# Year 8
# Knowledge Organisers

**NAME:**_____

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## What is a knowledge organiser?

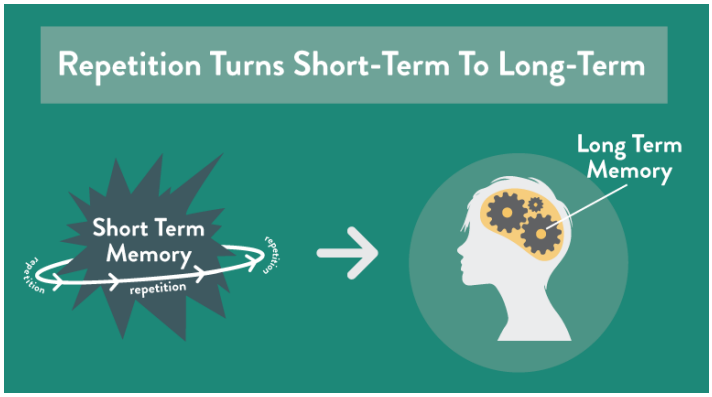
A knowledge organiser sets out the most important facts that your teachers believe you need to know about their subject. We want you to use it to memorise information that will support you with what you are learning in class.

## Why do you need knowledge organisers?

- To make your homework more meaningful and to link directly to what you learn in lessons. They are to be used in conjunction with the curriculum maps which can be found on Firefly and the school website.
- To help make sense of what you learn in lessons, allowing you to complete tasks that are more challenging.
- To help develop the techniques you need to memorise information, ready for future years.
- To give you the opportunity to feel more expert of specialist in a subject, and learn more for yourself.

## How does your memory work?

You store information in both your long term and short-term memory. Our short term memory is our 'working memory' – we use it for day to day thinking and problem solving and only store memories in here for a short amount of time. Our long-term memory contain information that we know really well, and our short-term memory 'calls it up' when new feel we need to use it. If we do not memorise information, our short-term memory soon forgets it. In addition, if we try to remember too much information in too short a period we overload our short-term memory – this can affect our ability to think clearly and leads us to make mistakes.




## To store information in your long-term memory you need to practice:

- **Repetition** – keep coming back to the same information repeatedly.
- **Spacing** – Mixing up the topic you study to test your memory.
- **Testing** – Find ways to check what you remember, and to work out your weak areas.

## Instructions for using your knowledge organisers

You can use your Knowledge Organisers in a number of different ways but you should not just copy from them. Below are some possible tasks or strategies you could complete as independent learning.

- Make flash cards ( https://quizlet.com/en-gb)
- Cover up one section of the KO and try to write out as much as you can form memory. Correct this work.
- Draw a mind map.
- Write your own challenging questions and then leave it overnight to answer them the next day.
- Put the key words into new sentences.
- Give yourself spelling and keyword definition tests
- Draw diagrams or processes / flow charts / images and label them with extra information.
- Do further research on the topic / create fact files.
- Make up mnemonics

# ART

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# YEAR 8 ART

## Term 1: Non-European Art Project

**The Big Picture:** We can learn a lot about different cultures outside of Europe and the Western world by looking at the artworks and artefacts made by native artists and crafts persons. Often these artworks and artefacts are very skilfully made, reflecting history, beliefs and daily life. Cultures from around the world have had much influence on European and Western art.

**Project Brief:** To create a piece of artwork inspired by Non-European artwork/artefacts incorporating patterns and/or symbols.

**Artist Connections**
You will be able to show an understanding of a range Non-European Art and the work of Non-European artists and crafts persons.


## Term 2: Still Life Project

**The Big Picture**
**Project brief:** To produce a large Still Life outcome.

**Artist Connections**
You will investigate and connect your practical work with the work of other Still Life artists.


## Term 3: Pop Art Project

**The Big Picture**
**Project Brief:** To produce a piece of artwork that is inspired by work from the Pop Art Movement.

**Artist Connections**
You will investigate and connect your practical work with the work of key "Pop" artists.

# Clay – Keywords

| | |
|---|---|
| Slab Building | Building sculptures or pot forms using flat pieces of clay |
| Coil Building | A method of hand building a sculpture or pot form using long rolled out, snake-like lengths of clay |
| Slip | A mixture of clay and water used like glue |
| Score | To make the surface of the clay rough when putting two pieces together |
| Wedge | To knead the clay or push on it repeatedly to help remove air bubbles |
| Knead | Preparing clay for shaping by pushing and rolling it under the palm of your hand |
| Fire | The firing process turns raw clay into ceramic through high-temperature heating. This happens in a kiln. |
| Kiln | The type of 'oven' used to fire the clay |
| Relief | Building forms up out of a flat surface |
| Carving | Cutting out pieces from the clay |
| Texture | The feel or appearance of the clay surface |
| Impressing | Marks that are made by pressing tools, objects and materials into soft clay |
| Leather hard | Clay that is losing moisture and beginning to stiffen – perfect for carving |
| Bone dry | When the clay is as dry as it can be before firing |
| Ceramic | Clay once it has been fired |
| Glazing | After a sculpture or pot has been fired in the kiln it can then be glazed. Glaze is applied like paint and the clay is then fired for a second time to produce a smooth, shiny surface. |



## Top Tips and Key Rules for Clay Work:-

- Always make sure you have your design out in front of you and keep referring to this while you are working with the clay.
- Don't make your clay too thick (over 2 cm) or too thin.
- You can use newspaper to create a 3D support for a sculpture to give good depth and form.
- You can build up smaller areas of design features by using small pellets of clay and blending them on well.
- To join bigger pieces of clay together you need to score and slip them.
- Surface details and textures can be built in relief or carved in.
- Don't let your clay get too wet or too dry.
- Don't trap any air in your clay or your clay will be at risk of exploding in the kiln during the firing process.
- Between clay lessons, wrap your work tightly in a plastic bag ensuring no air can get to it. Make sure your bag is labelled.

**Clay Handling Knowledge Organiser**

**Still Life** - a collection of inanimate objects (things that are not living) arranged together in a specific way.

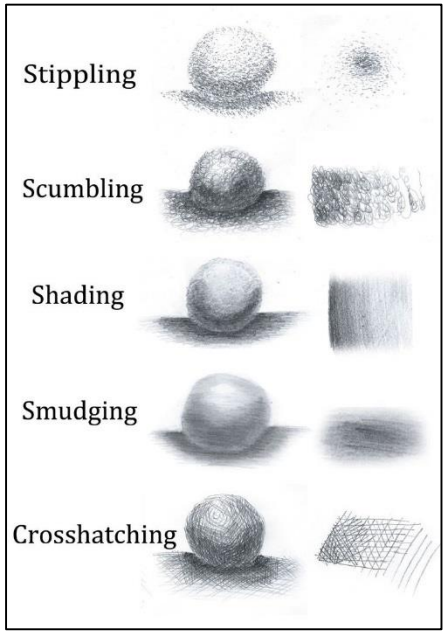
**Recording from Observation**

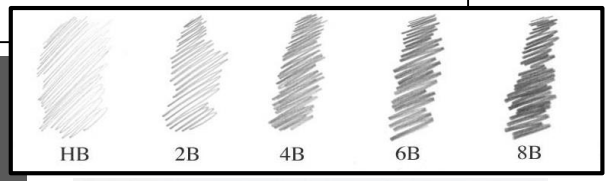
**Primary source observational drawing:** drawing something real in front of you.

**Secondary source observational drawing:** drawing something from a picture.

**Top tips to make drawings of objects look 3D:-**

- A range of tonal shading is essential to make objects look 3D and not flat.
- Pressing harder and lighter with a pencil creates the different tones.
- Shading straight across a surface will make an item appear flat.
- Use the direction of your pencil to help enhance giving a sense of 3D form i.e. when drawing curved objects, use curved shading marks.
- Use of different mark-making techniques i.e. stippling, smudging, cross-hatching etc can help to give a sense of the texture of an object.
- Including shadows will also help make objects appear 3D and separate objects from each other.
- Shadows also stop objects from appearing to float in the middle of your page.




**Grades of Pencils**

Pencils come in different grades. The softer the pencil the darker the tone.

H = hard, B = black (soft)

In Art the most useful pencils are B, 2B and 4B.

If your pencil has no grade it is likely to be an HB.

| Still Life Keywords | |
|---|---|
| Composition | The position and layout of shapes on a page |
| Viewfinder | A window usually made from paper or card to help select a focus area for drawing |
| Line | Defines shape, the outer edges of objects |
| Tone | Refers to how light or dark a object is |
| Shape | The outline of the still life objects |
| Form | Appearing three-dimensional |
| Pattern | A repeated shape or line |
| Texture | The feel or appearance of a surface, how rough or smooth it is |
| Structure | The way in which parts are arranged and put together |
| Scale | The different sizes of shapes used |
| Proportion | The size and shape of one object in comparison to another |
| Ellipse | The oval or squashed circle you see when drawing a cylindrical shape |
| Line of Symmetry | A line that can be drawn down the centre of any shape or object to show a mirror image of the other side |
| Shadow | The dark area on surface where the light is blocked by an object |

# Still Life Drawing Knowledge Organiser

# Colour Theory and Paint Handling Knowledge Organiser

## Painting Keywords

| | |
|---|---|
| Composition | The position and layout of shapes within a picture. |
| Balance | The even spread and spacing of shapes across a picture. |
| Orientation | The direction that a shape has been put on the page e.g. vertical, horizontal and diagonal. |
| Stippling | A brush technique that creates the appearance of many small dots close together. |
| Dabbing | A painting technique that creates an irregular pattern and which can add texture to a painting. |
| Blending | A painting technique where one colour will merge seamlessly into another colour. |
| Poster Paints | Water-soluble paints which comes in liquid bottled form. |
| Watercolour Paints | Paints that are diluted with water. They can be used to create soft wash or more vibrant colours depending on the amount of water used. |
| Acrylic Paints | Thick paints that come in bottled form. They are diluted with water, but become water-resistant when dry. |
| Scale | The different sizes of shapes used. |
| Wet-on-wet | Wet paint applied to wet paint; the colours will spread into one another, producing soft edges and blending. |
| Wet-on-dry | Wet paint applied to dry paint; produces sharp edges to shapes. |
| Wash | A paint technique where the paint is very diluted and thin. |
| Gradient | Colours painted in a way that creates a tonal scale or a continuous shift from one colour into another. |
| Texture | The surface of a painting can be built up with paint to create an uneven surface or it can be painted to be very flat and smooth. |
| Flat Painting | The use of flat colours (no tints or tones blended in) to give a clear bold finish. |
| Layers | Additional layers of paint are added to make the painted shapes flatter in colour (no brush marks showing). |

## Colour Theory Keywords

| | |
|---|---|
| The Colour Wheel | Circular guide to colour first developed in the early 19thC. in which the individual colours of the spectrum are arranged in segments. |
| Primary Colours | Colours from which all other colours are made (red, blue, and yellow). |
| Secondary Colours | Colours that are created from an equal amount of a pair of primary colours mixed together (green, orange, purple). |
| Tertiary Colours | Colours made from equal amounts of a pair of primary and secondary colours mixed together (red-purple, blue-purple, blue-green, yellow-green, yellow-orange, red- orange). |
| Warm Colours | Red, orange and yellow which seem 'warm' in a painting and seem also to advance. |
| Cold Colours | Blue, purple and green which appear to recede or help to give a sense of distance. |
| Complementary / Contrasting Colours | Pairs of colours that work well together and are opposite to each other on the colour wheel: (red & green, blue & orange, yellow & purple). |
| Harmonious Colours | Colours that are next to each other on the colour wheel. |
| Tint | Changing a colour by adding white. |
| Shade | Changing a colour by adding black. |

## Top tips to improve your painting:

- Don't overload your palette if you are using poster or acrylic paints; a little squeeze of each colour you need will go a long way.
- Work with an appropriately sized brush for the area that you are painting. You may need several brushes that are different sizes. For really small shapes, make sure you are using the smallest brush available.
- So you can control the paint effectively, make sure that you do not overload your brush with too much paint. Only the tip of the bristles needs to be loaded with paint.
- The thickness of the paint will effect the look of your work. If the paint is too thick it will give you a clunky, heavy look. If the paint is too thin, you will get a very watery look and you risk your paper starting to bobble. Use a little water but not too much on your brush to help you control how the paint will flow when you apply it to your paper.
- When mixing colours, make sure that you have a separate mixing tray and you rinse your brush well between transferring colours into the mixing tray otherwise you will contaminate your palette.
- For neat edges use just the very tip of the brush and work slowly at the edge outline of shapes.
- To achieve a smooth finish: when applying the paint make sure that all the bristles on the brush stay together forming a nice point. Move the brush in short, even strokes.

# Printmaking Keywords

| | |
|---|---|
| Relief Printing | A surface (block) is pressed into, cut away or built up to create raised areas that the rolled ink touches. This is then transferred on to paper. |
| Intaglio Printing | A form of printmaking where an image is incised into a surface and the incised line or sunken area holds the ink. It is the direct opposite of a relief print. |
| Printing Plate | The surface onto which a design for a print is produced. This could be made using wood, card, metal, perspex, lino or polystyrene. |
| Poly Tile Printing | A form of relief printing where marks are indented on a polystyrene tile and then multiple prints can be made of this design. |
| Lino Printing | Another form of Relief printing where the printing plate is created by carving into lino, a hard rubbery surface. The lino is then inked, a piece of paper placed over it, and then run through a printing press to transfer the ink to the paper. The result, a linocut print. |
| Ink Transfer | The process of the ink moving from the printing plate onto paper, to create a print. |
| Repeat pattern | A design is repeated over and over in a basic grid of rows and columns. |
| Half Repeat Pattern | A design is repeated like bricks on a house – they are in a horizontal row, and then the next row is offset to create a staggered look. |
| Mono-printing | A form of printmaking which is instant and can only be made once, unlike others where you can produce multiple originals. An expressive form of print making. |
| Reduction Printing | Additional layers on a print are created in different colours. More surface is removed from the print block for each layer. |

## How to create a Poly-Tile Printing Plate:-

- In your sketchbook, you will need to have a design drawn out that is the size of the print that you want to create.
- Once you have your final design drawn to the scale required, you should trace the design using tracing paper.
- Take the tracing paper and use masking tape to secure this **back to front** onto a poly-tile. The tile needs to have a back to front version of the design so that it will when printed be the correct way round.
- Use a biro pen to go over the lines made on the **back to front** tracing paper. This should transfer your pencil marks.
- Remove the tracing paper and then properly indent your tile with neat clean lines.
- Do not lean too hard or you will snap the tile or put a hole in it.
- Do lean hard enough though to create a channel that goes half way down the depth of the tile. If your marks are not deep enough, they will not get picked up when you try to make a print. The ploy-tile needs to be indented sufficiently so the ink sits well on the top of the tile when it comes to actually printing it.

## How to create prints with a Poly-Tile:

- Make sure all your equipment is clean before you start.
- Keep your messy inking up area separate from your final piece.
- Try to keep your hands as clean as possible throughout the process.
- Squeeze a small amount of ink out onto a large plastic tray and roll out using a roller until a tacky consistency is achieved.
- Use a roller to apply the tacky ink to the polystyrene block.
- Make sure you control the inking up onto the tile well. If you overdo the ink, its becomes messy. If you under-do it, the result will be patchy.
- Position your inked up poly-tile onto a piece of paper. Using dry roller, apply pressure to the back of the polystyrene tile taking care that the block is held securely in place.
- Peel to reveal: To avoid snapping the polystyrene tile, carefully peel the paper away from the polystyrene block.
- Your poly-tile can be re-used multiple times. You can wash the tile under a running tap then dry it off and change colour.

# Printmaking Knowledge Organiser

# POP ART KNOWLEDGE ORGANISER

1. Art

## POP ART KEY INFO:-

- Pop Art was an art movement of the 1950s and 60s in America and Europe.
- Pop art utilized images and icons from popular media and products. This included commercial items like soup cans, photos of celebrities, comics, newspapers and other items popular in the commercial world. Even brand names and logos were incorporated.
- Pop art is characterized by vibrant, bright colours. The primary colours, red, yellow and blue were prominent pigments that appeared in many famous works.
- Humour was one of the main components of Pop art. Artists would create work to make a statement about current events, poke fun at fads, and challenge the status quo.
- Many Pop artists engaged in printmaking processes, which enabled them to quickly reproduce images in large quantities.

## Andy Warhol

(1928 – 1987) used commercial printing techniques. Sometimes he printed images of every day popular day to day items.
He also printed images of famous icons.
He also liked to repeat his printed images.

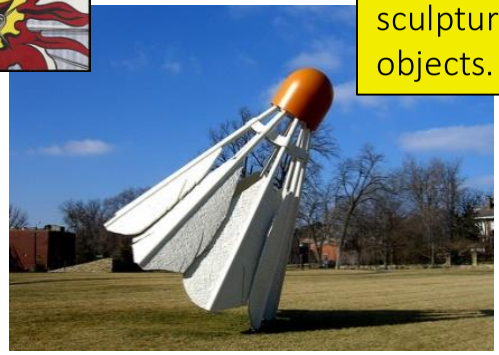

| Pop Art Keywords | |
|---|---|
| Mass/Popular Culture | Culture based on the tastes of ordinary people rather than an educated elite. |
| Composition | The position and layout of shapes on a page. |
| Silkscreen Printing | A process through which ink is transferred onto paper or canvas through a mesh screen with a stencil. |
| Collage | Using multiple images from different sources and placing them together to make a new picture. |
| Soft Sculpture | A type of sculpture made using cloth, foam rubber, plastic, paper, fibres and similar material that are supple and non rigid. |
| Ben-Day Dots | A commercial printing technique using small dots of colour. |
| Appropriation | The intentional borrowing, copying, and alteration of existing images and objects. |
| Onomatopoeia | Refers to words whose sound is very close to the sound they are meant to depict. |


## Claes Oldenburg

(born 1929) is best known for his public art installations typically featuring large replicas of everyday objects. Another theme in his work is soft sculpture versions of everyday objects.

## Roy Lichtenstein

(1923 – 1997) was inspired by comics from popular culture. He used bold outlines and simple colours, as well as dotted and striped background patterns. He was well known for his used of onomatopoeic words.

# COMPUTING

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# Year 8 Computing

## Digital Literacy

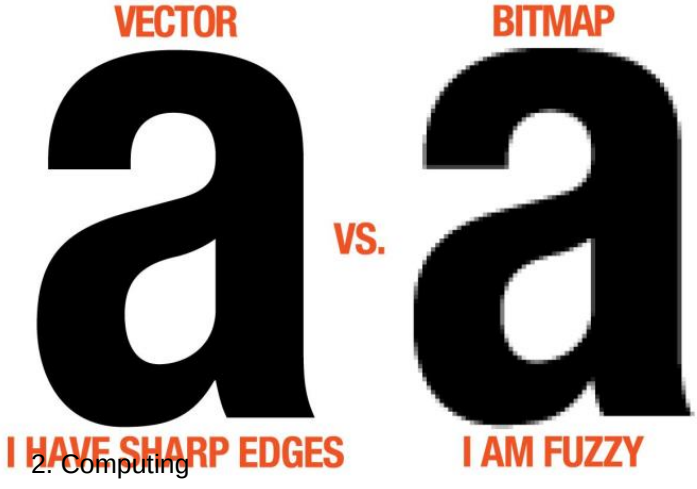
Be able to discuss & demonstrate ability to use school digital services, including Firefly, Office 365 and KHS Portal.

**Collaborate computing** is where files can be shared and simultaneously worked on at the same time. These files are shared through cloud computing services. **Advantages:** more minds = more ideas! Shared worked load. **Disadvantages:** worked shared online, technical issues could hinder progress.

