convert from seconds to hours: convert to minutes first.

MFL - French

FLASHCARDS

Create your own flashcards, question on one side answer on the other. Can you make links between the cards?

What is:-

7 × 8 = ?

You need to repeat the Q & A process for flashcards you fail on more frequently & less frequently for those you answer correctly

Create a flash card with all the key facts you want to learn (this can be drawn in your book). On the next page try writing down as many facts or as much of the knowledge as you can. If you find you are getting certain facts wrong then these are where you need to focus and relearn.

French Year 9 Summer Term – Self, Family and Friends

Objective: To talk about yourself, your family and friends

Threshold Concepts:

In French certain verbs are reflexive and are formed using a subject and reflexive pronoun.

Unlike English, the possessive pronouns his and her are not related to the gender of the person doing the action, but the gender of the noun referred to – "son/sa" can mean both "his" and "her".

Family and descriptions

mon frère – my brother

mon père – my dad

mon oncle – my uncle

mon grand-père – my grand-dad

mon beau-père – my step dad

ma sœur – my sister

ma mère – my mum

ma tante – my aunt

ma grand-mère – my gran

ma belle sœur- my sister-in-law

ma belle mère – my step mum

il / elle est – he / she is

agaçant – annoying

bavard – chatty

charmant – charming

têtu – stuborn

marrant – funny

fort – strong

impoli – impolite

méchant – mean

content – happy

impatient – impatient

Add an « e » for the feminine version of each adjective

j'ai - I have

les cheveux bruns – brown hair

des lunettes - glasses

Family Relationships

je m'entends avec – I get on with

je me dispute avec – I argue with

je me chamaille avec – I bicker with

je m'amuse avec – I have fun with

je m'occupe de – I look after

il / elle est – he / she is

égoïste – selfish

timide – shy

sévère – strict

travailleur - hardworking

Describing a day out

J'ai quitté la maison – I left the house

J'ai raté le bus – I missed the bus

J'ai écouté de la musique – I listened to music

J'ai retrouvé mon ami – I met my friend

J'ai discuté avec mon ami – I talked to my friend

J'ai mangé un sandwich - I ate a sandwich

J'ai acheté des vêtements – i bought clothes

C'était super – it was great

J'ai fait du shopping – I went shopping

Je suis allé(e) en ville – I went to town

Reflexive verbs

Reflexive verbs have an additional pronoun in front of the infinitive:

se disptuter – to argue

s'amuser – to have fun

The reflexive pronoun changes depending on the subject pronoun. The verb is conjugated in the usual way.

je me dispute

tu **te** disputes

il/elle/on **se** dispute

nous **nous** disputons

vous **vous** disputez

ils/elles **se** disputent

Possessive Adjectives

In French, there are three variations of the word "my". Click on the QR code for all possessive adjectives:

mon – used for masculine words

ma – used for feminine words

mes – used for plural words

-ER verb conjugation in the present tense

To put –er verbs in the present tense, we remove the –er and add the correct ending, depending on the pronoun:

je –e,

tu- es,

il/elle/on-e

nous- ons

vous- ez

ils/elles- ent

The Perfect Tense with "avoir"

To form the perfect you need to use the verb *avoir* in the present tense:

j'ai – I have

tu as – you have

il / elle a – he / she has

on a / nous avons – we have

You then add the past participle:

-er verbs = é (j'ai joué)

-re verbs = u (j'ai perdu)

-re verbs = i (j'ai fini)

There are some irregular past participles you need to know:

j'ai **fait** – **I did**

j'ai **bu** – **I drank**

j'ai **vu** – **I saw**

The perfect tense with être
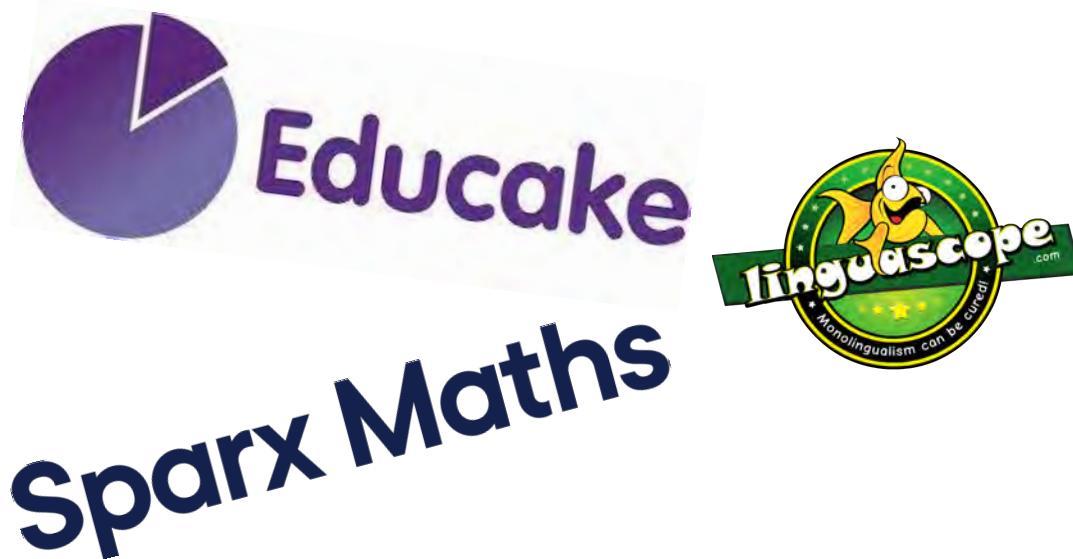
there are 14 verbs which use être to form the perfect tense:

je suis – i am

tu es – you are

il / elle est – he / she is

on est - we are

The most important verb which uses être is "aller"

je suis allé – I went

Year 9 – AQA MODULE 1- POINT DE DEPART 1	
Mon père	
Mon frère	
Mon oncle	
Mon grand-père	
Ma mère	
Ma sœur	
Ma tante	
Ma grand-mère	
Mon demi-frère	
Ma belle-mère	
Mes parents	
Il/elle est	
agaçant(e)	
arrogant(e)	
bavard(e)	
charmant(e)	
fort(e)	
content(e)	
impoli(e)	
marrant(e)	
méchant(e)	
têtu(e)	
J'ai les cheveux	
courts/longs	
raides/boucles frises	
roux/ noirs/blonds	
J'ai les yeux	
bleus/verts	
Je suis	
Petit(e)/grand(e)	
de taille moyenne	
mince/gros(se)	

Music

Make sure you are regularly testing your knowledge using the resources provided by the school on platforms such as Sparx, Educake and Linguascope. You will have been issued with user names and passwords to access your accounts.

SOUNDTRACKS
Exploring Film Music

A. The Purpose of Music in Film

Film Music is a type of **DESCRIPTIVE MUSIC** that represents a **MOOD, STORY, SCENE** or **CHARACTER** through music, it is designed to **SUPPORT THE ACTION AND EMOTIONS OF THE FILM ON SCREEN**. Film Music can be used to:

- Create or enhance a mood (though the **ELEMENTS OF MUSIC**) ->
- Function as a **LEITMOTIF** (see D)
- To emphasise a gesture (**MICKEY-MOUSING** – when the music fits precisely with a specific part of the action in a film e.g. cartoons)
- Provide unexpected juxtaposition/irony (using music the listener wouldn't expect to hear giving a sense of uneasiness or humour!)
- Link one scene to another providing continuity
- Influence the pacing of a scene making it appear faster/slower
- Give added commercial impetus (released as a **SOUNDTRACK**) – sometimes a song, usually a pop song is used as a **THEME SONG** for a film.
- Illustrate the geographic location (using instruments associated with a particular country) or historical period (using music 'of the time').

D. Leitmotifs

LEITMOTIF – A frequently recurring short melodic or harmonic idea which is associated with a character, event, concept, idea, object or situation which can be used directly or indirectly to remind us of one not actually present on screen. Leitmotifs can be changed through **SEQUENCING, REPETITION** or **MODULATION** giving a hint as to what may happen later in the film or may be heard in the background giving a "subtle hint" to the listener *e.g. the "Jaws" Leitmotif*

B. How the Elements of Music are used in Film Music

PITCH AND MELODY – **RISING MELODIES** are often used for increasing tension, **FALLING MELODIES** for defeat. Westerns often feature a **BIG THEME**. **Q&A PHRASES** can represent good versus evil. The **INTERVAL OF A FIFTH** is often used to represent outer space with its sparse sound.