## Data & Data Representation – Representing images

| *Key word* | *Definition* |
|---|---|
| Jpg (file format) | Joint Photographic Experts Group – commonly used for storing photographs and used by digital cameras |
| Png (file format) | Portable Network Graphics – this file format offers the feature of a clear background and is used in web graphics (logo's would be an example of png) |
| Gif (file format) | Graphic Interchange Format – supports 8 bit graphics and used in simple animated images. Previously used for web graphics but png is now more commonly used |
| Vector – png | Graphics created using scalable shapes, does not lose quality when enlarged |
| Bitmap – jpg | Made up of tiny dots called pixels, loses quality when enlarged, large file size |
| DPI | Dots per inch. The higher the DPI the better the image and the larger the file |
| Resolution | Higher the resolution better the image, measured in DPI or PPI |
| Hex colour | A colour hex code is a hexadecimal way to represent a colour in RGB format by combining three values – the amounts of red, green and blue in a particular shade of colour. |

### *Vector v's bitmap*



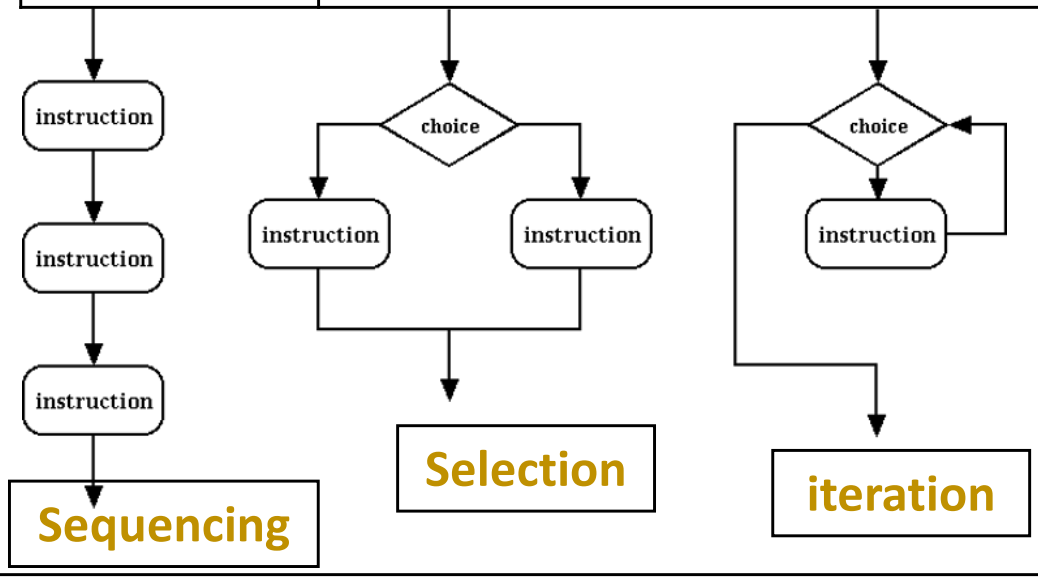

### *Conversion chart*

| DECIMAL | HEX | BINARY |
|---|---|---|
| 0 | 0 | 0000 |
| 1 | 1 | 0001 |
| 2 | 2 | 0010 |
| 3 | 3 | 0011 |
| 4 | 4 | 0100 |
| 5 | 5 | 0101 |
| 6 | 6 | 0110 |
| 7 | 7 | 0111 |
| 8 | 8 | 1000 |
| 9 | 9 | 1001 |
| 10 | A | 1010 |
| 11 | B | 1011 |
| 12 | C | 1100 |
| 13 | D | 1101 |
| 14 | E | 1110 |
| 15 | F | 1111 |

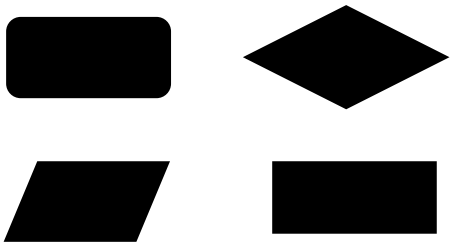
# Year 8 Computing

## Algorithms & Programming

| Term | Definition |
|---|---|
| Algorithm | A step by step set of instructions for solving a problem |
| Decomposition | Breaking a problem down into manageable chunks (each chunk can then be solved by creating an algorithm |
| Generalisation | Spotting patterns and similarities in algorithms and code |
| Abstraction | The process of filtering out irrelevant data |




### Flowcharts



Know your shapes!

## App Development:

| Term | Definition |
|---|---|
| Interface | The part of the app that helps the human user to interact with the device |
| Properties | A property is any feature of an object, such as it's colour or size, all properties of an object can be changed |
| Trigger | An event that makes the computer carry out an action |
| Event | An event checks if a condition is true and makes something happen accordingly |
| Variable | A data value that can change, e.g. the variable named "points" can increase by 1 every time someone scores a point |
| Co-ordinates | Numbers used to indicate the position of an object within the interface |

```
setProperty("screen1", "background-color", "grey");
onEvent("button1", "click", function() {
  playSound("sound://category_alerts/playful_quirky_negative_game_cue_2.mp3", false);
  image("id", "ff892d65159c65ae8ab29eb7e1e22c5c.png");
});
```

# DANCE

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# PARKOUR

## OBJECTIVE 1: MOTIF ACCURACY

**To accurately replicate and apply the Parkour inspired taught motif.**

## OBJECTIVE 2: SPACE&RELATIONSHIPS

**To explore a wide range of Parkour inspired use of SPACE and RELATIONSHIPS in your work.**

# WHAT SKILLS WILL I BE DEVELOPING IN DANCE?

## PHYSICAL

- **Control**

*The ability to start and stop movement, change direction and hold a shape efficiently*

- **Stamina**

*Ability to maintain physical and mental energy over periods of time*

## TECHNICAL

- **S A D R**

*Space, action, dynamics, relationships. Where, what, how, who?*

- **Moving in a stylistic way**

*The matter of dance: S A D R performed in a characteristic way of dancing – E.G influenced by Parkour*

## EXPRESSIVE

- **Musicality**

*The ability to make the unique qualities of the accompaniment evident in performance*

- **Spatial Awareness**

*Consciousness of the surrounding space and its effective use*

## MENTAL SKILLS

- **Response to feedback**

*Responding to questions and statements about your work, seeing your work through an outside eye giving the capacity to improve*

- **Commitment**

*Being dedicated to achieving your best performance*

## UNDERSTANDING CHOREOGRAPHY

- **Episodic structure**

*A series of sections presented by the choreographer. These can be self-contained but when put together will illuminate the overarching theme/idea.*

- **Motif Development**

*E.G retrograde, fragmentation, levels, repetition, inversion.*

- **Spatial pathways and formations**

*Linear, indirect, diagonal, lead and follow, pyramid, number variations.*

- **Highlight**

*A moment which stands out or is memorable. Consider using slow motion or extreme speed.*

## THINGS TO DO AT HOME:

- **Watch a live dance performance/DVD or stream a professional dance work to appreciate the use of space and relationships. What did you like about the choreography?**

- **Record your group piece. Reflect on your use of space and relationships. How varied are these? Can you include more examples and contrast?**

# DRAMA

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# YR8 DRAMA KNOWLEDGE ORGANISER

## KEYWORDS

1. **Traverse – Staging example 1 –** Audience on 2 sides (intimate)
2. **End On – Staging example 2 –** Audience in front (passive)
3. **Thrust – Staging example 3 –** Audience on 3 sides (intimate)
4. **Island – Staging example 4 –** Audience in the centre (integral)
5. **Promenade – Staging example 5 –** Audience follow actors and action (Integrated)
6. **In the Round – Staging example 6 –** Audience around the action (intimate)
7. **Integration – music, lighting, props and costume are all used together within a performance to enhance the meaning for the audience**
8. **Exposition – the first opportunity the audience are introduced to character or plot (usually the opening scene)**
9. **Language – the way we use words and sounds to explore communication in drama**
10. **Symbolic - Using symbols to suggest and communicate meaning to the audience.**
11. **Intonation – the emphasis placed on the tone of voice on certain words to convey additional meaning or subtext**
12. **Audience – the group of people watching or participating in your work**
13. **Devising – The process of making original drama from a stimulus or starting point**
14. **Structure – The way the drama is put together; connections between episodes, scenes or acts; the framework of the drama (linear/non-linear)**
15. **Timing – The techniques used to show time in the drama – past/present/future, fast/slow, forwards/backwards/stationary**
16. **Semiotics – How meaning is communicated through a series of signs and symbols in the performance – space, set, props, costume, sound, lighting**
17. **Ensemble – Actors working together to meet a common performance goal, usually physically or with movement or rhythm**
18. **Evaluation**
19. **Dialogue - The spoken text of a play/scene is dialogue.**
20. **Physical Theatre - Performances which incorporate choreography and movement within the work**

## S.T.Y.L.I.S.E.

**Structure** – the narrative line the drama follows to show connections between the drama being conveyed; is the narrative linear (in one chronological line of events) or non-linear (jumps from past to present to tell the story).

**Timing** – The use of techniques that will alter the timeline of the story; flashback/forward, slow motion, still images, narration, split scene, marking the moment

**Your Audience** – The types of staging you can use to best engage your audience with the work and how this affects their experience with the drama

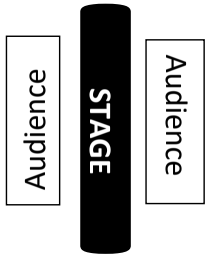
**Language** - the way we use words and sounds to explore communication in drama – varying the way language and words/sounds are used to intonate a scene: Broken Dialogue/Distilled text

**Integration** - music, lighting, props and costume are all used together within a performance to enhance the meaning for the audience. Choosing the right things to make the right meaning is key

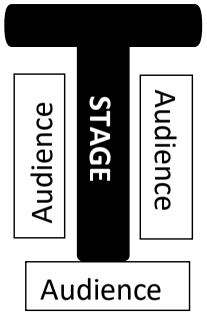
**Semiotics** - How meaning is communicated through a series of signs and symbols in the performance – the use of placards, movement, images, props, music can all add to the drama

**Ensemble** - Actors working together to meet a common performance goal, usually physically or with movement

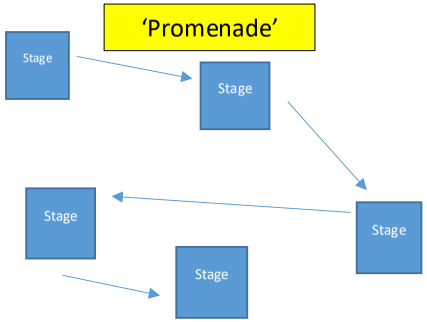
1 'Traverse'



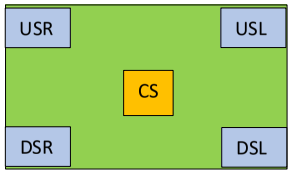

3 'Thrust'




5 'Promenade'



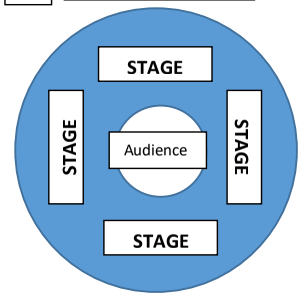

2 'end on'



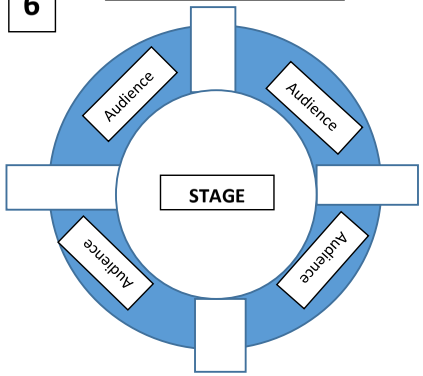

AUDIENCE

USR – Upstage right
USL – Upstage left
CS – Centre Stage
DSR – Downstage right
DSL – Downstage

4 'Island'




6 'In the Round



# ENGLISH

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

# STRATEGIC READING

**PREDICT:** What might happen next?

**QUESTION:** Do you have any questions you would like to ask about the text you read? Does it bring up any questions you might have about the issue/character/event?

**CLARIFY** Is there anything you might need to clarify about the text? Are there any areas of uncertainty that you have about what you just read? Perhaps there is a word you would like to know the meaning of?

**SUMMARISE:** Can you summarise what has happened in the text, or perhaps the greater meaning/message of the text? Could you summarise the effect that the text is trying to achieve/its tone?

**ACTIVATE PRIOR KNOWLEDGE:** What does the text remind you of? Have you learnt any of its content before?

| IMMERSIVE READER KNOWLEDGE ORGANISER | | | |
|---|---|---|---|
| DEFINE | RETRIEVE | SUMMARISE | INFER |
| Give/explain the meaning of words in context. | Retrieve and record information/identify key details from fiction and non-fiction. | Summarise main ideas from more than one paragraph. | Make inferences from the text/explain and justify inferences with evidence from the text. |
| • Find and copy one word meaning…<br>• In the paragraph, which word most closely matches the meaning of the word…<br>• What does the word…suggest about…?<br>• What does the word…tell you about…?<br>• What does the word…mean in this sentence? | • Write down one/two/three things that you are told about the…<br>• What was revealed at the end of the poem/story?<br>• Give one/two reasons why…<br>• In what year did…?<br>• What does the … do to frighten the…?<br>• What does the poet ask?<br>• How do you know that?<br>• How does the character show…? | • What is the main message of the poem/story?<br>• Which statement is the best summary for page…..?<br>• Number the following sentences in the order in which they happened in the poem/story.<br>• Look at the first 2 paragraphs. Which sentence below best describes the…?<br>• Summarise the first paragraph using ….words. | • What evidence is there of….?<br>• Explain what the description suggests about…?<br>• Why did….feel….?<br>• In which ways might this character appeal to many readers?<br>• Use evidence from the text to support your answers.<br>• What kind of person do you think… was? Why?<br>• Explain how …felt about…<br>• What was unusual for….on page….? |
| PREDICT | RELATE | EXPLORE | COMPARE |
| Predict what might happen from details stated and implied. | Identify/explain how information/narrative content is related and contributes to meaning. | Identify/explain how meaning is enhanced through choice of words and phrases. | Make comparisons within the text. |
| • Do you think that…will change his/her/their behaviour in the future….<br>• Explain why, using evidence from the text.<br>• Based on what you have read, what does the last paragraph suggest might happen next/to the….?<br>• What do you think….would say to …about?<br>• Who do you think will…?<br>• How do you think this character will…? | • Match parts of the story to the correct quotation (considering setting, past events, action, lesson, suspense, character, etc.).<br>• Find and copy a group of words where….mood changes.<br>• What impact does…change in mood/feeling have on the text as a whole?<br>• Find a group of words which explain….opinion of… | • Why did the author use this word?<br>• Why does the writer compare…to…?<br>• What language features did the author use to describe…?<br>• How does…help you to understand…?<br>• How do the words…create a feeling of…?<br>• What do phrases like… tell us?<br>• What does this description tell us about…? | • How does…feel about…compared to at the beginning of the text?<br>• According to the text, give one way that….are similar/different to…<br>• How does the mood/relationships/opinions of the characters change throughout the text? |

# TOPIC:

**Brief Synopsis- what is the unit about?**

**Within this four week unit we will be reading a range of poems with a variety of cultural contexts and thinking about how the poets use language, structure and imagery to present a theme, emotion, situation or place to the reader.**

## Key Vocabulary & Spellings

- Juxtaposition
- Imagery
- Simile
- Personification
- Rhythm
- Context
- Language
- Structure
- Narrative voice
- Theme
- Stanza
- Alliteration
- Metaphor
- Dialect
- Annotation

## Big Questions

*(does not need to be one per lesson)*

- What is juxtaposition?
- How can a poem convey meaning using language and structure?
- What is context and why is it important?
- How is language used to create meaning?
- What is narrative voice?
- What is form?
- Is poetry still relevant?

## Cross-Curricular Links/Key Contextual Details

PSHE
Geography

## Analytical Verbs/Sentence Stems

*(these are used to help students with analysis and discussing texts and ideas)*

- "……" links to the theme / idea of …..
- "……" has connotations of …….
- "……" is emotive because …….
- "……" is engaging because ……
- "……" challenges the reader to ……
- Use of the word "……." conveys ……
- This implies …..
- The speaker is presented as ……
- The image / technique / language makes the reader feel ……
- Throughout the poem the writer creates a sense of ……. using …….
- The impact of this on the reader is ….
- The writer's intention was to ……
- The effective use of ….. shows that …….
- The poet uses …… to create the idea that …….
- Alternatively, this could suggest ….
- The reader's response to this could be …..

| **TOPIC: Year 8 – Literary Allusions *(4 weeks)*** | **Big Questions** *(does not need to be one per lesson)* | **Analytical Verbs/Sentence Stems** *(these are used to help students with analysis and discussing texts and ideas)* |
|---|---|---|
| This unit explores various myths and mythological creatures, considering how these ideas are presented across time. The unit encourages students to establish links between texts, including GCSE English Literature texts, and consider how and why mythological characters are alluded to. | What do we mean by literary allusions?<br>Is there such a thing as a new idea?<br>What is a myth?<br>Who are some key mythological figures, and how are they presented across different eras?<br>How are ideas of evil presented across various texts and eras?<br>Why might people allude to mythological figures?<br>What is the significance and relevance of a name?<br>Who is the gorgon Medusa?<br>Who is Jagannath? | The word "…" is derived from… It also links to words such as…<br><br>The creature of … is associated with … This alluded to through…<br><br>The myth of … is significant because…<br><br>The creature/character of … is often referred to as being …<br><br>The qualities of … are usually associated with … suggesting…<br><br>The word "…" is significant because…<br><br>The word "…" also shares similarities with… |
| **Key Vocabulary & Spellings** | **Cross-Curricular Links/Key Contextual Details** | |
| Allusion<br>Myth<br>Hecate<br>Cerberus<br>Prometheus<br>Creation<br>Atlas<br>Jagannath<br>Mythological<br>Allude<br>Significant<br>Characteristics<br>Protagonist<br>Antagonist<br>Omen<br>Empathy<br>Moral | Links to key GCSE English Literature texts (Jekyll & Hyde and Macbeth) and the literary canon.<br>Historical links – Greek myths. | |

# TOPIC: Shakespeare Study (Much Ado) – Year 8

This unit builds on the Year 7 Shakespeare unit where they developed their knowledge of Shakespeare and explored extracts from Romeo & Juliet by getting students to study a play in more depth. They will explore characterisation, as well as key themes and ideas and develop an understanding of what is meant by a Shakespearean comedy. They will also consider how a play is performed and both contemporary and modern audience responses.

## Key Vocabulary & Spellings

Patriarchy
Comedy
Trickery
Villainous
Comedic
Dramatic irony
Villain
Contemporary
Shakespearean
Interpretation
Adaptation

## Big Questions

*(does not need to be one per lesson)*

- What is the narrative of Much Ado About Nothing?
- How is language used to construct the relationship between Beatrice and Benedict?
- How might Shakespeare present villains in a comedy?
- How might Shakespeare present different versions of love?
- What is the significance between parent and child in Shakespeare's time?
- How might Shakespeare present the theme of trickery?
- How might Shakespeare present the theme of honour?
- How might Shakespeare present Claudio in Act 4 Sc 1?
- How might Shakespeare use the fool for comedic value?
- How might Shakespeare present happy endings?

## Key Contextual Details/Cross Curricular Links

- Contextual knowledge of Shakespeare
- Understanding of genre conventions for Shakespearean comedy (learnt about Tragedy in year seven)

## Analytical Verbs/Sentence Stems

*(these are used to help students with analysis and discussing texts and ideas)*

The character of … is presented as…

Shakespeare has used dramatic irony here to achieve/create/make the audience believe…

The theme of… is presented through…

A modern audience might respond in a different way to a contemporary audience because…

A contemporary might audience would believe/think that…

Shakespeare presents trickery in various ways, for example…

Another way this theme is explored is through…

This is particularly effective…

In performance, this could involve…

The performances differ by/because…

# TOPIC: The Gothic (Year 8)

This unit is introducing students to the key features of Gothic texts, including themes, setting and different narrative voices.

Students will read a range of Gothic texts, before zooming on key aspects and applying these features in their own writing.

Assessment will be a piece of Gothic themed creative writing using stimulus.

## Key Vocabulary & Spellings

Gothic
Pathetic Fallacy
Narrator
Eerie
Unreliable
Atmosphere
Narrator
Narrative
Conventions
Isolated
Monstrous
Archetype
Genre
Scientific
Macabre
Obscure
Motivation

## Big Questions

*(does not need to be one per lesson)*

- What are the key features of Gothic?
- What is Gothic writing?
- What makes a Gothic setting?
- What is a typical Gothic setting and move?
- What is pathetic fallacy and how is this used for effect?
- What do we mean by an unreliable narrator?
- What is narrative voice and how is this used in Gothic texts?
- How can a writer use narrative voice for impact?
- How can a writer effectively build tension in their writing?

## Key Contextual Details/Cross Curricular Links

- Timeline of the Gothic
- Key Gothic texts
- Key features of Gothic texts

## Analytical Verbs/Sentence Stems

*(these are used to help students with analysis and discussing texts and ideas)*

A typical Gothic setting may include… because…

The technique of … is used to create the effect of…

This creates an eerie/unsettling atmosphere by <u>or</u> because…

The narrative voice is… creating the effect of…

This makes the reader think/feel/imagine…

The writer builds tension through their use of…

This is a typical Gothic text…

This text uses the conventions of… to create a Gothic atmosphere by…

# EP

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

# Unit 1- Environment

Within this unit year 8 students will be looking at environmental issues that the world faces today. We will look at human responsibility and what can be done to help protect the environment, as well as the work of individual groups such as charities and religious groups. The aim is for students to consider their role in the future of the planet.

## Key terms

- **Environment** – our surroundings
- **Sustainable / Sustainability** – the ability to ensure something doesn't run out
- **Stewardship** – looking after things for others
- **Eco** – a prefix to mean environmentally friendly,
  e.g. eco-friendly; eco-town; eco-mode
- **Human footprint** – the impact we have on our environment during our lives
- **Renewable** – re-usable
- **Carbon Dioxide (CO2)** – the gas produced when we burn fossil fuels for energy, e.g. petrol
- **Climate Change -** a change in global or regional climate patterns, largely due to the increased levels of carbon dioxide in the atmosphere produced by the use of fossil fuels.
- **Global Warming -** a gradual increase in the overall temperature of the earth's atmosphere generally attributed to the greenhouse effect
- **Recycling -** the action or process of converting waste into reusable material
- **Extinction -** is the dying out or extermination of a species.
- **Habitat -** the natural home or environment of an animal, plant, or other organism
- **Dominion –** being in charge of or ruling something, in this case humans ruling over animals

## Assessment

*Only religious people should care for the environment. Do you agree?*

**Assessment Criteria**

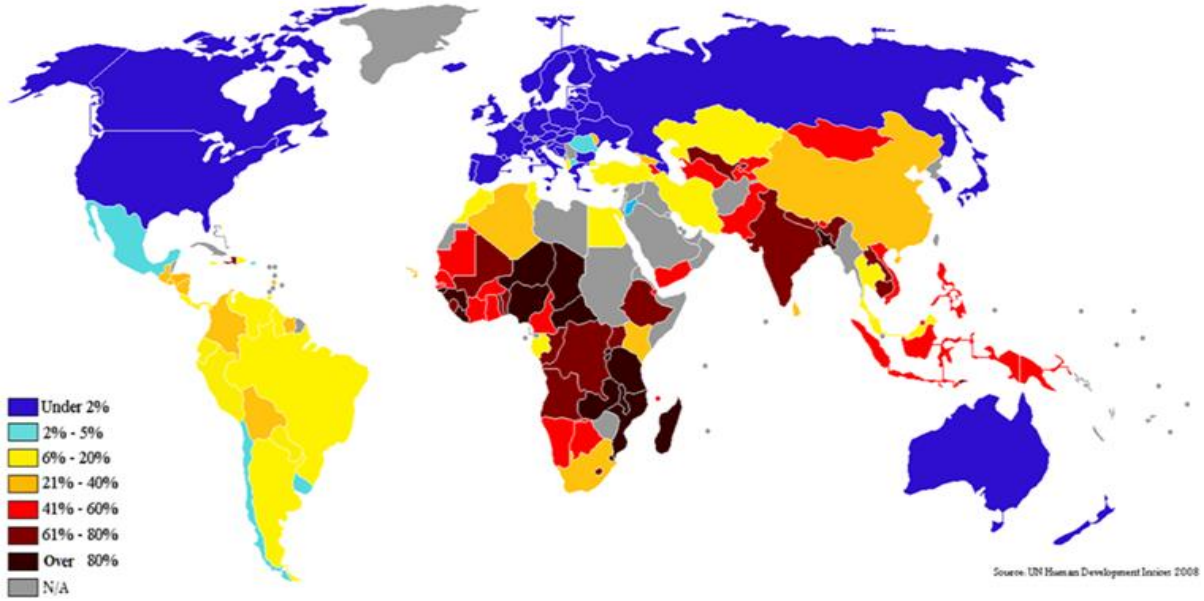
- Can write confidently about religious views on the environment using key words and examples from religious teachings.
- Can use examples to illustrate ideas about the environment.
- Can consider a range of views on the environment to evaluate different issues.
- Can communicate a reasoned argument on protecting the environment.

| Religion | Teaching | Religion | Teaching | Religion | Teaching |
|---|---|---|---|---|---|
| Christians believe humans only live on the planet for a short time and they should act like caretakers, looking after the planet until it is time to hand it back to its real owner. | "We do not own the world and its riches. Show a loving consideration for all creatures, and seek to maintain the beauty and variety of the world." | **Muslims believe we all have a duty to look after the planet.**<br>**Muslims use the word Khalifa which means steward or guardian of the earth.** | **The Qur'an says that men and women are allowed to use God's creation for their needs. What they must not do is destroy it totally or damage it.** | Sikhs believe that the world gives us everything we need and God has designed it that way. That does not mean people have a right to grab the lot. They should only take what they need, no more. If they become greedy, then the balance of nature | · Don't let magnificent animals become extinct.<br>· Don't let human beings die of starvation.<br>· Live and let live |
| Jews believe that when God created the world people were put in charge of the land and the animals on it. | "Look at my creations! See how beautiful and perfect they are! For your sake I created them all. Do not corrupt My world, for if you corrupt it there is no one to set it right after you."<br>Jewish Scriptures | Hindus believe that God created the entire world. All animals, plants and humans.<br><br>Humans see all living things as part of the same life cycle (circle of life). If we cut down all the trees or keep growing crops in the same soil, then the land will not grow plants. We will go hungry. | "As the bee takes the pollen of a flower and flies away without destroying its beauty and perfume, so let the wise person travel through this life" | Buddhists see the world as a big living thing. They believe that human beings are only a small part of that thing.<br>Everything depends on each other to live. | We are the generation with the awareness of a great danger. We are the ones with the responsibility and the ability to take steps of concrete action, before it is too late. |

# Unit 2 - Poverty

Within this unit year 8 students will be looking at what it means to be poor. It will include comparing absolute poverty globally with what it means to be relatively poor.

| Key terms | |
|---|---|
| **Poverty** | Not having enough money or possessions for your needs. This might include food, suitable shelter, transport, health support and ways to communicate. |
| **Wealth** | The amount of money and possessions you have. Wealthy people will have a lot of money and possessions and have access to the things they need. |
| **Absolute poverty** | Lack of money/resources to meet basic needs. This is often measured as surviving on less than $1.25 per day. On this measure over 1 billion people in the world live in absolute poverty. |
| **Relative poverty.** | Lack of money/resources in relation to the average person. One in five people in Britain live in relative poverty. |
| **LEDC** | Less economically developed country e.g. Chad, Haiti |
| **HEDC** | Highly economically developed country. E.g. UK, USA, Germany |
| **Deprivation Index** | A way of measuring poverty that looks at the things you may be forced to live without e.g. clean water, three meals a day, shared bedrooms, heating, and your own toilet. |
| **Sadaqah** | A Muslim word meaning compassion or kindness, an act of generous giving. |
| **Charity** | An organisation who would aim to help. Charities such as Christian Aid, Oxfam, Sport relief work to help those who live in poverty. |




## UK poverty facts and figures

Around 14.2 million people live in poverty in the UK: 8.5 million adults, 4.5 million children and 1.4 million pensioners

People with disabilities are much more likely to be living in poverty: 48.3% of households in poverty live in families with a disabled person

People in work also live in poverty: 60% of people in poverty in Britain live in a household where someone is in work.

Renters are disproportionately affected by poverty: 70% of people in poverty live in rented accommodation.

## Global poverty facts and figures

Based on the updated poverty line of $1.90 a day, World Bank projections suggest that global poverty may have reached 700 million, or 9.6 percent of global population, in 2015.

The working poor, who work and live on less than $1.90 a day, accounted for 10 percent of workers worldwide in 2015.

Sub-Saharan Africa is home to 43 percent of the global poor.

Eighty percent of the worldwide poor live in rural areas; 64 percent work in agriculture; 44 percent are 14 years old or younger; and 39 percent have no formal education at all.

# Unit 3 – Jesus

Within this unit pupils will look at 'Who was Jesus' in which we explore the life of Jesus but also how people view who Jesus was. This will be looking at why Christians see Jesus as the Son of God and others may see Jesus as a rebel or just a normal human being.

| Key terms | |
|---|---|
| Jesus | The name of the man who Christians believe was the son of God, and whose teachings are the basis of Christianity. |
| Disciples | One of the twelve in the inner circle of Christ's followers according to the Gospel accounts. |
| Resurrection | The rising of Jesus from the dead. |
| Bible | The Holy book of Christianity which includes the story of the life of Jesus. |
| Jerusalem | The main Holy city for the Jewish where the Temple was located. |
| Crucifixion | An ancient form of execution in which a person was nailed or bound to a cross, this was how Jesus died. |
| Blasphemy | An act of insulting or showing contempt or lack of reverence for God. |
| Miracles | An extraordinary and welcome event that is not explained by natural or scientific laws and is therefore attributed to God/Jesus. |
| Parables | A simple story used to explain a moral or spiritual lesson, as told by Jesus in the Gospels. |
| Angel | A spiritual being believed to act as an agent, or messenger of God. |
| Messiah | The expected king and deliverer of the Jews. |
| Heaven | The place where God lives and where good people are believed to go after they die. |
| Christianity | The name for the religion for those who follow and believe in the teachings of Jesus. |
| Religion | A particular system of faith and worship. |
| Jewish | Anything relating to Jews or Judaism |
| Bethlehem | The birth place of Jesus found in modern day Israel |
| Authorities | People who have power or control over others such as the 'Jewish authorities'. |

**Assessment: You will complete an extended written piece on the question of 'Who was Jesus'? You will be assessed on the following learning objectives;**

- **Can use key vocabulary such as resurrection, crucifixion and baptism in the correct context.**
- **Can confidently explain and illustrate key points in Jesus' life.**
- **Can outline and explain different views about who Jesus was.**

**Can consider the impact that Jesus has on people today**


**Influential Christians.**

**Elizabeth fry- 1780- 1845**

**Dr Barnardo- 1845-1905**

**Martin Luther King- 1929-1968**

# The Golden Rule

The Golden Rule is a moral which says treat others as you would like them to treat you. This moral is used as a basis in the human rights. It is called the "golden" rule because there is value in having this kind of respect and caring attitude for one another.
In Christianity, Jesus Christ taught this idea to his disciples and others when he gave his Sermon on the Mount. It is recorded in the Holy Bible in the book of Matthew, Chapter 7 and verse 12. Jesus explained to his listeners that all the things that were recorded in the Jewish law and that the prophets had taught about concerning morality was summed up in this one rule. The principle that was shared is to not always treat others as they might deserve to be treated, as we may judge some as undeserving, but instead to always be merciful and charitable, not withholding good.

# What do Christians believe?

**Christians believe that Jesus Christ was the Son of God and that:**

• God sent his Son to earth to save humanity from the consequences of its sins
• Jesus was fully human, and experienced this world in the same way as other human beings of his time
• Jesus was tortured and gave his life on the Cross (At the Crucifixion)
• Jesus rose from the dead on the third day after his Crucifixion (the Resurrection)

Christians believe that Jesus was the Messiah promised in the Old Testament
Christians believe that there is only one God, but that this one God consists of 3 "persons"

- ◦*God the Father*
- ◦*God the Son*
- ◦*The Holy Spirit*

Christians believe that God made the world.

“That is all right,” said the man. “But I do not understand this thing about the neighbour. Who is my neighbour?”
Jesus said, “A man was going on a journey from Jerusalem to Jericho, and on the way he was set upon by robbers. They took his money and clothes, beat him mercilessly for resisting to part with his belongings and left him for dead on the highway. Sometime later a priest from a nearby synagogue came that way. When he saw the traveller lying on the road, bleeding and groaning, he muttered a prayer and hurried away.
Then a townsman came by. He was startled by the sight of a bloodied and moaning traveller lying in his path. Guessing that the unfortunate man had been robbed and not wishing to suffer the same fate, he nimbly stepped aside and went on his way.
Some time passed and then a Samaritan (inhabitant of the City of Samaria) came riding up on his donkey. He was in a great hurry but when he saw the traveller lying on the road and writhing in pain, he at once stopped to help. He washed the man’s wounds with whatever little water he had, bandaged them and then hoisting the man onto his donkey took him to the nearest inn. There, he arranged board and lodging and treatment for him, told the innkeeper he would pay on his return journey whatever extra money he spent on the man, and hurried away to make up for lost time.
“Now tell me,” said Jesus to the man who was questioning him, “which of these three men behaved like a neighbour?”
“The Samaritan,” said the man.” He showed fellowship and kindness of a neighbour to a total stranger.”

# The Good Samaritan

# Unit 4- Big Ideas that changed the world

Within this unit year 8 students will be looking at three big modern ideas that have changed the way the world is – freedom, equality and democracy. In the past people were ruled by Emperors or monarchs, people were not equal, they had to do what they were told they did not choose who ruled over them. This unit explores how important these ideas are in the world today.

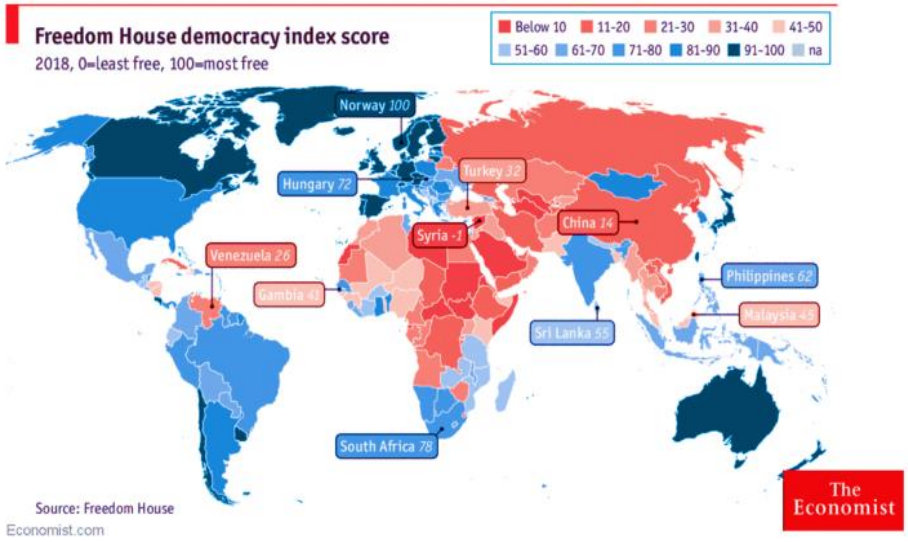
| Key terms | |
|---|---|
| Democracy | From the two Greek words Demos Kratos – literally meaning people power. Democracy today means the idea that people elect the people who govern them. |
| Freedom | 1. the power or right to act , speak, or think as one wants<br>2. the state of not being imprisoned or enslaved |
| Liberty | This means that you are free, for example free to go places, to say things. |
| Equality | This means 'the state of being equal, of being treated the same especially in status, rights, or opportunities' |
| Revolution | This means that you change how things are. The American and French Revolution both changed how these countries were governed and have had an impact on the rest of the world too. |
| Government | This is the group of people with the authority to govern a country or state. In democracies these are elected. |
| Election | This is where you vote for who you want to rule over you. |
| Ideology | This is the set of ideas, the aims and beliefs that are important to people. |
| Universal Declaration of Human rights | This is a set of rights that everybody in the world should have. |

**Assessment**- you will be expected to complete a written assessment based on the question;

**Which has been the most important idea: democracy, freedom or equality?**

Your LO's will be;

- Can use political terms such as liberty, democracy and equality with accuracy.
- Can understand where political ideas have come from.
- Can give examples of how political ideas are important today and how they have impacted on them.
- Can justify and explain why one idea is more important than another.




**<u>Significant historical events which show the importance of democracy, freedom and equality.</u>**

**<u>Freedom- French revolution</u> began on 14th July 1789. It was when the people decided to rebel against the ruling monarch (Louis XVI) who had implemented more tax and the people did not have a government to share their opinion.**

**<u>Democracy- The American war of independence</u> started in April 1775 and ended in September 1783. The American colonist fought the British as George III would not allow the American colonist to have representation (MP) in parliament.**

**<u>Equality- the American civil war</u> was fought between the Northern and Southern states in America between 1861-1865. The North wanted to get rid of the slave trade and the South wanted to keep it. The North eventually won and slavery was abolished.**

# Unit 5 – Human Rights

In this unit, pupils are introduced to human rights, the history of the universal declaration of human rights and the ways in which human rights are upheld and abused throughout the world.


| Key terms | |
|---|---|
| Human rights | The basic rights and freedoms that should belong to everybody from birth until death. |
| Universal declaration of human rights | The list of 30 human rights drawn up in 1948 by the UN, as a result of the horrors of World War 2. |
| Freedom to / freedom of | The right to be able to do something, e.g. freedom of speech. |
| Freedom from | The right to be protected from negative behaviour, e.g. freedom from discrimination. |
| Equality | Having the same opportunities, rights or status as someone else. |
| Human Rights Act (1998) | The law in the UK that upholds and protects human rights for UK citizens. |
| Child soldiers | Children who are often forced to fight in wars or assist armies or paramilitary groups. |
| Refugees | People who leave their own country out of fears for their safety (political reasons, war, religious r |
| Asylum seekers | Someone who is applying to move to the UK as a result of leaving their own country out of safety |
| Human trafficking | The way people are bought / sold and transported around the world – often to work in slavery. |
| Slavery | To have your freedom removed and to be forced to work / do something you don't want to. |

**The Law**

The UK has some of the strictest animal research regulations in the world, guided by the Animals (Scientific Procedures) Act, 1986 (ASPA). Research on great apes (orangutans, gorillas, chimpanzees and bonobos) was banned in 1986 and animal testing for cosmetics or their ingredients was banned in 1998. It is illegal to use an animal if there is an alternative non-animal method available, and the expected benefits accrued from the research must outweigh any potential animal suffering

| | |
|---|---|
| UNIVERSAL | Human rights *belong to all people.* |
| INALIENABLE | Human rights *cannot be taken away.* |
| INTERCONNECTED | Human rights *are dependent on one another.* |
| INDIVISIBLE | Human rights *cannot be treated in isolation.* |
| NON-DISCRIMINATORY | Human rights *should be respected without prejudice.* |

**UK Law**

The Human Rights Act 1998 sets out the fundamental rights and freedoms that everyone in the UK is entitled to. It incorporates the rights set out in the European Convention on Human Rights (ECHR) into domestic British law. The Human Rights Act came into force in the UK in October 2000.

**Universal Declaration of Human Rights - examples**

- The right to life
- Innocent until proven guilty
- The right to privacy
- Freedom to move
- Freedom of thought and expression
- The right to democracy
- The right to education
- Workers' rights
- The right to marriage and a family
- Fair treatment by courts
- We are all free and equal

# Unit 6 – Animal rights

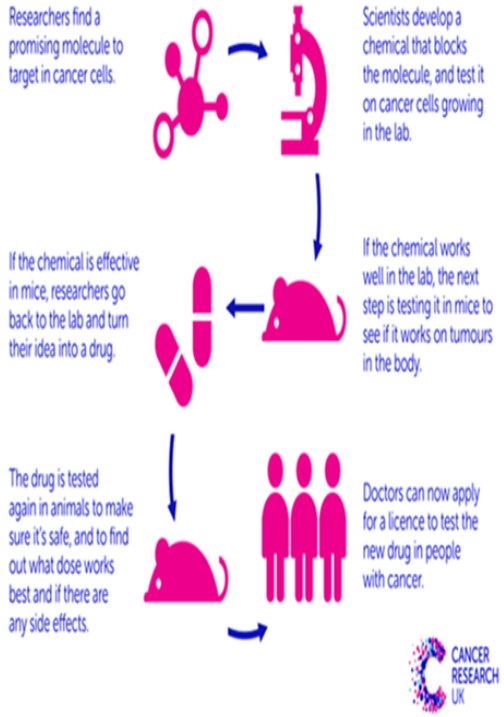
Within this unit pupils will look at the treatment and use of animals. They will look at animal testing both for cosmetics and medical research, and the ethical and moral arguments surrounding these. They will also look at different farming methods.

| Key terms | |
|---|---|
| **Animal testing** | **The use of animals for medical/cosmetic research.** |
| **Factory farming** | **Intensive farming or animals for food.** |
| **Free range** | **Animals which are not caged.** |
| **Organic** | **Food/ animals which are kept in a natural way.** |
| **Medicine** | **A drug or other preparation for the treatment or prevention of disease.** |
| **Cosmetics** | **A preparation applied to the body, especially the face, to improve its appearance.** |
| **Cruelty** | **Behaviour which causes physical or mental harm to another, whether intentionally or not.** |
| **Ethical** | **Morally good or correct.** |
| **Moral** | **Concerned with the principles of right and wrong behaviour.** |

## The Law

The UK has some of the strictest animal research regulations in the world, guided by the Animals (Scientific Procedures) Act, 1986 (ASPA). Research on great apes (orangutans, gorillas, chimpanzees and bonobos) was banned in 1986 and animal testing for cosmetics or their ingredients was banned in 1998. It is illegal to use an animal if there is an alternative non-animal method available, and the expected benefits accrued from the research must outweigh any potential animal suffering

| Arguments **FOR** animal testing | Arguments **AGINST** animal testing |
|---|---|
| **1. Helps researchers to find drugs and treatments:**<br>The major pro for animal testing is that it aids researchers in finding drugs and treatments to improve health and medicine. Many medical treatments have been made possible by animal testing, including cancer and HIV drugs, insulin, antibiotics, vaccines and many more. | **1. Animals are killed or kept in captivity:**<br>In animal testing, countless animals are experimented on and then killed after their use. Others are injured and will still live the remainder of their lives in captivity. |
| **2. Improves human health:**<br>It is for this reason that animal testing is considered vital for improving human health and it is also why the scientific community and many members of the public support its use. In fact, there are also individuals who are against animal testing for cosmetics but still support animal testing for medicine and the development of new drugs for disease. | **2. Some substances tested, may never be used for anything useful:**<br>The unfortunate aspect is that many of these animals received tests for substances that will never actually see approval or public consumption and use. It is this aspect of animal testing that many view as a major negative against the practice, as it seems that the animal died in vain because no direct benefit to humans occurred. |
| **3. Helps ensure safety of drugs:**<br>Another important aspect to note is that animal testing helps to ensure the safety of drugs and many other substances humans use or are exposed to regularly. Drugs in particular can carry significant dangers with their use but animal testing allows researchers to initially gauge the safety of drugs prior to commencing trials on humans. This means that human harm is reduced and human lives are saved. | **3. It is very expensive**:<br>Animal testing generally costs an enormous amount of money, as the animals must be fed, housed, cared for and treated with drugs or a similar experimental substance. On top of that, animal testing may occur more than once and over the course of months, which means that additional costs are incurred. The price of animals themselves must also be factored into the equation. There are companies who breed animals specifically for testing and animals can be purchased through them. |
| **4. Alternative methods of testing do not simulate humans in the same way**<br>Scientists typically use animals for testing purposes because they are considered similar to humans. As such, researchers do recognise the limitations and differences but the testing is done on animals because they are thought to be the closest match and best one with regards to applying this data to humans. | **4. Animals and humans are never exactly the same:**<br>There is also the argument that the reaction of a drug in an animal's body is quite different from the reaction in a human. The main criticism here is that some believe animal testing is unreliable. Following on that criticism is the premise that because animals are in an unnatural environment, they will be under stress. Therefore, they won't react to the drugs in the same way compared to their potential reaction in a natural environment. |



# French

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# Year 8 French

***Overview and key verbs*: *https://kesgrave.fireflycloud.net/mfl/french/key-stage-3/year-8***

***Vocabulary for all topics*: *https://www.linguascope.com*** ***Username*: *kesgrave*** ***Password*: *mflkhs2021***

## Autumn Term

| Content in chronological order | Vocabulary / Grammar |
|---|---|
| -Revision and extension from Year 7:<br>→ daily life (places, jobs, routine…)<br>→ present tense (regular/irregular verbs)<br>-Last weekend – use of the past tense:<br>→ perfect tense with avoir<br>→ with être (Mrs Vandertramp verbs)<br>-Listening, Reading and Writing test<br>-Going out:<br>→ shops and clothes<br>→ asking and replying to invitations | -Omission of the article before job titles. Ex: Je suis (I am) / Je travaille comme (I work as) secrétaire.<br>-J'habite = I live/ depuis =since /Je viens de = I come from<br><br>-How to form the perfect tense:<br>https://www.bbc.com/bitesize/guides/z2h6tfr/revision/1<br>-J'ai regardé = I watched / J'ai joué = I played<br>-J'ai bu = I drank / J'ai lu = I read / J'ai pris = I took<br>-Je suis allé(e) = I went / Je suis arrivé(e) = I arrived<br>-Modal verbs: -vouloir (to want) → Je veux (I want)<br>-pouvoir (to be able to) → Je peux (I can)<br>-devoir (to have to) → Je dois (I must) |

## Spring Term

| Content in chronological order | Vocabulary / Grammar |
|---|---|
| -Food topic:<br>→ French meals and habits<br>→ Market and restaurant situations<br>→ Food during the French revolution<br>-Speaking assessment on the food topic<br>-Holiday topic: countries, opinions<br>→ Asking questions and use of 3 tenses | -Je mange = I eat / Je bois = I drink<br>-Je voudrais = I'd like / l'addition = the bill<br>-le petit-déjeuner = breakfast / le déjeuner = lunch<br>-J'aime = I like / Je préfère = I prefer / Je déteste<br>-In = à (+ town) / en ( + feminine country) / au (+ masculine country) / aux (+ plural country)<br>-où = where / quand = when / qui = who<br>-L'année dernière = last year / cet été = this summer |

## Summer term

| Content in chronological order | Vocabulary / Grammar |
|---|---|
| -Projet France (assessment):<br>-Research about a region<br>-Writing an email, creating an itinerary<br>-Hobbies, technology and pocket money:<br>-Film studies: description and review<br>→ Les Choristes → Le Petit Nicolas<br>-End of year assessments | -Adjectives: agreements and word order<br>-Near future: nous allons visiter (we're going to visit)<br>-Asking questions: Il y a-t-il…? Is there…?<br>-J'ai besoin de = I need / J'économise pour = I save up for<br>-Je pense que / Je trouve que = I think / find that<br>-Les personnages = the characters -L'école = school<br>-L'histoire est = The story is -Les enfants = the children<br>-C'est un film drôle / triste = It's a funny / sad film |

Grammar Vocabulary Cultural

# GEOGRAPHY

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# Kesgrave Geography Knowledge Organiser: Year 8 North America

## Urbanisation

Megacity— A city with more than 10 million people e.g. Tokyo

Urbanisation— the % of people in cities getting bigger because of push/pull factors and natural increase.