DYNAMICS – **FORTE (LOUD)** dynamics to represent power; **PIANO (SOFT)** dynamics to represent weakness/calm/resolve. **CRESCENDOS** used for increasing threat, triumph or proximity and **DECRESCENDOS** or **DIMINUENDOS** used for things going away into the distance. Horro Film soundtracks often use **EXTREME DYNAMICS** or **SUDDEN DYNAMIC CHANGES** to 'shock the listener'.

HARMONY – **MAJOR** – happy; **MINOR** – sad. **CONSONANT HARMONY OR CHORDS** for "good" and **DISSONANT HARMONY OR CHARDS** for "evil". **SEVENTH CHORDS** often used in Westerns soundtracks.

DURATION – **LONG** notes often used in Westerns to describe vast open spaces and in Sci-Fi soundtracks to depict outer space; **SHORT** notes often used to depict busy, chaotic or hectic scenes. **PEDAL NOTES** – long held notes in the **BASS LINE** used to create tension and suspense.

TEXTURE – **THIN/SPARE** textures used for bleak or lonely scenes; **THICK/FULL** textures used for active scenes or battles.

ARTICULATION – **LEGATO** for flowing or happy scenes, **STACCATO** for 'frozen' or 'icy' wintery scenes. **ACCENTS (>)** for violence or shock.

RHYTHM & METRE – 2/4 or 4/4 for Marches (battles), 3/4 for Waltzes, 4/4 for "Big Themes" in Westerns. **IRREGULAR TIME SIGNATURES** used for tension. **OSTINATO** rhythms for repeated sounds *e.g. horses.*

C. Film Music Key Words

SOUNDTRACK – The music and sound recorded on a motion-picture film. The word can also mean a commercial recording of a collection of music and songs from a film sold individually as a CD or collection for digital download.

MUSIC SPOTTING – A meeting/session where the composer meets with the director and decides when and where music and sound effects are to feature in the finished film.

STORYBOARD – A graphic organiser in the form of illustrations and images displayed in sequence to help the composer plan their soundtrack.

CUESHEET – A detailed listing of **MUSICAL CUES** matching the visual action of a film so that composers can time their music accurately.

CLICK TRACKS – An electronic **METRONOME** which helps film composers accurately time their music to on-screen action through a series of 'clicks' (often heard through headphones) – used extensively in cartoons and animated films.

DIEGETIC FILM MUSIC – Music within the film for both the characters and audience to hear *e.g. a car radio, a band in a nightclub or sound effects.*

NON-DIEGETIC FILM MUSIC – Music which is put "over the top" of the action of a film for the audience's benefit and which the characters within a film can't hear – also known as **UNDERSCORE** or **INCIDENTAL MUSIC**.

E. History of Film Music

Early films had no soundtrack (**"SILENT CINEMA"**) and music was provided live, usually **IMPROVISED** by a pianist or organist. The first **SOUNDTRACKS** appeared in the 1920's and used existing music (**BORROWED MUSIC** – music composed for other (non-film) purposes) from composers such as Wagner and Verdi's operas and ballets. In the 1930's and 1940's Hollywood hired composers to write huge Romantic-style soundtracks. **JAZZ** and **EXPERIEMENTAL MUSIC** was sometimes used in the 1960's and 1970's. Today, film music often blends **POPULAR, ELECTRONIC** and **CLASSICAL** music together in a flexible way that suits the needs of a particular film.

F. Film Music Composers and their Soundtracks

Jerry Goldsmith
Planet of the Apes
Star Trek: The Motion Picture
The Omen
Alien

John Williams
Star Wars
Jaws
Harry Potter
Indiana Jones
Superman, E.T.