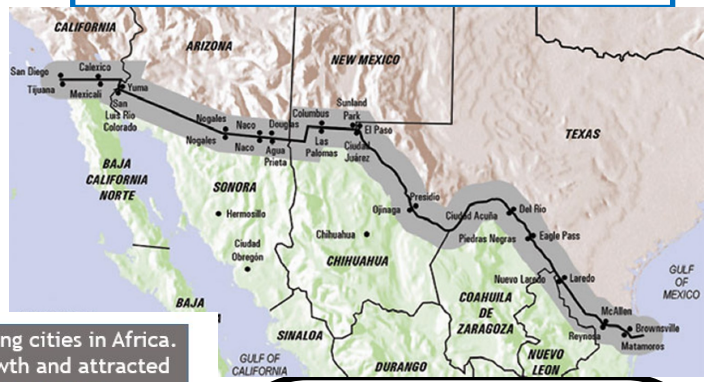
Development—the process of improving a country's social,

Lagos, Nigeria - one of the fastest growing cities in Africa. The discovery of oil nearby has aid growth and attracted people/ businesses to the city. RESOURCES


Scandinavian countries (Finland, Norway and Sweden) have their capital cities in the south of the country where the climates are more temperate. GEOGRAPHY

London, UK - is on the banks of the River Thames, which provided good transport and opportunities for trade TRANSPORT

## Migration

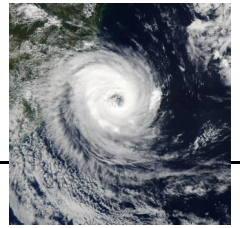



### Facts

- Between 2016 and 2017 - there were 33,0000 unaccompanied children who made the journey alone.
- Tortilla Curtain's total length is 3,169 km (1,969 miles)
- It is the most frequently crossed international border in the world, with approximately three hundred fifty million (350,000,000) crossings per year.


| Number | Country | Capital City |
|---|---|---|
| 1 | USA | Washington DC |
| 2 | Canada | Ottawa |
| 3 | USA - Alaska | Washington Dc |
| 4 | Mexico | Mexico City |
| 5 | Greenland | Nuuk |
| 6 | Cuba | Havana |
| 7 | Haiti | Port-au-Prince |
| 8 | Dominican Rep. | Santo Domingo |
| 9 | Puerto Rica | San Juan |
| 10 | Guatemala | Guatemala City |
| 11 | Belize | Belmopan |
| 12 | Honduras | Tegucigalpa |
| 13 | El Salvador | San Salvador |
| 14 | Nicaragua | Managua |

## Tropical Storms



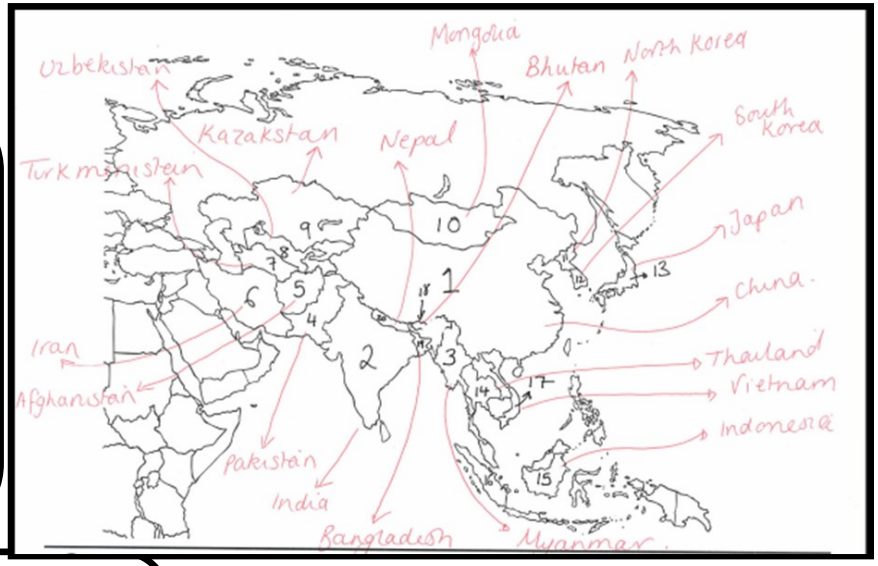
| How do they form? | | The sun sends incoming solar radiation to Earth which warms our oceans |
|---|---|---|
| This warms the oceans to a critical 27°C. | This warm, moist air starts to rise. | This air cools as it rises, at 1°C per 100m, this causes condensation to occur, clouds to form and rain to occur |
| The whole system of clouds and wind spins due to the trade winds and the earth's rotation. | As the storm moves over the ocean, it picks up more warm moist air and grows. The speed of its winds increases as more air is sucked in. | As the storm moves over shallower water land it loses energy and starts to die out. |

# Kesgrave Geography Knowledge Organiser: Year 8 **Asia**

## De/afforestation

**Why is the rainforest important?**

- A huge source of oxygen and it stores carbon di-oxide (carbon sink)
- Most biodiverse regions in the world
- May have species of vegetation that could help cure illnesses
- Valuable resources for economies around the world
- Interesting places for tourists to visit.
- A huge natural habitat for countless animals and plants




| Number | Country | Capital City |
|---|---|---|
| 1 | China | Beijing |
| 2 | India | New Delhi |
| 3 | Myanmar | Naypyidaw |
| 4 | Pakistan | Islamabad |
| 5 | Afghanistan | Kabul |
| 6 | Iran | Tehran |
| 7 | Turkmenistan | Ashgabat |
| 8 | Uzbekistan | Tashkent |
| 9 | Kazakhstan | Nur-Sultan |
| 10 | Mongolia | Ulaanbaatar |
| 11 | North Korea | Pyongyang |
| 12 | South Korea | Seoul |

Afforestation - is the planting or adding of trees in an area where there was never a forest or plantation. This is a method to create a new forest.
Reforestation - is the replanting of trees in an area where there was once a forest which was destroyed or damaged.
Ecotourism—tourism directed towards exotic, often threatened, natural environments, intended to support conservation efforts and observe wildlife.

## Squatter Settlements

DEFINITION— Slum: a compact settlement of at least 20 households with a collection of poorly built tenements mostly of a temporary nature."
BIGGEST— Khayelitsha in Cape Town (South Africa): 400,000 people , Kibera in Nairobi (Kenya): 700,000 people and Dharavi in Mumbai (India): 1,000,000 people.

**Reforestation & Afforestation**

**Pros**

- We can slow down global warming
- Trees reduce the risks for landslides
- Prevention of desertification
- Natural habitat for many animals and other organisms
- Conservation area for endangered species
- Shade trees for convenience
- Leisure activities
- Can lead to social cohesion
- Planting trees can be fun
- Good to educate your kids
- Assurance of wood supply
- Employment opportunities
- Planting trees can be a serious business
- Improvements in air quality

**Cons**

- Decrease in the value of land for the owner
- Less space for housing
- Less space for farming
- Local poverty may increase
- Wildfires
- Litter in forests
- Less space for other crucial public infrastructure
- Planting trees may be costly
- Pests may be a problem
- Scarcity may increase property prices and rents for the general public
- Forests require proper maintenance
- Also ecotourism causes some problems

| Positives of a Slum | Negatives of a Slum |
|---|---|
| Mumbai is major centre of learning and education. | Many youngsters are unable to complete their education as they must find a job. |
| Mumbai has more than 1,000 primary and secondary schools. | Nearly one third of the population have been victims of crime. |
| Literacy rates are high. | It is the financial capital of India. |
| Most people have an electricity and water supply. | Economic growth has not been fast enough to create sufficient jobs for the available workforce. |
| It is the centre of the Hindi movie industry - Bollywood. | Water pipes often run close to sewer lines. Leakages lead to contamination of water and the spread of diseases. |
| | At least 650 million litres of water are lost each day in Mumbai due to old, leaking pipes. |

# GERMAN

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# Year 8 German

***Overview and key verbs*: *https://kesgrave.fireflycloud.net/mfl/german/key-stage-3/year-8***

***Vocabulary for all topics*: *https://www.linguascope.com* *Username*: *kesgrave* *Password*: *mflkhs2021***

## Autumn Term

| Content in chronological order | Vocabulary / Grammar |
|---|---|
| - Revision and extension from Year 7:<br>- Pronunciation<br>- Revision of verb types and present tense<br>- Health<br>- Body parts, gender, singular and plural<br>- Pain and illnesses<br>- At the doctors; scenarios<br>- Food and drinks items, healthy and unhealthy items.<br>-Position of adverbs of frequency<br>- Opinions<br>- Listening, reading and speaking assessment<br>- Holidays<br>- Countries<br>- Seasons and weather<br>- imperfect tense<br>- Perfect tense<br>- Film: Night Crossing<br>- Writing, listening and reading assessment | -All nouns in German start with a capital letter and are masculine, feminine or neuter.<br>→ *the* (m) = **der** / *the* (f) = **die** / *the* (n) = **das**<br>→*a-an* (m) = **ein** / *a-an* (f) = **eine** / *a (n)* = **ein**<br>-Personal pronouns: **ich** (*I*), **du** (*you singular*), **er/sie/es** (*he/she/it*), **wir** (*we*), **ihr** (*you plural*), **sie/Sie** (*they/you formal sg/pl*).<br>-Possessive adjectives; mein, dein, sein, ihr<br>-Forming plurals<br>-Imperfect tense: **war** → was, **waren** → were, **hatte/n** → had (singular/plural)<br>- Perfect tense is made up of an auxiliary verb (form of haben or sein plus a past participle at the end of the sentence, e.g: **ich habe Pizza gegessen** → I ate pizza, **ich bin nach Deutschland gefahren** → I travelled to Germany. |

## Spring Term

| Content in chronological order | Vocabulary / Grammar |
|---|---|
| - Shopping and eating<br>- At the market; fruit and veg, singular and plural, quantities<br>- Marketplace conversations<br>- In the café, ordering.<br>- Food in Germany<br>- Shops and shopping; prepositions and the dative case<br>- Directions<br>- Pocket money<br>- Speaking assessment (followed by listening and reading assessment)<br>- After school<br>- TV programmes<br>- Revision of telling time | -Dative case: articles change after following prepositions of position: **in** (in) **auf** (on top of) **unter** (unter) **über** (over/above) **hinter** (behind) **vor** (in front of) **zwischen** between) **neben** (next to) **an** (against). The changes are: **der → dem, die → der, das → dem, die (plural) → den**<br>- **ich möchte** = I would like<br>-**Gramm** → gram/grams **Kilo** → kilo/kilos **Euro** → euro/euros<br>-Adverbs in German are positioned directly after (the subject and) the verb: **gern** (gladly) **nicht gern** (not willingly) **oft** (often) **immer** (always) **ab und zu** (now and then) **manchmal** (sometimes)**selten** (rarely) **nie** (never) **jeden Tag** (every day) **am Wochenende** (at the weekend) **einmal/zweimal /dreimal pro** |

| | |
|---|---|
| - Cinema<br>- Music<br>- Hobbies<br>- Adverbs of frequency, TMP<br>- Modal verbs<br>- Perfect tense<br>- Listening, reading and writing (translation) assessment | **Tag/Woche/Monat /Jahr** once/twice/three times a day/week/month/year |

## Summer term

| Content in chronological order | Vocabulary / Grammar |
|---|---|
| -Film: Das Wunder von Bern<br>(Historical contexts / Comparing characters, themes, storyline)<br>- Writing (film review)<br>Going out and Germany project<br>- Accepting and turning down invitations<br>- Clothes<br>- Party<br>- Party Food<br>- Daily routine<br>- Writing (up to 3 tenses) / Listening and Reading | - Key words for telling time: **Uhr** → o'clock **nach** → past **vor** → to **Viertel** → quarter **halb** → half way to (the next hour).<br>-Adverbs can refer to time (when?), manner (how?) or place (where?). In German sentences, they must always be kept in this order.<br>-Modal verbs: **dürfen** → to be allowed to **können** → to be able to / can **müssen** → to have to / must **wollen** → to want to **sollen** → to be supposed to / should.<br>-Modal verbs are formed differently to other verbs. They are normally always used with a second verb. This verb is in the infinitive form and at the end of the sentence. |

Grammar Vocabulary Cultural

# HISTORY

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# Year 8 History Knowledge Organiser – 1500-1900

*Tudor Kings and Queens*

| 1. Key Dates | |
|---|---|
| 1485 | Henry Tudor ends the Wars of the Roses, defeats Richard III and becomes Henry VII |
| 1534 | Henry VIII replaces the Pope to become the head of the Church of England |
| 1603 | The Gunpowder Plot |
| 1642-45 | The English Civil War |
| 1721 | Robert Walpole becomes the first Prime Minister |
| 1771 | Arkwright builds his first cotton spinning factory |
| 1807 | Slave Trade abolished |
| 1829 | Robert Stephenson's steam locomotive the Rocket is chosen for use on the Liverpool to Manchester railway. |
| 1833 | Slave Trade abolished in British Empire |
| 1851 | The Great Exhibition |

| 2. Key people/groups | |
|---|---|
| Henry VIII | King of England 1509-1547. Had six wives and broke England away from the Roman Catholic Church |
| Mary I | Queen of England 1553 – 1558. A Catholic and known as "Bloody Mary" for the amount of Protestants that she had killed. |
| Elizabeth I | Queen of England 1558-1603 |
| Mary Queen of Scots | A Catholic. Lost the throne of Scotland and fled to England where she was kept under "house arrest" until Elizabeth I signed her death warrant. Executed in 1588. |
| Francis Drake | Leader of the English navy which defeated the Spanish Armada in 1588. |
| Duke of Medina Sidonia | Leader of the Spanish Armada |
| James VI and I | King of Scotland who became King of England on the death of the childless Elizabeth I. The first Stuart monarch. 1603-1625. |
| Richard Arkwright | Businessman who mechanised spinning and built the first factory. |

| 3. Key terms and concepts | |
|---|---|
| Tudor | The period between 1485 and 1603 when Kings and Queens from the Tudor family ruled England and Wales |
| Stuart | The period between 1603 and 1714 when Kings and Queens from the Stuart family ruled Great Britain |
| Republic | A country that has no King or Queen |
| Catholic | A branch of Christianity. The Pope is the Head of the Catholic Church |
| Protestant | A newer branch of Christianity. Some Catholics began to complain or protest against some practices in the Catholic Church. These people formed a new church – The Protestant Church. |
| Puritan | An extreme Protestant who believes in only what is said in the Bible. |
| Break from Rome | The period in Britain when Henry VIII made himself Head of the Church in England rather than the Pope. |
| Reformation | Refers to the process of changing the religion in Britain during the Tudor period from Catholic to Protestant |
| Monastery | A residence for a group of monks (men who devote their lives to God and the Catholic Church) |
| Martyr | A person who publically dies for their religious or other beliefs |
| Civil War | A war between two sides in the same country |
| Divine Right of Kings | A belief that Kings are appointed by God and should therefore be completely obeyed. |
| Renaissance | A period in European History roughly during the Tudor and Stuart periods when there was a huge surge in the arts, science and education. |
| Reform | A change for the better. Laws are often referred to as “reforms” |
| Industrial Revolution | When goods formerly manufactured in people’s homes increasingly become made by machines in factories |
| Canal | Manmade (dug!) waterways designed to transport heavy goods. |
| Turnpike Trusts | A group who buy a road, charge people to use it and use this money to repair and improve it. |

# MATHS

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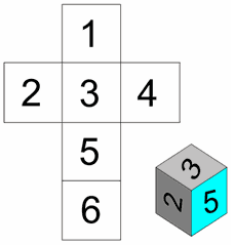
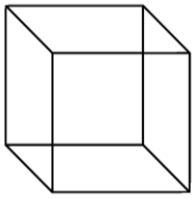
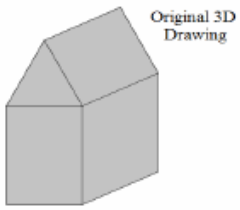
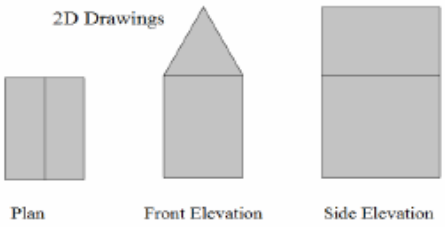
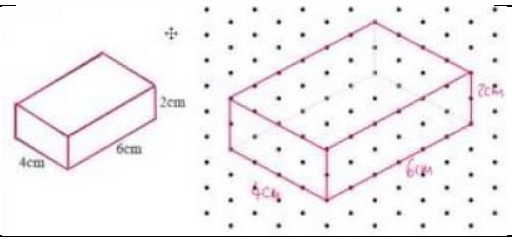
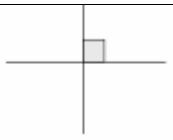
| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Integer | A **whole number** that can be positive, negative or zero. | $-3, 0, 92$ |
| 2. Decimal | A number with a **decimal point** in it. Can be positive or negative. | $3.7, 0.94, -24.07$ |
| 3. Negative Number | A number that is **less than zero**. Can be decimals. | $-8, -2.5$ |
| 4. Addition | To find the **total**, or **sum**, of two or more numbers.<br><br>'add', 'plus', 'sum' | $3 + 2 + 7 = 12$ |
| 5. Subtraction | To find the **difference** between two numbers.<br>To find out how many are left when some are taken away.<br><br>'minus', 'take away', 'subtract' | $10 - 3 = 7$ |
| 6. Multiplication | Can be thought of as **repeated addition**.<br><br>'multiply', 'times', 'product' | $3 \times 6 = 6 + 6 + 6 = 18$ |
| 7. Division | Splitting into equal parts or groups.<br>The process of calculating the **number of times one number is contained within another one**.<br><br>'divide', 'share' | $20 \div 4 = 5$<br><br>$\frac{20}{4} = 5$ |
| 8. Remainder | The amount '**left over**' after dividing one integer by another. | The remainder of $20 \div 6$ is 2, because 6 divides into 20 exactly 3 times, with 2 left over. |
| 9. BIDMAS | An acronym for the **order** you should do calculations in.<br><br>BIDMAS stands for **'Brackets, Indices, Division, Multiplication, Addition and Subtraction'**.<br><br>Indices are also known as 'powers' or 'orders'.<br><br>With strings of division and multiplication, or strings of addition and subtraction, and no brackets, work from left to right. | $6 + 3 \times 5 = 21, not\ 45$<br><br>$5^2 = 25$, where the 2 is the index/power.<br><br>$12 \div 4 \div 2 = 1.5, not\ 6$ |
| 10. Recurring Decimal | A decimal number that has **digits that repeat forever**.<br><br>The part that repeats is usually shown by placing a dot above the digit that repeats, or | $\frac{1}{3} = 0.333 \ldots = 0.\dot{3}$<br><br>$\frac{1}{7} = 0.142857142857 \ldots = 0.\dot{1}4285\dot{7}$ |

| | | |
|---|---|---|
| | dots over the first and last digit of the repeating pattern. | $\frac{77}{600} = 0.128333 \ldots = 0.128\dot{3}$ |
| | **Representing 3D shapes in 2D** | |
| 1. Net | A pattern that you can **cut and fold** to make a **model** of a **3D shape**. |  |
| 2. Properties of Solids | **Faces = flat surfaces**<br>**Edges = sides/lengths**<br>**Vertices = corners** | A cube has 6 faces, 12 edges and 8 vertices.<br>  |
| 3. Plans and Elevations | This takes 3D drawings and produces 2D drawings.<br><br>**Plan View**: from **above**<br>**Side Elevation**: from the **side**<br>**Front Elevation**: from the **front** |  <br>  |
| 4. Isometric Drawing | A method for visually **representing 3D objects in 2D**. |  |
| | **Constructing Shapes** | |
| 1. Parallel | Parallel lines never meet. |  |
| 2. Perpendicular | Perpendicular lines are at right angles. There is a 90° angle between them. |  |

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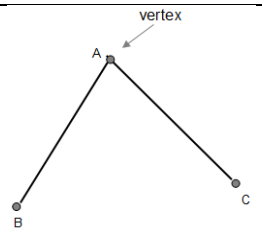
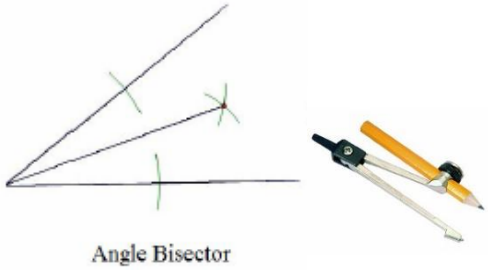
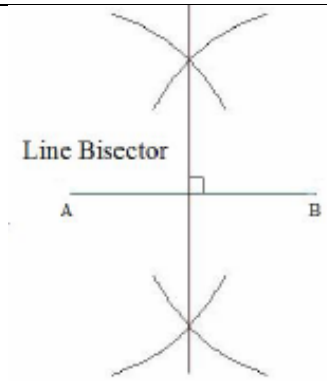
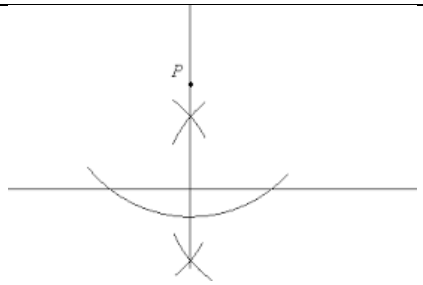
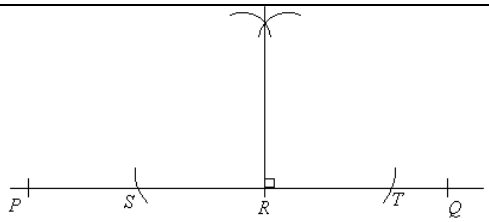
| 3. Vertex | A corner or a point where two lines meet. |  |
| 4. Angle Bisector | **Angle Bisector: Cuts the angle in half**.<br><br>1. Place the sharp end of a pair of compasses on the vertex.<br>2. Draw an arc, marking a point on each line.<br>3. Without changing the compass put the compass on each point and mark a centre point where two arcs cross over.<br>4. Use a ruler to draw a line through the vertex and centre point. |  |
| 5. Perpendicular Bisector | **Perpendicular Bisector: Cuts a line in half and at right angles**.<br><br>1. Put the sharp point of a pair of compasses on A.<br>2. Open the compass over half way on the line.<br>3. Draw an arc above and below the line.<br>4. Without changing the compass, repeat from point B.<br>5. Draw a straight line through the two intersecting arcs. |  |
| 6. Perpendicular from an External Point | The **perpendicular distance** from a point to a line is the **shortest distance** to that line.<br><br>1. Put the sharp point of a pair of compasses on the point.<br>2. Draw an arc that crosses the line twice.<br>3. Place the sharp point of the compass on one of these points, open over half way and draw an arc above and below the line.<br>4. Repeat from the other point on the line.<br>5. Draw a straight line through the two intersecting arcs. |  |
| 7. Perpendicular from a Point on a Line | Given line PQ and point R on the line:<br><br>1. Put the sharp point of a pair of compasses on point R.<br>2. Draw two arcs either side of the point of equal width (giving points S and T) |  |

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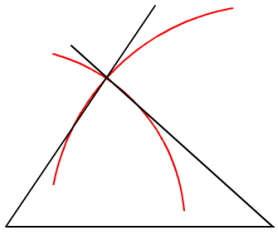
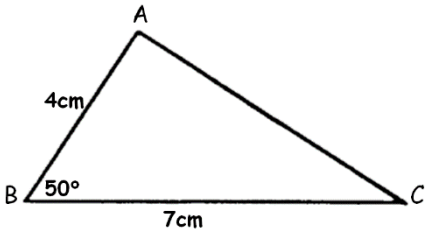
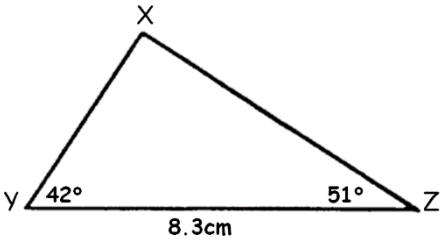
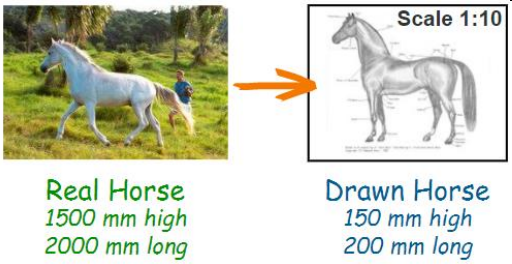
| | 3. Place the compass on point S, open over halfway and draw an arc above the line.<br>4. Repeat from the other arc on the line (point T).<br>5. Draw a straight line from the intersecting arcs to the original point on the line. | |
| 8. Constructing Triangles (Side, Side, Side) | 1. Draw the base of the triangle using a ruler.<br>2. Open a pair of compasses to the width of one side of the triangle.<br>3. Place the point on one end of the line and draw an arc.<br>4. Repeat for the other side of the triangle at the other end of the line.<br>5. Using a ruler, draw lines connecting the ends of the base of the triangle to the point where the arcs intersect. |  |
| 9. Constructing Triangles (Side, Angle, Side) | 1. Draw the base of the triangle using a ruler.<br>2. Measure the angle required using a protractor and mark this angle.<br>3. Remove the protractor and draw a line of the exact length required in line with the angle mark drawn.<br>4. Connect the end of this line to the other end of the base of the triangle. |  |
| 10. Constructing Triangles (Angle, Side, Angle) | 1. Draw the base of the triangle using a ruler.<br>2. Measure one of the angles required using a protractor and mark this angle.<br>3. Draw a straight line through this point from the same point on the base of the triangle.<br>4. Repeat this for the other angle on the other end of the base of the triangle. |  |
| | **Scale Diagrams and Bearings** | |
| 1. Scale | The **ratio** of the **length** in a **model** to the length of the **real** thing. |  |

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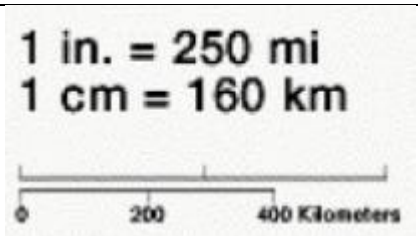
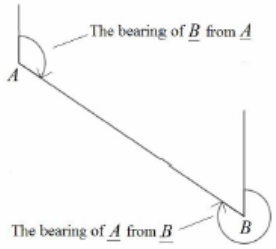
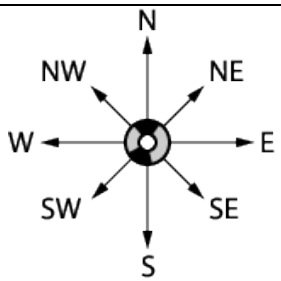
| 2. Scale (Map) | The **ratio** of a **distance on the map** to the actual **distance in real life**. |  |
| 3. Bearings | 1. Measure from **North** (draw a North line)<br>2. Measure **clockwise**<br>3. Your answer must have **3 digits** (eg. 047°)<br><br>Look out for where the bearing is measured <u>from</u>. |  |
| 4. Compass Directions | You can use an acronym such as **'Never Eat Shredded Wheat'** to remember the order of the compass directions in a clockwise direction.<br><br>Bearings: $NE = 045°, W = 270°\ etc.$ |  |
| | **Fractions** | |
| 1. Fraction | A mathematical expression representing the **division** of one integer by another.<br><br>Fractions are written as **two numbers separated by a horizontal line**. | $\frac{2}{7}$ is a 'proper' fraction.<br><br>$\frac{9}{4}$ is an 'improper' or 'top-heavy' fraction. |
| 2. Numerator | The **top** number of a fraction. | In the fraction $\frac{3}{5}$, 3 is the numerator. |
| 3. Denominator | The **bottom** number of a fraction. | In the fraction $\frac{3}{5}$, 5 is the denominator. |
| 4. Unit Fraction | A fraction where the **numerator is one** and the denominator is a positive integer. | $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}\ etc.$ are examples of unit fractions. |
| 5. Reciprocal | The reciprocal of a number is **1 divided by the number**.<br><br>The reciprocal of $x$ is $\frac{1}{x}$<br><br>**When we multiply a number by its reciprocal we get 1**. This is called the 'multiplicative inverse'. | The reciprocal of 5 is $\frac{1}{5}$<br><br>The reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$, because<br><br>$\frac{2}{3} \times \frac{3}{2} = 1$ |

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| 6. Mixed Number | A number formed of both an **integer part** and a **fraction part**. | $3\frac{2}{5}$ is an example of a mixed number. |
| 7. Simplifying Fractions | **Divide the numerator and denominator by the highest common factor**. | $\frac{20}{45} = \frac{4}{9}$ |
| 8. Equivalent Fractions | Fractions which represent the **same value**. | $\frac{2}{5} = \frac{4}{10} = \frac{20}{50} = \frac{60}{150}\ etc.$ |
| 9. Comparing Fractions | To compare fractions, they each need to be rewritten so that they have a **common denominator**.<br><br>**Ascending** means **smallest to biggest**.<br><br>**Descending** means **biggest to smallest**. | Put in to ascending order : $\frac{3}{4}, \frac{2}{3}, \frac{5}{6}, \frac{1}{2}$.<br><br>Equivalent: $\frac{9}{12}, \frac{8}{12}, \frac{10}{12}, \frac{6}{12}$<br><br>Correct order: $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$ |
| 10. Fraction of an Amount | **Divide** by the **bottom**, **times** by the **top** | Find $\frac{2}{5}$ of £60<br>$60 \div 5 = 12$<br>$12 \times 2 = 24$ |
| 11. Adding or Subtracting Fractions | Find the **LCM of the denominators** to find a common denominator.<br>Use equivalent fractions to change each fraction to the **common denominator**.<br>Then just **add or subtract the numerators** and keep the **denominator the same**. | $\frac{2}{3} + \frac{4}{5}$<br>Multiples of 3: 3, 6, 9, 12, **15**..<br>Multiples of 5: 5, 10, **15**..<br>LCM of 3 and 5 = 15<br>$\frac{2}{3} = \frac{10}{15}$<br>$\frac{4}{5} = \frac{12}{15}$<br><br>$\frac{10}{15} + \frac{12}{15} = \frac{22}{15} = 1\frac{7}{15}$ |
| 12. Multiplying Fractions | **Multiply** the **numerators** together and **multiply** the **denominators** together. | $\frac{3}{8} \times \frac{2}{9} = \frac{6}{72} = \frac{1}{12}$ |
| 13. Dividing Fractions | **'Keep it, Flip it, Change it – KFC'**<br>Keep the first fraction the same<br>Flip the second fraction upside down<br>Change the divide to a multiply<br><br>Multiply by the reciprocal of the second fraction. | $\frac{3}{4} \div \frac{5}{6} = \frac{3}{4} \times \frac{6}{5} = \frac{18}{20} = \frac{9}{10}$ |
| | **Indices** | |
| 1. Square Number | The number you get when you **multiply a number by itself**. | **1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225…**<br>$9^2 = 9 \times 9 = 81$ |
| 2. Square Root | The **number you multiply by itself** to get another number.<br><br>The reverse process of squaring a number. | $\sqrt{36} = 6$<br><br>because $6 \times 6 = 36$ |

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| 3. Solutions to $x^2 =$ .... | **Equations** involving **squares** have **two solutions**, one **positive** and one **negative**. | Solve $x^2 = 25$<br><br>$x = 5 \; or \; x = -5$<br><br>This can also be written as $x = \pm 5$ |
| 4. Cube Number | The number you get when you **multiply a number by itself and itself again**. | 1, 8, 27, 64, 125…<br>$2^3 = 2 \times 2 \times 2 = 8$ |
| 5. Cube Root | The **number you multiply by itself and itself again** to get another number.<br><br>The reverse process of cubing a number. | $\sqrt[3]{125} = 5$<br><br>because $5 \times 5 \times 5 = 125$ |
| 6. Powers of… | The powers of a number are that **number raised to various powers**. | The powers of 3 are:<br><br>$3^1 = 3$<br>$3^2 = 9$<br>$3^3 = 27$<br>$3^4 = 81$ etc. |
| 7. Multiplication Index Law | When **multiplying** with the same base (number or letter), **add the powers**.<br><br>$\boldsymbol{a^m \times a^n = a^{m+n}}$ | $7^5 \times 7^3 = 7^8$<br>$a^{12} \times a = a^{13}$<br>$4x^5 \times 2x^8 = 8x^{13}$ |
| 8. Division Index Law | When **dividing** with the same base (number or letter), **subtract the powers**.<br><br>$\boldsymbol{a^m \div a^n = a^{m-n}}$ | $15^7 \div 15^4 = 15^3$<br>$x^9 \div x^2 = x^7$<br>$20a^{11} \div 5a^3 = 4a^8$ |
| 9. Brackets Index Laws | When raising a power to another power, multiply the powers together.<br><br>$\boldsymbol{(a^m)^n = a^{mn}}$ | $(y^2)^5 = y^{10}$<br>$(6^3)^4 = 6^{12}$<br>$(5x^6)^3 = 125x^{18}$ |
| 10. Notable Powers | $\boldsymbol{p = p^1}$<br>$\boldsymbol{p^0 = 1}$ | $99999^0 = 1$ |
| | **Algebra proficiency** | |
| 1. Expression | A mathematical statement written using **symbols**, **numbers** or **letters**, | 3x + 2 or $5y^2$ |
| 2. Equation | A statement showing that **two expressions are equal** | 2y – 17 = 15 |
| 3. Identity | An equation that is **true for all values** of the variables<br><br>An identity uses the symbol: ≡ | $2x \equiv x+x$ |
| 4. Formula | Shows the **relationship** between **two or more variables** | Area of a rectangle = length x width or A= LxW |
| 5. Simplifying Expressions | **Collect 'like terms'.**<br><br>Be careful with negatives.<br>$x^2$ and $x$ are not like terms. | $2x + 3y + 4x - 5y + 3$<br>$= 6x - 2y + 3$<br>$3x + 4 - x^2 + 2x - 1 = 5x - x^2 + 3$ |

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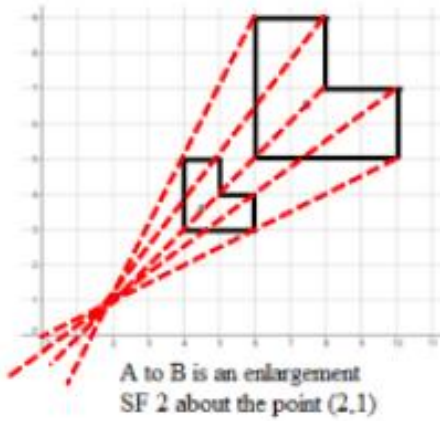
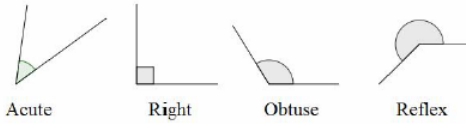
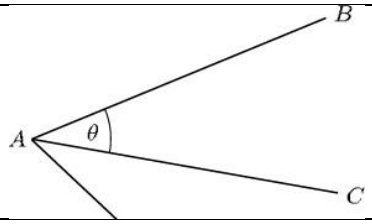
| 6. $x$ times $x$ | The answer is $x^2$ not $2x$. | Squaring is multiplying by itself, not by 2. |
| 7. $p \times p \times p$ | The answer is $p^3$ not $3p$ | If p=2, then $p^3$=2x2x2=8, not 2x3=6 |
| 8. $p + p + p$ | The answer is 3p not $p^3$ | If p=2, then 2+2+2=6, not $2^3 = 8$ |
| 9. Expand | To expand a bracket, **multiply** each term **in the bracket** by the expression **outside** the bracket. | $3(m + 7) = 3x + 21$ |
| 10. Factorise | The **reverse** of **expanding**.<br>Factorising is writing an expression as a product of terms by '**taking out' a common factor**. | $6x - 15 = 3(2x - 5)$, where 3 is the common factor. |
| | **Enlargement of shape** | |
| 1. Enlargement | The shape will get **bigger or smaller**.<br>Multiply each side by the **scale factor**. | Scale Factor = 3 means '3 times larger = multiply by 3'<br><br>Scale Factor = ½ means 'half the size = divide by 2' |
| 2. Finding the Centre of Enlargement | Draw **straight lines** through **corresponding corners** of the two shapes. The centre of enlargement is the point **where all the lines cross over**.<br><br>Be careful with negative enlargements as the corresponding corners will be the other way around. |  |
| | **Calculating angles** | |
| 1. Types of Angles | **Acute angles** are less than 90°.<br>**Right angles** are exactly 90°.<br>**Obtuse angles** are greater than 90° but less than 180°.<br>**Reflex angles** are greater than 180° but less than 360°. |  |
| 2. Angle Notation | Can use **one lower-case** letters, eg. $\theta$ or $x$<br><br>Can use **three upper-case** letters, eg. $BAC$ |  |

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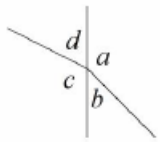
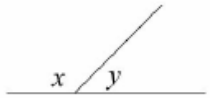
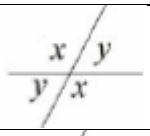
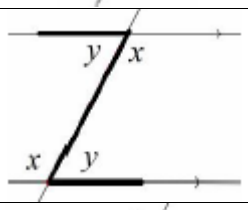
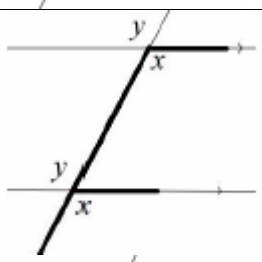
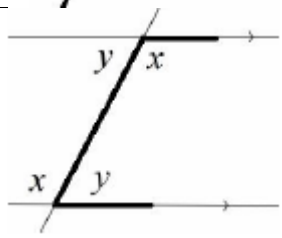
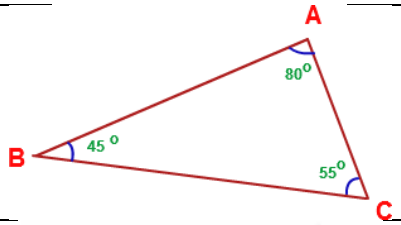
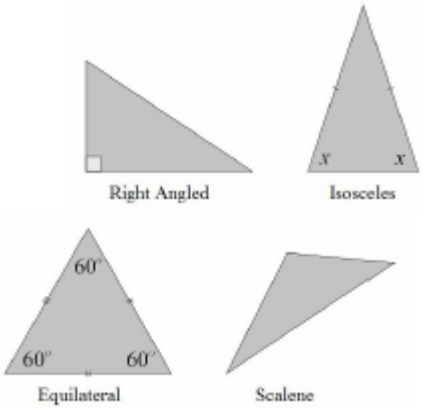
| 3. Angles at a Point | **Angles around a point add up to 360°**. |  <br>$a+b+c+d=360^o$ |
| 4. Angles on a Straight Line | **Angles around a point on a straight line add up to 180°**. |  <br>$x+y=180^o$ |
| 5. Opposite Angles | **Vertically opposite angles are equal**. |  |
| 6. Alternate Angles | **Alternate angles are equal**.<br>They look like Z angles, but never say this in the exam. |  |
| 7. Corresponding Angles | **Corresponding angles are equal**.<br>They look like F angles, but never say this in the exam. |  |
| 8. Co-Interior Angles | **Co-Interior angles add up to 180°**.<br>They look like C angles, but never say this in the exam. |  |
| 9. Angles in a Triangle | **Angles in a triangle add up to 180°.** |  |
| 10. Types of Triangles | **Right Angle** Triangles have a **90°** angle in.<br>**Isosceles** Triangles have **2 equal sides** and **2 equal base angles**.<br>**Equilateral** Triangles have **3 equal sides** and **3 equal angles (60°)**.<br>**Scalene** Triangles have **different sides** and **different angles**.<br><br>**Base angles in an isosceles triangle are equal.** |  |