James Horner
Titanic
Apollo 13
Braveheart
Star Trek II
Aliens

Ennio Morricone
The Good, The Bad and The Ugly
For a Few Dollars More
The Mission

Danny Elfman
Mission Impossible
Batman Returns
Men in Black
Spider Man

Hans Zimmer
The Lion King
Gladiator
Dunkirk
Blade Runner 2049
No Time to Die

Bernard Hermann
Psycho
Vertigo
*Taxi Driver*

Computer and Video Game Music
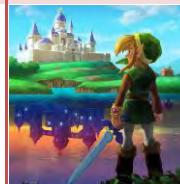
Early Computer and Video Game Music

Early video game music consisted primarily of **SOUND EFFECTS** (an artificially created or enhanced sound used to emphasize certain actions within computer and video games), **CHIPTUNES** or **8-BIT MUSIC** (a style of electronic music which used simple melodies made for programmable sound generator (PSG) sound chips in vintage computers, consoles and arcade machines) and early sound **SYNTHESISER** technology (an electronic musical instrument that generates audio signals that may be converted to sound). **SAMPLING** (the technique of digitally encoding music or sound and reusing it as part of a composition or recording) began in the 1980's allowing sound to be played during the game, making it more realistic and less "synthetic-sounding".

How Computer and Video Game Music is used within a Game

Music within a computer or video game is often used for **CUES** (knowing when a significant event was about to occur).
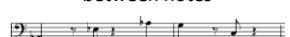
Video game music is often heard over a game's title screen (called the **GROUND THEME**), options menu and bonus content as well as during the entire gameplay.

Music can be used to **INCREASE TENSION AND SUSPENSE** *e.g. during battles and chases*, when the player must make a decision within the game (a **DECISION MOTIF**) and can change, depending on a player's actions or situation *e.g. indicating missing actions or "pick-ups"*.

Musical Features of Computer and Video Game Music

JUMPING BASS LINE	STACCATO ARTICULATION	CHROMATIC MOVEMENT	SYNCOPATION
Where the bass line often moves by **LEAP** (**DISJUNCT MOVEMENT**) leaving 'gaps' between notes	Performing each note sharply and detached from the others. Shown by a dot.	Melodies and bass lines that ascend or descend by semitones. *Chromatic Scale*	Accenting the weaker beats of the bar to give an "offbeat" jumpy feel to the music.

How Computer and Video Game Music is Produced

Fully-orchestrated **SOUNDTRACKS** (video game music scores) are now popular – technology is used in their creation but less in their performance. The composer uses **MUSIC TECHNOLOGY** to create the score, it is then played by an **ORCHESTRA** and then digitally converted and integrated into the game. Video game **SOUNDTRACKS** have become popular and are now commercially sold and performed in concert with some radio stations featuring entire shows dedicated to video game music.

Character Themes in Computer and Video Game Music

Characters within a video game can also have their own **CHARACTER THEMES** or **CHARACTER MOTIFS** – like **LEITMOTIFS** within Film Music. These can be manipulated, altered and changed – adapting the elements of music – **ORCHESTRATION** (the act of arranging a piece of music for an orchestra and assigning parts to the different musical instruments)**, TIMBRE, SONORITY, TEXTURE, PITCH, TEMPO, DYNAMICS** – depending on the character's situation or different places they travel to within the game.

Famous Computer and Video Game Music Composers and their Soundtracks

Koji Kondo
Super Mario Bros. (1985)
The Legend of Zelda (1986)

Michael Giacchino
The Lost World: Jurassic Park (1997)
*Medal of Honour (1999)*
Call of Duty (2003)

Mieko Ishikawa
Dragon Slayer (1993)

Martin O'Donnell and Michael Salvatori
Halo (2002)

Daniel Rosenfield
Minecraft (2011)

Rom Di Prisco
Fortnite (2017)

PE

Year 9 PE Summer Knowledge Organiser

In the summer term, students will learn how to plan and run a sport specific drill or activity, demonstrate good leadership in a variety of situations, and show good control whilst performing skills in a variety of sports.

Head

Plan and Run

Students will gain understanding in how to plan and run a sports specific drill, which will lead to performance improvement. It should include:

- Activities that closely replicate that of the main sport.

- Something that allows for skills to be practiced, but also for progression.

- A chance to prepare well for the main sporting event/game.

Heart

Leadership

Good leadership skills are something that students can take from PE and use in all walks of life. Signs of a good leader could be:

- Good relationships with others

- Strong communication skills

- The ability to make decisions quickly and efficiently

- Good problem solving skills

Think about ways you could show good leadership both in PE and in other subjects around school.