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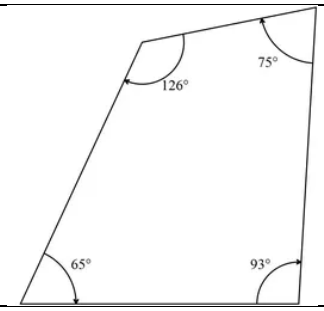
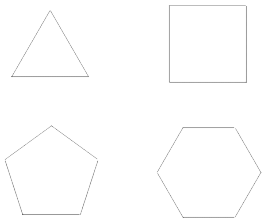
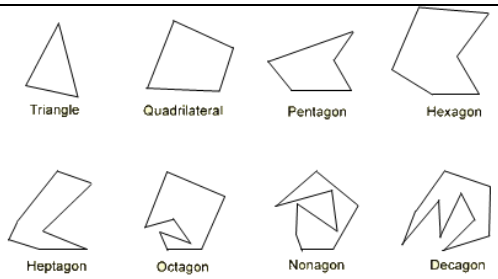
| 11. Angles in a Quadrilateral | **Angles in a quadrilateral add up to 360°.** |  |
| 12. Polygon | A **2D** shape with **only straight edges**. | Rectangle, Hexagon, Decagon, Kite etc. |
| 13. Regular | A shape is regular if all the **sides** and all the **angles** are **equal**. |  |
| 14. Names of Polygons | **3**-sided = **Triangle**<br>**4**-sided = **Quadrilateral**<br>**5**-sided = **Pentagon**<br>**6**-sided = **Hexagon**<br>**7**-sided = **Heptagon**/Septagon<br>**8**-sided = **Octagon**<br>**9**-sided = **Nonagon**<br>**10**-sided = **Decagon** |  |
| 15. Sum of Interior Angles | $(\boldsymbol{n}-\mathbf{2})\times\mathbf{180}$<br>where n is the number of sides. | Sum of Interior Angles in a Decagon = $(10-2)\times 180 = 1440°$ |
| 16. Size of Interior Angle in a Regular Polygon | $\dfrac{(\boldsymbol{n}-\mathbf{2})\times\mathbf{180}}{\boldsymbol{n}}$<br><br>You can also use the formula:<br>$\mathbf{180}-\boldsymbol{Size\ of\ Exterior\ Angle}$ | Size of Interior Angle in a Regular Pentagon =<br>$\dfrac{(5-2)\times 180}{5} = 108°$ |
| 17. Size of Exterior Angle in a Regular Polygon | $\dfrac{\mathbf{360}}{\boldsymbol{n}}$<br><br>You can also use the formula:<br>$\mathbf{180}-\boldsymbol{Size\ of\ Interior\ Angle}$ | Size of Exterior Angle in a Regular Octagon =<br>$\dfrac{360}{8} = 45°$ |
| | **Equations and Formulae** | |
| 1. Solve | To find the **answer**/value of something<br><br>**Use inverse operations** on both sides of the equation (balancing method) until you find the value for the letter. | Solve $2x-3=7$<br><br>Add 3 on both sides<br>$2x = 10$<br>Divide by 2 on both sides<br>$x = 5$ |
| 2. Inverse | **Opposite** | The inverse of addition is subtraction. The inverse of multiplication is division. |

| | | |
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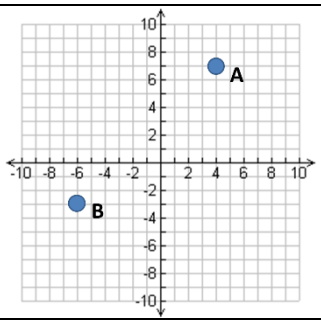
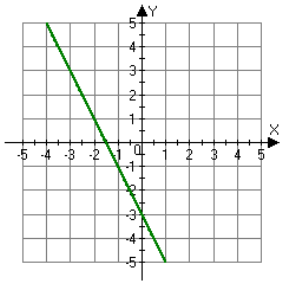
| 3. Rearranging Formulae | **Use inverse operations** on both sides of the formula (balancing method) until you find the expression for the letter. | Make x the subject of $y = \frac{2x-1}{z}$<br><br>Multiply both sides by z<br>$yz = 2x - 1$<br>Add 1 to both sides<br>$yz + 1 = 2x$<br>Divide by 2 on both sides<br>$\frac{yz+1}{2} = x$<br>We now have x as the subject. |
| 4. Writing Formulae | **Substitute letters for words** in the question. | Bob charges £3 per window and a £5 call out charge.<br><br>$C = 3N + 5$<br><br>Where N=number of windows and C=cost |
| 5. Substitution | **Replace letters with numbers**.<br><br>Be careful of $5x^2$. You need to square first, then multiply by 5. | $a = 3, b = 2\ and\ c = 5$. Find:<br>1. $2a = 2 \times 3 = 6$<br>2. $3a - 2b = 3 \times 3 - 2 \times 2 = 5$<br>3. $7b^2 - 5 = 7 \times 2^2 - 5 = 23$ |
| | **Linear Graphs** | |
| 1. Coordinates | Written in **pairs**. The **first** term is the **x-coordinate** (movement **across**). The **second** term is the **y-coordinate** (movement **up or down**) |  <br>A: (4,7)<br>B: (-6,-3) |
| 2. Midpoint of a Line | Method 1: **add the x coordinates and divide by 2**, **add the y coordinates and divide by 2**<br><br>Method 2: Sketch the line and find the values half way between the two x and two y values. | Find the midpoint between (2,1) and (6,9)<br><br>$\frac{2+6}{2} = 4$ and $\frac{1+9}{2} = 5$<br><br>So, the midpoint is (4,5) |
| 3. Linear Graph | **Straight line** graph.<br><br>The general equation of a linear graph is<br>$\boldsymbol{y = mx + c}$<br><br>where $\boldsymbol{m}$ **is the gradient** and $c$ **is the y-intercept**.<br><br>The **equation** of a linear graph can contain an **x-term**, a **y-term** and a **number**. | Example:<br>  <br>Other examples:<br>$x = y$<br>$y = 4$<br>$x = -2$<br>$y = 2x - 7$<br>$y + x = 10$<br>$2y - 4x = 12$ |

| | | |
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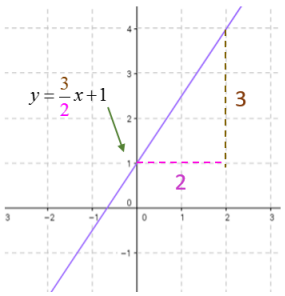
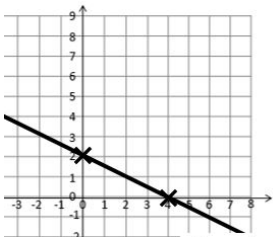
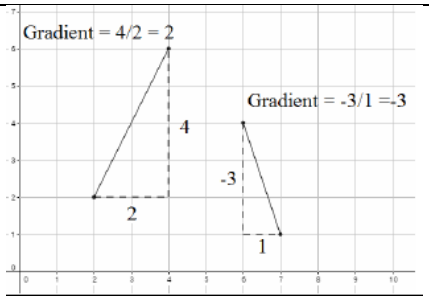
| 4. Plotting Linear Graphs | Method 1: **Table of Values**<br>Construct a table of values to calculate coordinates.<br><br>Method 2: **Gradient-Intercept Method** (use when the equation is in the form $y = mx + c$)<br>1. Plots the y-intercept<br>2. Using the gradient, plot a second point.<br>3. Draw a line through the two points plotted.<br><br>Method 3: **Cover-Up Method** (use when the equation is in the form $ax + by = c$)<br>1. Cover the $x$ term and solve the resulting equation. Plot this on the $x - axis$.<br>2. Cover the $y$ term and solve the resulting equation. Plot this on the $y - axis$.<br>3. Draw a line through the two points plotted. | <table><tr><td>x</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td></tr><tr><td>y= x +3</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr></table><br>  <br>  <br>$2x + 4y = 8$ |
| 5. Gradient | The gradient of a line is how **steep** it is.<br><br>**Gradient =**<br>$$\frac{\textbf{Change in } y}{\textbf{Change in } x} = \frac{\textbf{Rise}}{\textbf{Run}}$$<br><br>The gradient can be positive (sloping upwards) or negative (sloping downwards) |  |
| 6. Finding the Equation of a Line <u>given a point and a gradient</u> | **Substitute** in the **gradient (m)** and **point (x,y)** in to the equation $\boldsymbol{y = mx + c}$ and **solve for c**. | Find the equation of the line with gradient 4 passing through (2,7).<br><br>$y = mx + c$<br>$7 = 4 \times 2 + c$<br>$c = -1$<br><br>$y = 4x - 1$ |
| 7. Finding the Equation of a Line <u>given two points</u> | Use the two points to **calculate the gradient**. Then **repeat the method above** using the gradient and either of the points. | Find the equation of the line passing through (6,11) and (2,3)<br><br>$m = \frac{11 - 3}{6 - 2} = 2$<br><br>$y = mx + c$<br>$11 = 2 \times 6 + c$<br>$c = -1$<br><br>$y = 2x - 1$ |
| | **Pythagoras** | |

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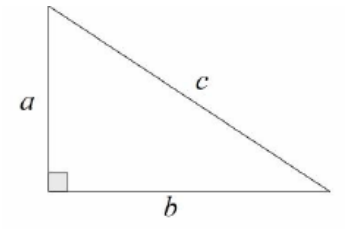
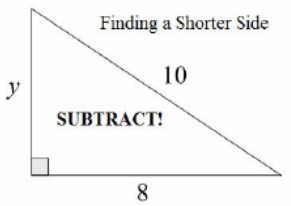
|---|---|---|
| 1. Pythagoras' Theorem | For any **right angled triangle**:<br><br>$\boldsymbol{a^2 + b^2 = c^2}$<br><br>  <br><br><br>Used to find **missing lengths**.<br>a and b are the shorter sides, c is the **hypotenuse** (**longest side**). |  <br><br>$a = y,\ b = 8,\ c = 10$<br>$a^2 = c^2 - b^2$<br>$y^2 = 100 - 64$<br>$y^2 = 36$<br>$y = 6$ |
| | **Standard form** | |
| 1. Standard Form | $\boldsymbol{A \times 10^b}$<br><br>$where\ \mathbf{1 \le A < 10},\quad \boldsymbol{b = integer}$ | 8400 = 8.4 x $10^3$<br><br>0.00036 = 3.6 x $10^{-4}$ |
| 2. Multiplying or Dividing with Standard Form | Multiply: **Multiply the numbers** and **add the powers**.<br>Divide: **Divide the numbers** and **subtract the powers**. | $(1.2 \times 10^3) \times (4 \times 10^6) = 8.8 \times 10^9$<br><br>$(4.5 \times 10^5) \div (3 \times 10^2) = 1.5 \times 10^3$ |
| 3. Adding or Subtracting with Standard Form | **Convert** in to **ordinary** numbers, **calculate** and then **convert back** in to standard form | $2.7 \times 10^4 + 4.6 \times 10^3$<br>$= 27000 + 4600 = 31600$<br>$= 3.16 \times 10^4$ |
| | **Sequences** | |
| 1. Linear Sequence | A number pattern with a **common difference**. | 2, 5, 8, 11… is a linear sequence |
| 2. Term | **Each value** in a sequence is called a term. | In the sequence 2, 5, 8, 11…, 8 is the third term of the sequence. |
| 3. Term-to-term rule | A rule which allows you to **find the next term** in a sequence if you **know the previous term**. | First term is 2. Term-to-term rule is 'add 3'<br><br>Sequence is: 2, 5, 8, 11… |
| 4. nth term | A rule which allows you to **calculate the term** that is in the **nth position** of the sequence.<br><br>Also known as the 'position-to-term' rule.<br><br>**n** refers to the **position** of a term in a sequence. | nth term is $3n - 1$<br><br>The 100th term is $3 \times 100 - 1 = 299$ |
| 5. Finding the nth term of a linear sequence | 1. Find the **difference**.<br>2. **Multiply that by $\boldsymbol{n}$**.<br>3. Substitute $n = 1$ to **find out what number you need to add or subtract to get the first number in the sequence**. | Find the nth term of: 3, 7, 11, 15…<br><br>1. Difference is +4<br>2. Start with $4n$ |

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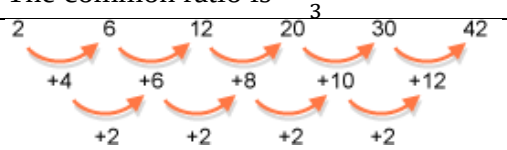
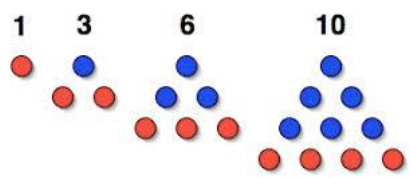
| | | 3. $4 \times 1 = 4$, so we need to subtract 1 to get 3.<br>nth term = $4n - 1$ |
| 6. Fibonacci type sequences | A sequence where the next number is found by **adding up the previous two terms** | The Fibonacci sequence is:<br>$1,1,2,3,5,8,13,21,34 \ldots$<br><br>An example of a Fibonacci-type sequence is:<br>$4, 7, 11, 18, 29 \ldots$ |
| 7. Geometric Sequence | A sequence of numbers where each term is found by **multiplying the previous one** by a number called the **common ratio, r**. | An example of a geometric sequence is:<br>$2, 10, 50, 250 \ldots$<br>The common ratio is 5<br><br>Another example of a geometric sequence is:<br>$81, -27, 9, -3, 1 \ldots$<br>The common ratio is $-\frac{1}{3}$ |
| 8. Quadratic Sequence | A sequence of numbers where the **second difference is constant**.<br><br>A quadratic sequence will have a $n^2$ term. |  |
| 9. nth term of a geometric sequence | $\boldsymbol{ar^{n-1}}$<br><br>where $a$ is the first term and $r$ is the common ratio | The nth term of $2, 10, 50, 250 \ldots$ Is<br><br>$2 \times 5^{n-1}$ |
| 10. nth term of a quadratic sequence | 1. Find the first and second differences.<br>2. Halve the second difference and multiply this by $n^2$.<br>3. Substitute $n = 1,2,3,4 \ldots$ into your expression so far.<br>4. Subtract this set of numbers from the corresponding terms in the sequence from the question.<br>5. Find the nth term of this set of numbers.<br>6. Combine the nth terms to find the overall nth term of the quadratic sequence.<br><br>Substitute values in to check your nth term works for the sequence. | Find the nth term of: 4, 7, 14, 25, 40..<br><br>Answer:<br>Second difference = +4 → nth term = $2n^2$<br><br>Sequence: 4, 7, 14, 25, 40<br>$2n^2$ 2, 8, 18, 32, 50<br>Difference: 2, -1, -4, -7, -10<br><br>Nth term of this set of numbers is $-3n + 5$<br><br>Overall nth term: $2n^2 - 3n + 5$ |
| 11. Triangular numbers | The sequence which comes from a pattern of dots that form a triangle.<br><br>$1, 3, 6, 10, 15, 21 \ldots$ |  |
| | **Area and circumference of circles** | |

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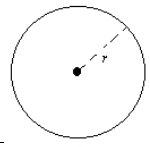
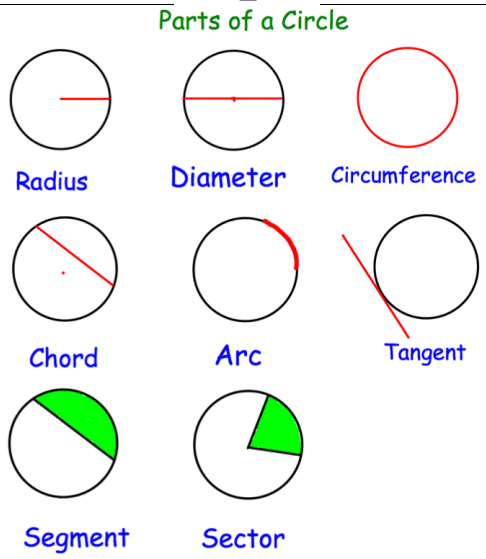
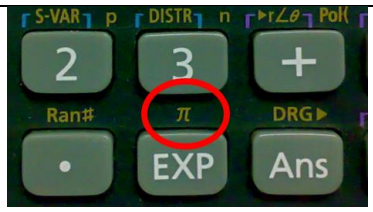
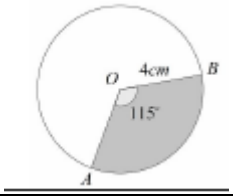
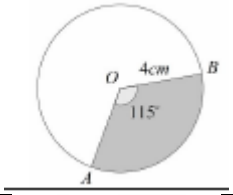
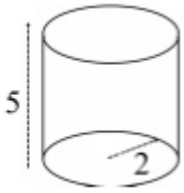
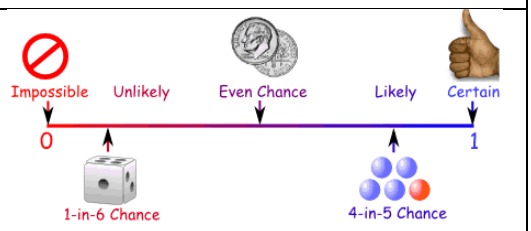
| 1. Circle | A circle is the locus of all points equidistant from a central point. |  |
| 2. Parts of a Circle | **Radius** – the **distance** from the **centre** of a circle to the **edge**<br>**Diameter** – the total **distance** across the **width** of a circle **through the centre**.<br>**Circumference** – the **total distance** around the **outside** of a circle<br>**Chord** – a **straight line** whose **end points lie on a circle**<br>**Tangent** – a **straight line** which **touches** a circle at exactly **one point**<br>**Arc** – a **part of the circumference** of a circle<br>**Sector** – the **region** of a circle enclosed by **two radii** and their intercepted **arc**<br>**Segment** – the **region** bounded by a **chord** and the **arc** created by the chord |  |
| 3. Area of a Circle | $\boldsymbol{A = \pi r^2}$ which means 'pi x radius squared'. | If the radius was 5cm, then:<br>$A = \pi \times 5^2 = 78.5cm^2$ |
| 4. Circumference of a Circle | $\boldsymbol{C = \pi d}$ which means 'pi x diameter' | If the radius was 5cm, then:<br>$C = \pi \times 10 = 31.4cm$ |
| 5. $\pi$ ('pi') | Pi is the circumference of a circle divided by the diameter.<br><br>$\boldsymbol{\pi \approx 3.14}$ |  |
| 6. Arc Length of a Sector | The arc length is part of the circumference.<br><br>Take the **angle** given **as a fraction over 360°** and **multiply** by the **circumference**. | Arc Length = $\frac{115}{360} \times \pi \times 8 = 8.03cm$<br>  |
| 7. Area of a Sector | The area of a sector is part of the total area.<br><br>Take the **angle** given **as a fraction over 360°** and **multiply** by the **area**. | Area = $\frac{115}{360} \times \pi \times 4^2 = 16.1cm^2$<br>  |
| 8. Surface Area of a Cylinder | **Curved Surface Area =** $\boldsymbol{\pi dh}$ or $\boldsymbol{2\pi rh}$<br><br>**Total SA =** $\boldsymbol{2\pi r^2 + \pi dh}$ or $\boldsymbol{2\pi r^2 + 2\pi rh}$ |  |

| | | |
|---|---|---|
| | | $Total\ SA = 2\pi(2)^2 + \pi(4)(5) = 28\pi$ |
| | **Probability** | |
| 1. Probability | The **likelihood/chance** of something happening.<br><br>Is expressed as a number **between 0 (impossible) and 1 (certain)**.<br><br>Can be expressed as a fraction, decimal, percentage or in words (likely, unlikely, even chance etc.) |  |
| 2. Probability Notation | **P(A)** refers to the **probability that event A will occur**. | P(Red Queen) refers to the probability of picking a Red Queen from a pack of cards. |
| 3. Theoretical Probability | $\frac{\textbf{Number of Favourable Outcomes}}{\textbf{Total Number of Possible Outcomes}}$ | Probability of rolling a 4 on a fair 6-sided die = $\frac{1}{6}$. |
| 4. Relative Frequency | $\frac{\textbf{Number of Successful Trials}}{\textbf{Total Number of Trials}}$ | A coin is flipped 50 times and lands on Tails 29 times.<br><br>The relative frequency of getting Tails = $\frac{29}{50}$. |
| 5. Expected Outcomes | To find the number of expected outcomes, **multiply** the **probability** by the **number of trials**. | The probability that a football team wins is 0.2 How many games would you expect them to win out of 40?<br><br>$0.2 \times 40 = 8\ games$ |
| 6. Exhaustive | Outcomes are **exhaustive** if they **cover the entire range of possible outcomes**.<br><br>The **probabilities** of an **exhaustive** set of outcomes **adds up to 1**. | When rolling a six-sided die, the outcomes 1, 2, 3, 4, 5 and 6 are exhaustive, because they cover all the possible outcomes. |
| 7. Mutually Exclusive | Events are mutually exclusive if they **cannot happen at the same time**.<br><br>The **probabilities** of an exhaustive set of **mutually exclusive** events **adds up to 1**. | Examples of mutually exclusive events:<br><br>- Turning left and right<br>- Heads and Tails on a coin<br><br>Examples of non mutually exclusive events:<br><br>- King and Hearts from a deck of cards, because you can pick the King of Hearts |

| | | |
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| 8. Sample Space | The **set of all possible outcomes** of an experiment. | |

| + | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |

| | | |
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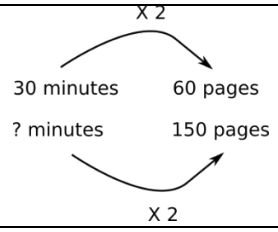
| 9. Sample | A **sample** is a small selection of items from a population.<br><br>A sample is **biased** if individuals or groups from the population are not represented in the sample. | A sample could be selecting 10 students from a year group at school. |
| 10. Sample Size | The larger a sample size, the closer those probabilities will be to the true probability. | A sample size of 100 gives a more reliable result than a sample size of 10. |
| | **Ratio** | |
| 1. Ratio | Ratio compares the size of **one part** to **another part**.<br><br>Written using the ':' symbol. | 3 : 1  |
| 2. Proportion | Proportion compares the size of **one part** to the size of the **whole**.<br><br>Usually written as a fraction. | In a class with 13 boys and 9 girls, the proportion of boys is $\frac{13}{22}$ and the proportion of girls is $\frac{9}{22}$ |
| 3. Simplifying Ratios | **Divide** all parts of the ratio by a **common factor**. | 5 : 10 = 1 : 2 (divide both by 5)<br>14 : 21 = 2 : 3 (divide both by 7) |
| 4. Ratios in the form 1 : $n$ or $n$ : 1 | **Divide** both parts of the ratio by one of the numbers to make **one part equal 1**. | 5 : 7 = 1 : $\frac{7}{5}$ in the form 1 : n<br>5 : 7 = $\frac{5}{7}$ : 1 in the form n : 1 |
| 5. Sharing in a Ratio | **1. Add** the total parts of the ratio.<br>**2. Divide** the amount to be shared by this value to find the value of one part.<br>**3. Multiply** this value by each part of the ratio.<br><br>Use only if you **know the total**. | Share £60 in the ratio 3 : 2 : 1.<br><br>3 + 2 + 1 = 6<br>60 ÷ 6 = 10<br>3 x 10 = 30, 2 x 10 = 20, 1 x 10 = 10<br>£30 : £20 : £10 |
| 6. Proportional Reasoning | Comparing two things using **multiplicative reasoning** and applying this to a new situation.<br><br>Identify one multiplicative link and use this to find missing quantities. |   |
| 7. Unitary Method | Finding the **value of a single unit** and then finding the necessary value by **multiplying** the single unit value. | 3 cakes require 450g of sugar to make. Find how much sugar is needed to make 5 cakes.<br><br>3 cakes = 450g |

| | | |
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| | | So 1 cake = 150g (÷ by 3)<br>So 5 cakes = 750 g (x by 5) |
| 8. Ratio already shared | Find what **one part** of the ratio is worth using the **unitary method**. | Money was shared in the ratio 3:2:5 between Ann, Bob and Cat. Given that Bob had £16, found out the total amount of money shared.<br><br>£16 = 2 parts<br>So £8 = 1 part<br>3 + 2 + 5 = 10 parts, so 8 x 10 = £80 |
| 9. Best Buys | Find the **unit cost** by **dividing** the **price by the quantity**.<br>The **lowest** number is the best value. | 8 cakes for £1.28 → 16p each (÷by 8)<br>13 cakes for £2.05 → 15.8p each (÷by 13)<br>Pack of 13 cakes is best value. |

# MUSIC

Be Positive. Be Respectful. Be Your Best

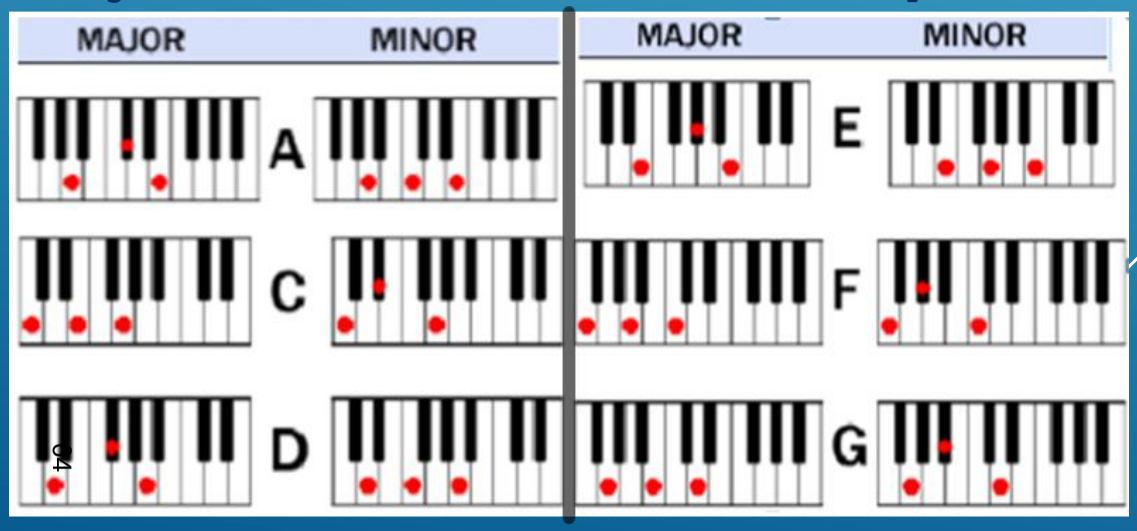
MORE THAN JUST A SCHOOL

# Music

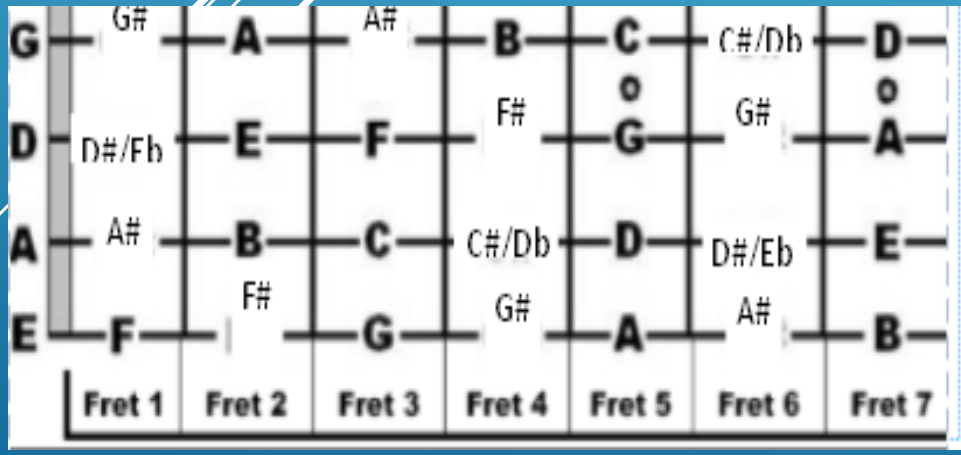
| Important Terminology | |
|---|---|
| Chords | A chord is when you play more than 1 note at the same time. Chords are often 3 notes. The 1st, 3rd and 5th notes of a scale. The chord of C is C, E and G. |
| Major | A scale or a chord that has a “happy” feel. |
| Minor | A scale or a chord that has a “sad” feel. |
| Theme and Variations | A theme and variation is a form of music that begins with a main melody (the theme) that is then altered or changed in some way throughout the piece. |
| Pentatonic Scale | A five note scale |
| Improvisation | Making up music on the spot which is not planned beforehand. |

| The sections of a song | |
|---|---|
| Introduction | The beginning of the song. Often just instrumental. Setting the mood of the song. |
| Verse | Often the first section of music with words. The words change but the music stays the same. |
| Chorus | Often the second section of music with words, the words and the music both stay the same. |
| Instrumental | Just the instruments (no singer) |
| Pre-Chorus | The section that joins the end of the verse to the start of the chorus. |
| Outro | The end of the song |

## Major and Minor Chords on the Keyboard




## Notes on a guitar



# PE

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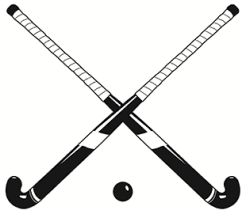
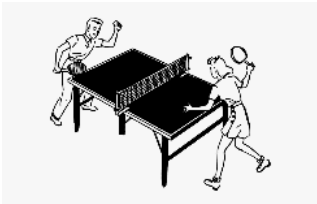
# YEAR 8 KNOWLEDGE ORGANISER




| Theory | |
|---|---|
| Aerobic Endurance | The capacity to continue prolonged physical activity and withstand fatigue. Eg. Long distance running |
| Muscular Endurance | **The ability of a given muscle to exert force, consistently and repetitively, over a period of time. Eg. rowing** |
| Muscular Strength | The amount of force you can put out or the amount of weight you can lift. Eg. weight lifting. |
| Flexibility | **The ability of a joint or series of joints to move through an unrestricted, pain free range of motion. Eg. gymnastics** |
| Speed | The ability to move all or part of the body as quickly as possible. Eg 100m sprint |
| Agility | The ability to move and change the direction and position of the body quickly and effectively while under control. Eg rugby |
| Balance | **The ability to control or stabilize the body when a person is standing still or moving. Eg gymnastics** |
| Coordination | The body's ability to perform smooth and efficient movements. Eg. tennis |
| Power | **The ability to exert force in the shortest period of time. Eg golf swing** |
| Reaction Time | The time it takes for you to initiate an action or movement in response to a stimulus. Eg 100m sprint start |
| Fartlek training | Periods of fast and slow running intermixed with a change in difficulty and terrain, known as 'speed play'. Eg 5 min jog, 1 min walk, 30 sec sprint |
| Simple Skills | A skill with small parts. Requires little concentration and cognitive ability. |
| Complex Skills | **Complicated movements that require high levels of co-ordination and control.** |
| Fixed & variable practice | Fixed – Repeated movement **Variable – Repeated in different situations** |

## Sports included in Year 8 PE

Football, Dance, Table Tennis, Athletics, Cricket, Badminton, Hockey

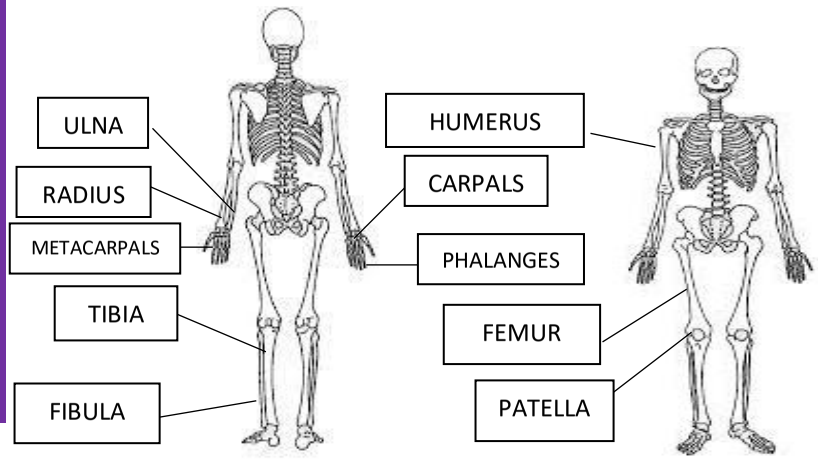
## Key Terms and Rules

**Can you explain the following:**

Reverse stick, strong/weak side, overhead, underarm, forehand, backhand, inside, outside, curl/spin, drive, cushion, shielding, possession, intercept, marking, outwit, ready position

## Extension – can you apply the theory to this year's sports?

What additional rules and key terms in those sports do you know?



# PSHEE

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# PSHEE Knowledge Organiser – Year 8

| | | | | |
|---|---|---|---|---|
| **AUTUMN A** | **FRIENDSHIPS, ANTI-BULLYING, MENTAL HEALTH & EMOTIONAL WELLBEING** | **TOPICS COVERED:** Peer pressure and influence, self-esteem, coping with change and loss, how to get support and how to support a friend. | **KEY TERMS:** Self-manager, sensitivity, empathy, sympathy, understanding, self-awareness, peer pressure, influence, bereavement, grief, anxiety, social anxiety. | **SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor https://www.nhs.uk/conditions/stress-anxiety-depression/bereavement-and-young-people/ https://www.cruse.org.uk/get-help/for-parents/teenagers-understanding-of-death |

| | | | | |
|---|---|---|---|---|
| **AUTUMN B** | **CAREERS, ASPIRATIONS & MONEY** | **TOPICS COVERED:** Exploring different careers, enterprise projects (setting up your own business), money, | **KEY TERMS:** Entrepreneur, entrepreneurial, location, market, manager, promotions, pitch, income, outgoings | **SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor https://www.gov.uk/government/news/support-for-young-entrepreneurs https://www.princes-trust.org.uk/help-for-young-people/who-else/business-advice |

| | | | | |
|---|---|---|---|---|
| **SPRING A** | **SEXUAL HEALTH, HEALTHY & UNHEALTHY RELATIONSHIPS** | **TOPICS COVERED:** Expectations of a partner, readiness for sex, consent, sexual orientation | **KEY TERMS:** Values, support, jealousy, boundaries, respect, prejudice, homophobia, biphobia, transphobia, bullying, identity, biological sex, gender identity, gender expression, sexual orientation, cisgender, transgender, gender queer, non-binary, homosexual, pressure, peer pressure, consent | **SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor www.thinkuknow.co.uk www.outreachyouth.org.uk www.suffolklgbtnetwork.org.uk www.stonewall.org.uk/help-advice/whats-in-my-area |

| | | | | |
|---|---|---|---|---|
| **SPRING B** | **PHYSICAL HEALTH, PERSONAL** | **TOPICS COVERED:** Drug education (smoking), managing risks to health, online safety, first aid, recognising and | **KEY TERMS:** Vaping, nicotine, addiction, smoking, tobacco, awareness, cancer, genetic predisposition, personal safety, first aid, online safety, fear of missing out (FOMO), trolling, phubbing, you only live once (YOLO) | **SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor www.childline.org.uk https://youngminds.org.uk/ http://www.4yp.org.uk/contact/ |

| | | | | |
|---|---|---|---|---|
| | **SAFETY & RISK MANAGEMENT** | responding to risks in different situations, | | |
| **SUMMER A** | **DIVERSITY, PREJUDICE & MEDIA INFLUENCE** | **TOPICS COVERED:** Celebrating diversity, developing mutual respect human rights, body image, fake news, | **KEY TERMS:** Respect, diverse, diversity, rights, freedom, responsibilities, body dysphoria, body image, critical consumer, fake news, impact, criminality | **SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor http://www.doingsmsc.org.uk/british-values/ |
| **SUMMER B** | **COMMUNITY, SOCIAL, MORAL, SPIRITUAL, CULTURAL, FUNDAMENTAL BRITISH VALUES** | **TOPICS COVERED:** Being valuable citizens, understanding school community, fundraising, British values, tolerance & respect. | **KEY TERMS:** Volunteer, citizen, society, societal expectations, community, cohesion, acceptance, tolerance, British values. | **SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor http://volunteersuffolk.org.uk/ https://www.dofe.org/do/ |

# SCIENCE

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# Y8 Science

| You need to KNOW | Key words |
|---|---|
| **Organisms 2**<br>• Know that breathing rate can change when at rest and when exercising.<br>• Know that oxygen and food are required by the body for respiration.<br>• Know the names of the gases that are exchanged between the alveoli and the blood.<br>• Know the function of each of the key parts of the human gas exchange system.<br>• Know. Explain how the ribs and diaphragm change the volume and pressure inside the thorax during inhalation and exhalation.<br>• Know how to measure lung capacity by displacing a volume of water with exhaled air.<br>• Know. List the factors that can affect the gas exchange system.<br>• Know. Explain how exercise, smoking and asthma affect the gas exchange system.<br>• Know that food is required to supply energy for the body's activities.<br>• Describe the key components of a balanced diet.<br>• Describe the key components of the human digestive system and know the function of each.<br>• Describe how food is broken down by chemical and mechanical digestion.<br>• Describe and explain the importance of enzymes in the chemical digestion of food | circulatory system, respiratory system, reproductive system, immune system, digestive system, gas exchange, cilia, balanced diet, trachea, oesophagus, liver, stomach, kidney, intestines, pancreas, gall bladder, enzymes, catalyst |
| **Genes 2**<br>• Know that organisms need to survive in their environment and that those which are well adapted are more likely to survive.<br>• Know the definitions of the key terms natural selection, competition, evolution.<br>• Know the principles of Darwin's theory of natural selection.<br>• Explain that organisms have adaptations that help them survive in their environment.<br>• Explain the term extinction and give examples of organisms which are now extinct.<br>• Explain why biodiversity is important in ecosystems.<br>• Know that characteristics are passed down from parents to their children.<br>• Explain the importance of DNA, genes and chromosomes in inheritance.<br>• Understand the terms genome, haploid, diploid, allele, homozygous, heterozygous, dominant, recessive.<br>• Know how to draw diagrams to show how genes are inherited<br>• Define the terms mutation and carcinogen.<br>• Explain, with examples, the effect of changes in DNA on an organism and its future offspring. | genetic variation, environmental variation, biodiversity, evolution, normal distribution, repeatable, DNA, mutation, genes, chromosomes, selection, adaptations, allele |
| **Ecosystems 2**<br>• Know a definition of aerobic respiration as being the release of energy from glucose in the presence of oxygen.<br>• Know the reactants, products and word equation for respiration.<br>• Know the definition of anaerobic respiration.<br>• Know Describe the difference between anaerobic respiration in animals, plants and microbes like yeast.<br>• Know how to write word equations for anaerobic respiration in animals, plants and microbes.<br>• Know that fermentation is the same as anaerobic respiration in yeast.<br>• Describe the process of photosynthesis. | photosynthesis, producer, consumer, oxygen, carbon dioxide, glucose, aerobic, anaerobic, bacteria, decomposition, fermentation, yeast, roots, leaves, stomata, xylem, phloem, water, osmosis |

| | |
|---|---|
| • Know how to write the word equation for photosynthesis<br>• Describe the role of plant roots.<br>• Explain how plant roots are adapted to obtain named resources from the soil.<br>• Know the names of the tissues that transport materials to and from the plant roots.<br>• Explain the uses of the products of photosynthesis and the importance of these to other organisms<br>• Explain how the rate of photosynthesis can be affected by changing the external conditions. | |
| **Matter 3**<br>• Know that the Periodic table shows all the elements arranged in rows and columns.<br>• Know that Groups are columns of the periodic table and that Periods are rows of the periodic table<br>• Know that metals are generally found on the left side of the table, non-metals on the right.<br>• Know that Group 0 contains unreactive gases called noble gases.<br>• Know that Group 1 contains reactive metals called alkali metals.<br>• Know that the elements in a group all react in a similar way and sometimes show a pattern in reactivity.<br>• Know that Group 7 contains non-metals called halogens.<br>• Know that most substances are not pure elements, but compounds or mixtures containing atoms of different elements. They have different properties to the elements they contain.<br>• Know that elements are what all substances are made up of, and which contain only one type of atom.<br>• Know that a chemical formula shows the elements present in a compound and their relative proportions<br>• Know the symbols of hydrogen, oxygen, nitrogen, carbon, hydrogen, iron, zinc, copper, sulfur, aluminium, iodine, bromine, chlorine, sodium, potassium and magnesium.<br>• Given chemical formulae, name the elements present and their relative proportions.<br>• Know that atoms are the smallest particle of an element that can exist.<br>• Know that molecules are two to thousands of atoms joined together. Most non-metals exist either as small or giant molecules.<br>• Represent atoms, molecules and elements, mixtures and compounds using particle diagrams.<br>• Know that a polymer is a molecule made of thousands of smaller molecules in a repeating pattern. Plastics are man-made polymers, starch is a natural polymer.<br>• Know the properties of ceramics, composites and their components. | Group, period, Mendeleev, metal, non-metal, reactivity, alkali, element, compound, mixture, halogen, formulae, ceramic, composite, alloy, atoms, polymers, monomers. |
| **Reactions 3**<br>• Know the following definitions:<br>Chemical reaction: A change in which a new substance is formed.<br>Physical change: One that changes the physical properties of a substance, but no new substance is formed.<br>• Know that an exothermic reaction is one in which energy is given out, usually as heat or light.<br>• Know that an endothermic reaction is one in which energy is taken in, usually as heat.<br>• Know that during a chemical reaction bonds are broken (requiring energy) and new bonds formed (releasing energy). If the energy released is greater than the energy required, the reaction is exothermic. If the reverse, it is endothermic.<br>• Know that a chemical bond is a force that holds atoms together in molecules.<br>• Know that catalysts are substances that speed up a chemical reactions but are unchanged at the end.<br>• Know that thermal decomposition is a reaction where a single reactant is broken down into simpler products by heating. | Exothermic, endothermic, bonds, reaction, atoms, catalysts, energy, thermal decomposition, reactants, products, conserved, fuels, |

| | |
|---|---|
| • Know the following definitions:<br>Reactants: Substances that react together, shown before the arrow in an equation.<br>Products: Substances formed in a chemical reaction, shown after the reaction arrow in an equation.<br>Conserved: When the quantity of something does not change after a process takes place.<br>• Know that combustion is a reaction with oxygen in which energy is transferred to the surroundings as heat and light.<br>• Use particle diagrams to show what happens in a reaction.<br>• Know the term: Fuel: Stores energy in a chemical store which it can release as heat.<br>• Balance a symbol equation. | |
| **Earth 2**<br>• Know carbon is recycled through natural processes in the atmosphere, ecosystems, oceans and the Earth's crust (such as photosynthesis and respiration) as well as human activities (burning fuels).<br>• Know that the Earth's atmosphere contains around 78% nitrogen, 21% oxygen, <1% carbon dioxide, plus small amounts of other gases.<br>• Know that fossil fuels are the remains of dead organisms that are burned as fuels, releasing carbon dioxide.<br>Know that a carbon sink is an area of vegetation, the ocean or the soil, which absorbs and stores carbon.<br>• Know that greenhouse gases reduce the amount of energy lost from the Earth through radiation and therefore the temperature has been rising as the concentration of those gases has risen.<br>• Know that the greenhouse effect is when energy from the sun is transferred to the thermal energy store of gases in Earth's atmosphere<br>• Know that scientists have evidence that global warming caused by human activity is causing changes in climate.<br>• Know that global warming is the gradual increase in surface temperature of the Earth.<br>• Know that there is only a certain quantity of any resource on Earth, so the faster it is extracted, the sooner it will run out. Recycling reduces the need to extract resources.<br>• Know definitions for:<br>**Natural resources**: materials from the Earth which act as raw materials for making a variety of products.<br>**Extraction**: the separation of a metal from a metal compound.<br>**Recycling**: the processing a material so that it can be used again.<br>• Know that most metals are found combined with other elements, as a compound, in ores. The more reactive a metal, the more difficult it is to separate it from its compound. Carbon displaces less reactive metals, while electrolysis is needed for more reactive metals.<br>• Know Definitions for:<br>**Mineral:** a naturally occurring metal or metal compound.<br>**Ore**: a naturally occurring rock containing sufficient minerals for extraction.<br>• Know that most metals are found combined with other elements, as a compound, in ores. The more reactive a metal, the more difficult it is to separate it from its compound. Carbon displaces less reactive metals, while electrolysis is needed for more reactive metals.<br>• Know the following term:<br>Electrolysis: using electricity to split up a compound into its elements.. | Carbon, fossil fuels, atmosphere, carbon sink, greenhouse effect, global climate change, natural resource, extraction, recycling, mineral, ore, electrolysis, smelting, blast furnace, pollution |
| **Electromagnetism 2**<br>• Know non-contact forces such as gravity and electrostatics.<br>• Know attractive and repulsive forces around magnets<br>• Know which materials are magnetic and examples of practical uses of the magnetic properties of these materials.<br>• Know that the current in a wire is increased if there is a larger voltage, for example because of more cells.<br>• Know how an electromagnet generates a magnetic field. | Gravity, non contact, static, magnetism, magnetic field, domains, electromagnetism, poles, repel, attract, voltage, navigation, bell, loudspeaker, solenoid. |