Hands

Show Control

When performing more advanced skills, showing control is more important then ever, to ensure the risk of injury is as minimal as possible.

Students should:

- Know how to perform the skill.

- Know how to move their body and limbs to complete the skill.
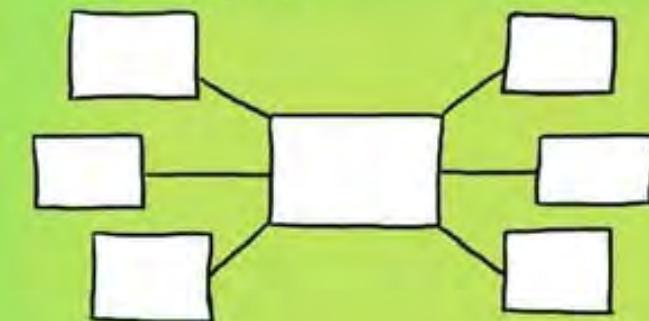
Can you think of what control looks like in these particular sports?

Football, Gymnastics, Handball

PSHE
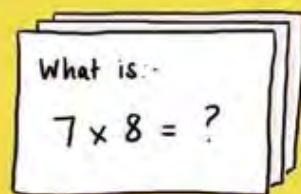
RS

FLASHCARDS

Create your own flashcards, question on one side answer on the other. Can you make links between the cards?

What is:-

7 x 8 = ?

You need to repeat the Q & A process for flashcards you fail on more frequently & less frequently for those you answer correctly

Create a flash card with all the key facts you want to learn (this can be drawn in your book). On the next page try writing down as many facts or as much of the knowledge as you can. If you find you are getting certain facts wrong then these are where you need to focus and relearn.

RSE

Read through your knowledge organiser. Next, cover it up or put it away and try tho write down as many of the key facts that you can remember. Use your knowledge organiser to check the fact you have written down. Correct any you may have got wrong.

Science

Organise your ideas into a concept map, like the one below that summarises 'cells'. In a concept map, you take the main ideas and link them together with phrases that explain the relationship between the concepts. But, always try to make the concept map from memory first! Then check it with the knowledge organiser

Homeostasis
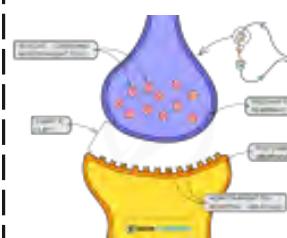
Threshold Concept
Homeostasis is organisms maintaining a constant internal environment

The nervous system:
- The central nervous system (CNS) – the brain and spinal cord.

- The peripheral nervous system – nerve cells that carry information to or from the CNS.

Keywords
- **Nerves:** Specialised cells which carry electrical impulses
- **Hormones**: Chemical messenger produced in glands and carried by the blood to specific organs in the body.
- **Organism**: Living things that are capable of reacting to stimuli, reproduction, growth, and homeostasis.
- **Regulate**: control or maintain the rate or speed of a process so that it operates properly.
- **Response**: as a result of the stimulus that is detected by the receptor a response is caused

Synapse:

Body controls:
Homeostasis maintains optimal conditions for enzyme action throughout the body, as well as all cell functions.
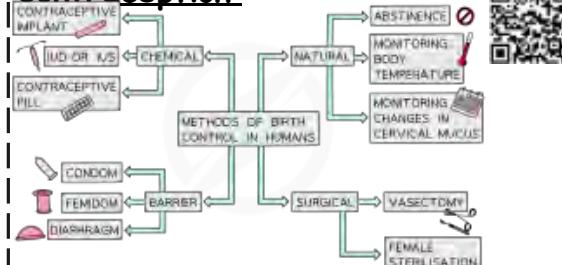
In the human body, these include the control of:

1. Blood glucose concentration

2. Body temperature

3. Water levels

The menstrual cycle
1. The menstrual cycle is the reproductive cycle in women, which starts with a period (menstruation). if the woman is not pregnant.

2. There are four hormones involved: follicle stimulating hormone, luteinising hormone, oestrogen & progesterone.

3. FSH (released by the pituitary gland) causes eggs to mature in the ovaries.

4. FSH stimulates ovaries to produce oestrogen.

5. Oestrogen inhibits further release of FSH and stimulates release of LH.

6. LH (released by the pituitary gland) stimulates the release of an egg (ovulation) from an ovary.

5. LH stimulates secretion of progesterone by the empty follicle.

6. Progesterone inhibits the release of LH and FSH.

7. Oestrogen and progesterone maintain the lining of the uterus.

The nervous system response:

KEY:
- SENSORY NEURONE
- RELAY NEURONE
- MOTOR NEURONE

SPINAL CORD (CROSS SECTION)

MUSCLE (EFFECTOR)

LEG

*AN IMPULSE IS ALSO SENT TO THE BRAIN, BUT THE BRAIN IS NOT INVOLVED IN COORDINATING THE RESPONSE

RECEPTOR CELL

PIN (STIMULUS)

Required practical: Reaction time
2 PERSON 2 SITS ON A CHAIR, WITH THEIR ARM RESTING ON THE TABLE WITH THEIR DOMINANT HAND OVER THE EDGE.

PERSON 2

RULER HELD WITH 0cm BETWEEN PERSON 1's THUMB AND FOREFINGER

DOMINANT HAND

PERSON 1

3 PERSON 1 CATCHES THE RULER AS QUICKLY AS POSSIBLE. RECORD THE NUMBER ON THE RULER THAT IS LEVEL WITH 1's THUMB. REPEAT SEVERAL TIMES.

PERSON 2

PERSON 1

Contraception:
CONTRACEPTIVE IMPLANT

IUD OR IUS — CHEMICAL

CONTRACEPTIVE PILL

METHODS OF BIRTH CONTROL IN HUMANS

ABSTINENCE

NATURAL — MONITORING BODY TEMPERATURE

MONITORING CHANGES IN CERVICAL MUCUS

CONDOM

FEMDOM — BARRIER

DIAPHRAGM

SURGICAL — VASECTOMY

FEMALE STERILISATION
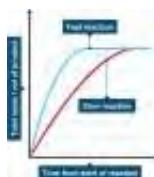
Equations for this topic

Rates of Reaction

Threshold Concept

All particles must collide with a minimum amount of energy in order to react

Rate of reaction

Rate of reaction is how fast reactants are changed into products

Collision theory and activation energy

The rate of reaction is directly proportional to the number of successful collisions.
To react: particles must first **collide** with enough **activation energy** to be successful.
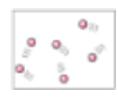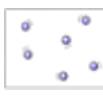
## Factors affecting rate of reaction

Effect of Temperature:
Increasing the temperature increases the speed that particles are moving
This means there are more frequent collisions, and those collisions have more energy
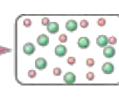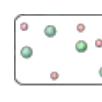
Video of all

Effect of Concentration:
Increasing concentration increases the number of reacting particles.
This increases the frequency of collisions
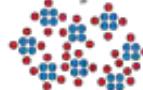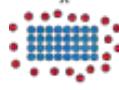
Effect of Surface Area:
Increasing the surface area increases the proportion of (solid) particles available to react.
This increases the frequency of collisions.

Keywords

Particle - A particle is the smallest possible unit of matter
Energy - Energy is what holds the atoms in a molecule together
Collision - If the two molecules A and B are to react, they must get close enough to break and make the new bonds that are needed in the products
Reactant - A substance put into a chemical reaction
Product - A substance made in a chemical reaction
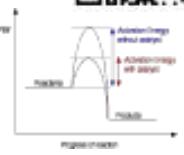
Catalysts

Catalysts: increase the rate of a reaction without getting used up.
Catalysts decrease the activation energy required to begin the reaction.
Catalysts are often used in industry to speed up chemical processes.

Measuring rate of reaction

There are various ways to measure quantity of reactant used or quantity of product formed.
Measuring the volume of gas collected can be the easiest way to measure.