| | |
|---|---|
| • Apply knowledge of magnets to navigation methods using the Earth's magnetic field.<br>• Apply knowledge of electromagnets to explain how bells, circuit breakers and loudspeakers work.<br>• Apply knowledge of these effects by investigating ways of varying the strength of an electromagnet. | |
| **Energy 2**<br>• Know the SI unit of force is the newton (N) and of energy is the joule (J).<br>• Know the term work and give examples where work is done, including displacements and deformations.<br>• Know the factors that change the work required to move an object.<br>• Apply the idea of work done to explain, using diagrams, how levers, pulleys and wheels are all used to make work easier.<br>• Know examples of how levers, pulleys and wheels are all used to make work easier.<br>• Know that temperature is commonly measured with a thermometer in degrees Celsius.<br>• Revisit the particle model of matter, in particular the ways in which particles are free to move in each common state of matter.<br>• Know the difference between energy in a thermal store and temperature.<br>• Apply ideas about particles and waves to explain, using examples, the three ways that energy can be moved from one place to another by heating.<br>• Apply collect data by carrying out an investigation into the thermal insulation of different materials.<br>• Apply the results of your investigation to evaluate the importance of conduction, convection and radiation. | Newton, Joule, displacement, deformation, work, levers, pulleys, thermometer, temperature, Fahrenheit, Celsius, Kelvin, particle, thermal store, insulation, convection, conduction, radiation |
| **Forces 2**<br>• Know that the SI unit of force is the newton (N).<br>• Know the meaning of the term contact force and give examples of these type of forces.<br>• Know the effect on a moving and non moving object of a resultant force of zero.<br>• Know the meaning and give examples of the terms deformation, tension and compression.<br>• Apply these definitions to explain, with examples, how forces can change an object's form causing it to be stretched or compressed<br>• Apply these ideas by explaining how different materials behave under tension or compression.<br>• Know that in some materials, deformation is proportional to the force applied and therefore this is a linear relationship.<br>• Apply this relationship to explain the effect of a change in force on the length of a spring.<br>• Know the terms friction and drag.<br>• Apply this understanding by explaining the factors which affect the size of frictional and drag forces, including the effects of drag and other forces on falling or accelerating objects as they move.<br>• Apply these ideas to sports or vehicle technology that reduces frictional or drag forces.<br>• Know the particle model of matter and that particles in liquids and gases are free to move.<br>• Know how the effect of a force differs depending on the area over which the force applies.<br>• Apply the formula: fluid pressure, or stress on a surface = force (N)/area (m2)<br>• Apply the relationship to explain, with examples, how pressure acts in a fluid in all directions and increases with depth.<br>• Know that pressure in a fluid causes upthrust, and how an object floats or sinks depending on the object's weight and the upthrust.<br>• Know that atmospheric pressure is the pressure caused by the weight of the air (gas) above a surface. | Newton, force, resultant, deformation, tension, compression, spring, extension, linear, Hooke's law, friction, drag, upthrust, acceleration, pressure, atmosphere, fluid, floating, sinking, density, gas. |
| **Waves 2**<br>• Know the vocabulary used to describe waves, such as wavelength and amplitude.<br>• Know that when a sound wave travels through a substance, particles move to and fro, transferring energy in the direction of movement of the wave.<br>• Know the term pressure wave and give examples of pressure waves.<br>• Apply the idea of wave displacement to explain the functions of microphones and loudspeakers. | Amplitude, frequency, wavelength, transverse, longitudinal, peak, trough, waves, pressure, physiotherapy, acoustics, light, sound, reflection, absorption, transmission, |

| | |
|---|---|
| • Apply ideas about electromagnetism to explain how audio equipment converts sound into a changing pattern of electric current.<br>• Know that sound waves can be used in cleaning and physiotherapy.<br>• Know that waves of higher amplitude or higher frequency transfer more energy and give examples.<br>• Apply ideas about frequency to explain the differing damage done to living cells by light and other EM waves.<br>• Apply ideas about the frequency of a wave to the energy it carries and the effect on living cells.<br>• Know that waves can be described in terms of wavelength, frequency and amplitude.<br>• Know the differences between longitudinal and transverse waves, with examples including light and sound.<br>• Apply a physical model of a transverse wave to show how the waves moves from place to place, while the material it travels through does not.<br>• Know examples that demonstrate transmission of a wave.<br>• Apply the wave model to explain observations of the reflection, absorption and transmission of a range of waves.<br>• Apply the model of transverse waves to explain how two waves can add together or cancel out.<br>• Apply the wave model to explain observations of the reflection, absorption and transmission of waves. | superposition, electromagnetic, infrared, ultraviolet. |

# TECHNOLOGY

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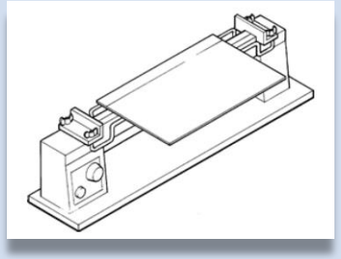
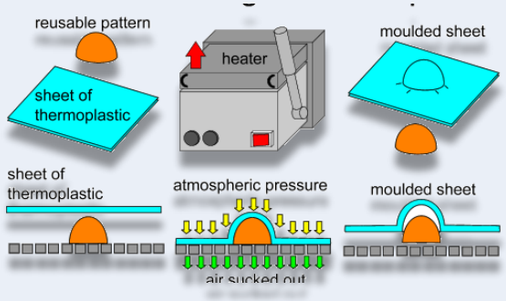
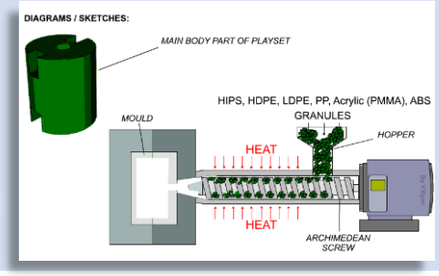
# D&T & Engineering Unit 1 – Practical skills – Year 8

| Process | How it works |
|---|---|
| **Line Bender**<br>  | Line bending is a process where thermoplastics are heated until soft enough to bend into a desired shape. The thermoplastic is then held still until it cools and stays in the bent shape. |
| **Vacuum Forming**<br>  | Vacuum Forming is an industrial process which can be used for batch production or mass production.<br>A sheet of thermoplastic is held in place by toggle clamps, then heated until the plastic becomes soft. The air is then sucked out from underneath the plastic using a vacuum pump. Atmospheric pressure, presses down on top of the plastic sheet which in turn presses down onto a mould |
| **Injection Moulding**<br>  | Injection moulding is the process where molten thermoplastics are injected under high pressure into a mould. |

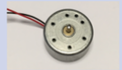
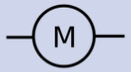
| Key Questions | Answers |
|---|---|
| **What are thermoplastics?** | • **These plastics can be re-heated and re-shaped in various ways.**<br>• **They become mouldable after reheating as they do not undergo significant chemical change. Reheating and shaping can be repeated. The bond between the molecules is weak and becomes weaker when reheated, allowing reshaping.**<br>• **These types of plastics can be recycled.** |
| **What are thermosetting plastics?** | • **These are plastics that once heated and moulded, cannot be reheated and remoulded.**<br>• **The molecules of these plastics are cross linked in three dimensions and this is why they cannot be reshaped or recycled.**<br>• **The bond between the molecules is very strong.** |
| **What is Acrylic?** | • **Acrylic. (Known also as PERSPEX) This is the most common plastic in a school workshop.**<br>• **Purchased in the form of sheets and comes in a range of colours.**<br>• **It can be translucent (e.g. smoked), transparent or opaque.**<br>• **It is resistant to most acids and weather conditions. Easy to cut shape. Polishes well.** |
| **What is HIPS (High Impact Polystyrene)?** | • **High Impact Polystyrene (HIPS). Light material and yet strong.**<br>• **Available in a range of colours.**<br>• **Can be vacuum formed.**<br>• **Thinner HIPS is quite flexible.**<br>• **Used for electrical casings, packaging, trays** |

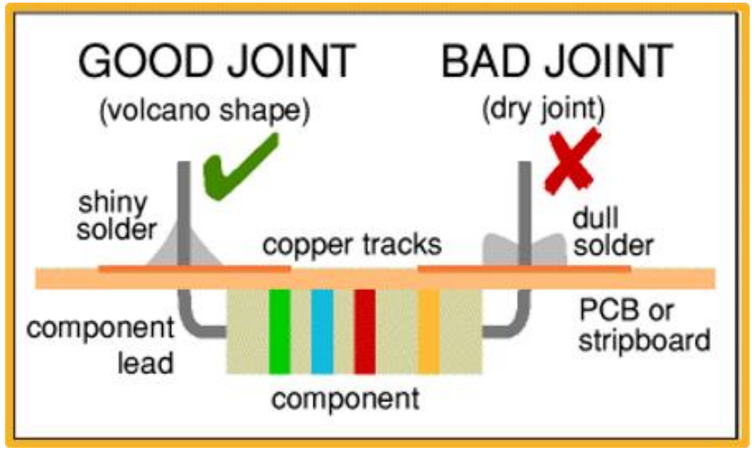
**Tools and equipment used when working with plastics:**

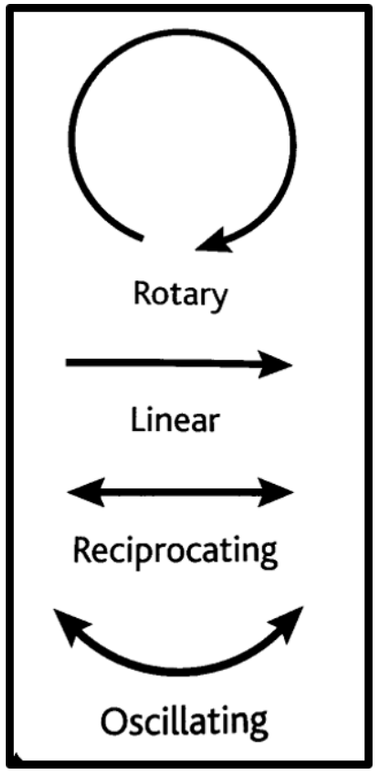
- Line Bender
- Vacuum former
- Scroll Saw/Coping saw
- Plastic yellow or blue handle file
- Wet & Dry paper

# D&T & Engineering Unit 2 - STEM – Solar Buggy – Year 8

| Key word | Definition |
|---|---|
| Circuits Series and Parallel | In a series circuit, all components are connected end-to-end, forming a single path for electrons to flow. In a parallel circuit, **all components are connected across each other**, forming exactly two sets of electrically common points |
| Current | Current is **a flow of electrical charge carriers**, usually electrons or electron-deficient atoms. ... Electrons, the most common charge carriers, are negatively charged. They flow from relatively negative points to relatively positive points. Electric current can be either direct or alternating. |
| Electronic components | Electronic components are the **basic building blocks of an electronic circuit or electronic system or electronic device**. |
| Motion | linear.<br>rotary.<br>reciprocating.<br>oscillating. |
| Assembly | Making a complete product to perform a function |
| Functionality | The particular use or set of uses for which something is designed |
| Soldering | Soldering is a joining process used to join different types of metals together by melting solder |
| Gear ratios | A gear ratio is **the ratio of the number of rotations of a driver gear to the number of rotations of a driven gear** |
| Evaluation | Evaluation is the systematic assessment of the design |
| Modification | A modification is a **change or alteration**, usually to make something work better |
| Electronic circuit | An electric circuit includes **a device that gives energy to the charged particles constituting the current** |
| Solar power | Solar power **works by converting energy from the sun into power** |
| Green power | Green energy is **any energy type that is generated from natural resources**, such as sunlight, wind or water. |

| Component Name | Component Photo | Component Symbol | Component Description |
|---|---|---|---|
| Solar Panel – Photovoltaic Cell |  |  | an electrical device that converts the energy of light directly into electricity |
| Capacitor |  |  | a device used to store an electric charge, consisting of one or more pairs of conductors separated by an insulator. |
| Motor |  |  | Electric **motors** transfer electrical energy into kinetic energy, using magnets and coils of wire. |
| Diode |  |  | device with two terminals, typically allowing the flow of current in one direction only. |
| Switch |  |  | an **electrical** component that can "make" or "break" an **electrical** circuit, interrupting the current or diverting it |




# D&T & Engineering Unit 3 - Systems & Control- Year 8

| Key word | Definition |
|---|---|
| System | Something that has an input, process and output. Systems can be mechanical, electrical or use microprocessors. They help us control a product or environment. |
| Input | What is taken into the systems. It could be a movement, but could also be a signal from sensor (I.e. temperature) |
| Process | The thing that happens in the system, often mechanical, electrical or computer controlled |
| Output | What comes out of the system. Again, this could be a movement, or could be something electrical that lights up or makes a noise |
| Circuit | A loop of conductive material (I.e. copper) that carries electrons from a battery through useful components and back to the battery. It can be represented by a circuit diagram. |
| Components | Electrical items that carry out a useful function. An input component might be a Light Dependent Resistor (LDR), while an output component might be a Light Emitting Diode (LED) |
| Soldering | The process of using a hot soldering iron to heat a conductive metal material (solder) so that it flows over the component leg and copper track of a circuit board |
| Vacuum Forming | A plastic moulding process that heats thermo-plastic material so that it becomes flexible, then sucks out the air around a wooden mould, so that an interesting shape can be produced. |

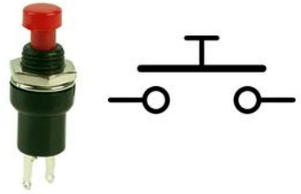
## Our Light Sensor System...

**Input 1** – *Light Dependant Resistor (LDR)* → **Process** – *Transistors & Capacitors* → **Output 1** – *LED*

## Components you might find in a system...

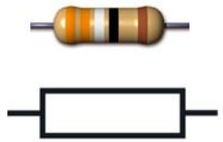
**Input Components**

Push to make switch



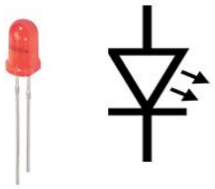
**Process Components**

Resistor (Reduces current)



**Output Components**

Light Emitting Diode (LED)



## Ohm's Law...

$$I = \frac{V}{R}$$

I = Current in Amperes (A)
V = Voltage in Volts (V)
R = Resistance in Ohms (Ω)

## Vacuum forming...

# Food – Year 8

| Key word | Definition |
|---|---|
| Nutrient | Components found in food |
| Macronutrient | Nutrients needed by the body in large amounts |
| Micronutrient | Nutrients needed by the body in small amounts |
| Bridge hold | Making a bridge between your thumb and first finger and holding the food safely while safely cutting |
| Claw hold | Holding the end of the vegetable or fruit with your fingers |
| Mash | To make food soft |
| Floury potato | When cooked, the cells in the potato separate, causing it to fall apart |
| Waxy potato | A potato that is dense, firm and holds it shape when cooked |
| Dough | A mixture of dry ingredients and liquid that is mixed, kneaded, shaped and then baked |
| Danger zone | Between 5-63C where most bacteria can multiply |
| Shortening | When fats give biscuits and pastry a crumbly texture |
| Aeration | Air is trapped in a mixture to make it lighter |
| Raising Agents | Substances added to mixtures to make them rise |
| Baking Powder | A chemical raising agent used when making cakes |
| Boiling | Cooking in a liquid at boiling point |
| Simmering | Cooking just below boiling point |
| Baking | Placing food in dry heat in a hot oven |

| Nutrient | Function |
|---|---|
| **Protein** | **Growth and repair, maintenance and energy** |
| **Fat** | **Warmth, energy, protects internal organs, provides fat soluble vitamins (A, D, E &K)** |
| **Carbohydrates** | **Energy** |
| **Vitamin A** | **Keep eyes and skin healthy** |
| **Vitamin B group** | **Releases energy from food** |
| **Vitamin C** | **Healthy connective tissue & to absorb iron** |
| **Vitamin D** | **Help the body absorb calcium – healthy bones and teeth** |
| **Calcium** | **Builds strong bones and teeth** |
| **Iron** | **Keeps red blood cells healthy** |

## Seasonality

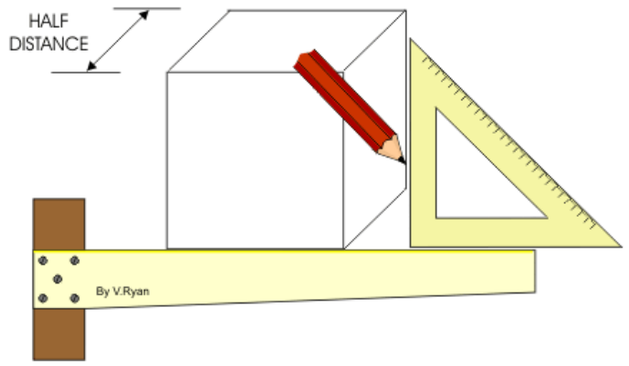
**Seasonal foods** – foods that are only available at certain times of the year.

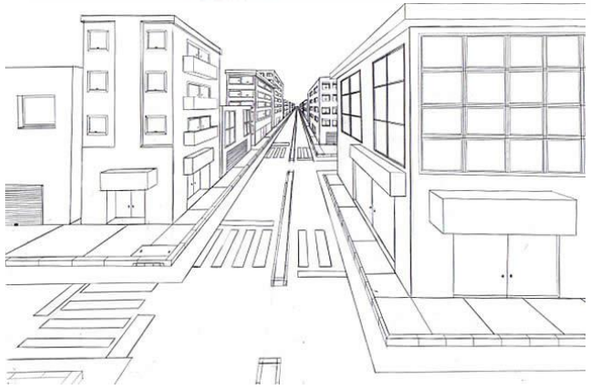
**Glut** – an excess or supply (e.g. of apples in the autumn)

*March – Rhubarb, June – Strawberries, September – Blackberries, December - Sprouts*

# Graphics – Year 8

| Keywords | Definition |
|---|---|
| Oblique | 3D Drawing, lines backwards are drawn half distance at 45 degree |
| Isometric | Designs are always drawn at 30 degrees in isometric projection |
| One point perspective | A one-point perspective drawing means that the drawing has a single vanishing point, usually directly opposite the viewer's eye and usually on the horizon line. |
| Two-point perspective | Two-point perspective using two vanishing points |
| Render | Rendering is the process of creating the effects of light, shade and light source to achieve contrast in drawings. |
| Vanishing Point | The point at which receding parallel lines viewed in perspective appear to converge. |
| Horizon | A horizontal line drawn across the picture. |



# YR8 Textiles: FABRIC BOOK

| Technique | Definition |
|---|---|
| Batik | A technique of wax "resist" dyeing to create a pattern or picture. The wax stops the dye from colouring the fabric, leaving blank areas in the dyed fabric. |
| Applique | To attach fabric to a background piece of fabric. |
| Embroidery | Decorative stitching which can be used to create a line, shape, picture or pattern. |
| String print | A method of "relief printing" where string is glued into a shape or pattern on a piece of cardboard to create a print block. Printing ink is applied with a print roller and the design is printed onto paper or fabric. |
| Reverse applique | A piece of fabric is applied to the inside or back of the fabric and the top layer is cut away to reveal the piece behind. |
| Sew face-to-face | Match two pieces of fabric front sides facing each other and sew around 3 edges. Leave one side open so that the work can be turned with the right sides facing out. |

| Keyword | Definition |
|---|---|
| Aesthetics | The way an item looks |
| Template | A shape which can be drawn around. |
| Tactile | The sensory feel of an object |
| Visual language | The way in which ideas are communicated through imagery |
| Investigate | To research, explore, study or find out about something. |
| Sensory | Skills linking to our smell, touch, vision, hearing, taste. |
| Surface pattern | Artwork such as a printed pattern, illustration or text which decorates the surface |
| Repeat pattern | A surface which has a motif printed or illustrated several times |
| Symmetrical | Exactly the same on both sides |

## Equipment:

Tjanting
Batik pot
Wax
Sewing machine
brushes
Needle
Iron
Palette
Print roller

## Materials:

Polycotton
Calico
Felt
Fabric paint
Thread
Printing ink

**DID YOU KNOW?**
Batik is both an approach to making artworks and a traditional craft from Eastern Asia. In Indonesia Batik has been taught for centuries. The word **batik** is from Java it means to **"dot"**