The units of rate depend on what you are measuring. For example, when measuring gas in cm^3 you will end up with rate units of cm^3/s. When measuring the change in mass (g), you will end up with units of g/s

$$mean\ rate\ of\ reaction = \frac{quantity\ of\ reactant\ used}{time\ taken}$$

$$mean\ rate\ of\ reaction = \frac{quantity\ of\ product\ formed}{time\ taken}$$

Required Practical
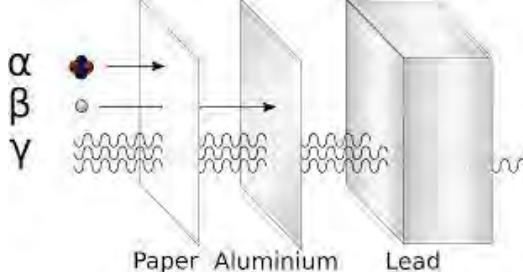
Equations for this topic

Atomic Structure
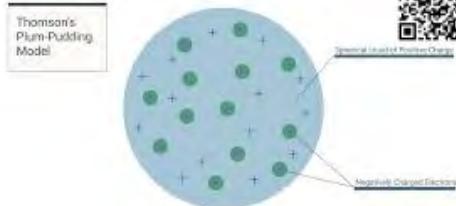
Threshold Concept

Identify that there are three types of radiation

Keywords

Atom – the smallest particle of a chemical element that can exist
Proton – positively charged particle
Neutron – Particle with no charge
Electron – Negatively charged particle
Wave – Energy transfer method
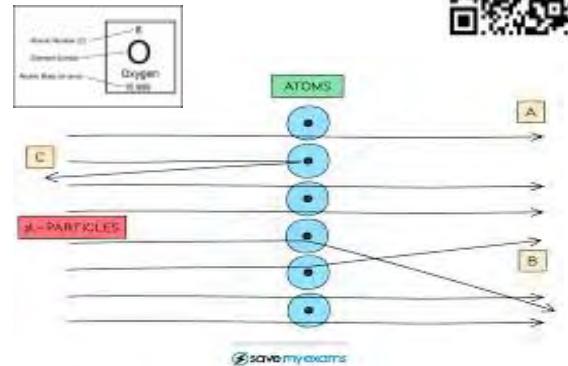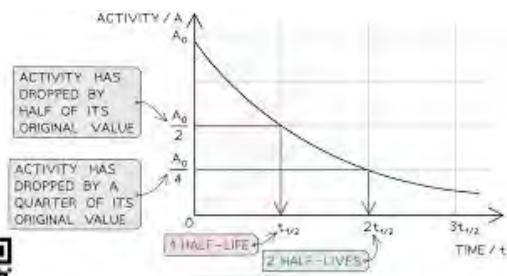
Alpha, Beta and Gamma

α
β
γ

Paper   Aluminium   Lead

Plum Pudding Model

Thomson's Plum-Pudding Model

Rutherfords Scattering Experiment

ATOMS

A

C

α – PARTICLES

B

Nuclear Model

Rutherford's Model Of Atoms

NUCLEUS
NEUTRON
PROTON
ELECTRON ORBITS
ELECTRONS

Half Life

ACTIVITY / A

A₀

ACTIVITY HAS DROPPED BY HALF OF ITS ORIGINAL VALUE

ACTIVITY HAS DROPPED BY A QUARTER OF ITS ORIGINAL VALUE

1 HALF-LIFE

2 HALF-LIVES

TIME / t

Uses and Dangers of Radiation

	Irradiation	Contamination
Description	Object is exposed to radiation but does not become radioactive	Object becomes radioactive and emits radiation
Source	Danger is from radiation emitted outside the object	Danger from radiation emitted within the object
Prevention	Prevented by using shielding, such as lead clothing	Prevented by safe handling of sources and airtight safety clothing
Causes	Caused by the presence of radioactive sources outside the body	Caused by inhalation or ingestion of radioactive sources

Equations for this topic

$$^{235}_{92}U \xrightarrow{\text{decay by releasing an alpha particle}} ^{4}_{2}\alpha + ^{231}_{90}Th$$

$$^{14}_{6}C \xrightarrow{\text{decay by releasing an beta particle}} ^{0}_{-1}\beta + ^{14}_{7}N$$

$$^{235}_{92}U \xrightarrow{\text{decay by releasing a gamma wave}} ^{0}_{0}\gamma + ^{235}_{92}U$$