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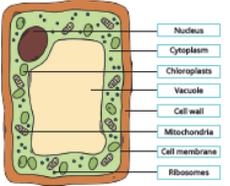
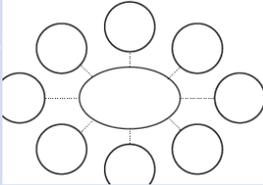


**Year 8 Knowledge Organiser - Autumn 2**

Just reading through your books or a knowledge organiser is not always an effective way to revise. Instead, you should do something with the information. Choose an example of the revision methods on the pages or see if you can come up with another method.

The knowledge is evolutionary not revolutionary. Approximately half the knowledge is new and half helps you revise. Many of the activities are changing. We hope you enjoy them.

Subject	Page Number	Subject	Page Number
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Idea	Explanation
<p>Make some flash cards or PowerPoint slides. Make top trumps.</p> 	<p>Write down key words, quotation, questions or equations on one side of a card. On the other side, write the definition or answer. Use them to test yourself.</p>
<p>Plant Cell</p>  <p>Make a poster.</p>	<p>Turn your notes into posters with lots of colour and illustrations. Summarising the key information in a different way is an effective way of learning and your brain will remember the colours more easily. Do the title last!</p>
<p>Draw spider diagrams, or for the adventurous mind maps.</p> 	<p>Write the topic/keyword in the centre of your page. Add everything you know in subtopics. Then explore each subtopic in turn adding more ideas. Colour/pictures help you recall.</p>
<p>Write a song or a rap.</p> 	<p>Are there songs that stick your head. Change the lyrics to the information you want to learn. If you record and listen back it will be a more fun way of revising.</p>
 <p>Plan a lesson</p>	<p>If you teach something to someone else the chance of recalling it is really high. This has been found to be the most effective way of learning something for the long term.</p>
<p>Write a story or comic strip.</p> 	<p>Take the keywords or facts that you need to learn and turn them into a story or a cartoon. The sillier the story the more likely you are to remember it.</p>
<p>Write a quiz. Design a game.</p> 	<p>Playing is how we learn as young children and it is a very powerful way of learning throughout life. If we enjoy the game it helps us remember.</p>

# Sharing the Love of Reading: 11-16-year olds



1. Can I read aloud to a friend or relative?

2. Can I hide a story or poem to be found?

3. Can I deliver a speech from a character or public figure?

4. Can I share my reading journey over the last week?

5. Can I learn about a book from someone's past?

6. Can I...

7. Can I discover what books mean to someone else?



10. Can I gain a '7-day streak' of reading?



8. Can I...

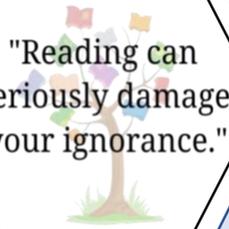
9. Can I create a paper chain of poetry?

13. Can I read in an unusual & unexpected place?

11. Can I design my own reading den?

12. Can I recreate a scene/poem using various materials?

"Reading can seriously damage your ignorance."



14. Can I set up a news desk & give a report?

18. Can I make my own mini book?

15. Can I recreate a favourite book or comic cover?

16. Can I find an online video of an illustrator drawing and draw along?

17. Can I make an A-Z of authors, book titles or favourite characters?

## Questions, questions, questions...

Asking and answering questions (in our head and aloud) helps us to be better readers. We are constantly asking questions to encourage comprehension skills during reading and these can be broken into three clear sections; 'before', 'during' and 'after' reading.

Here are some examples you can try at home:

(You don't have to ask every question every time you read, try picking out 2-3 different questions each time you read.)

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### Before reading:

- Why did you select this book?
- What makes you think this book is going to be interesting?
- What do you think the book is going to be about (use the cover image, title and blurb for clues)?
- Does this book remind you of anything else you've already read or seen?

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### During reading:

- Who/What/Where/When/Why/How questions
- Will you catch me up on the story? What's happened so far?
- What do you think will happen next? Why do you think that?
- Why do you think the character did \_\_\_\_\_?
- If you were that character, what would you have done differently in that situation?
- How do you think the character is feeling right now?
- If the book was a TV show, which actors would you cast in it?
- Where is the book set?
- What does the place look like in your head as you read? Would you want to visit there?
- Did you learn any new words or facts so far?

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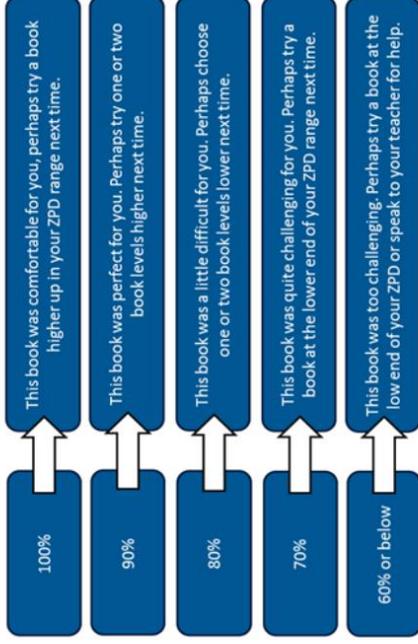
### After reading:

- What was your favourite part of the book? Why?
- Who was your favourite character? Why?
- What was the most interesting thing you learned from the book?
- Why do you think the author wrote this book?
- Would you have ended the book differently? Did it end the way you thought it would?
- If you could change one thing in the book, what would it be?
- Do you think the book had a good title? What different titles could it have had?
- Can you retell the story in your own words?
- Does this book remind you of anything else you have read? How so?



## To improve my Book Level:

- I will always quiz within my ZPD.
- According to my last quiz result, I should choose a book....



## To improve my Average Percent Correct:

I will use the 5 W's to review before I quiz

I will take my time when quizzing

I will make notes when reading

I will make sure my book within my ZPD range

I will quiz as soon as I finish my book

- 5 W's:
- What...
- Who...
- When...
- Where...
- Why....

## To meet my Points Target:



Aim for **100%** to earn all the points

I will stick with a book and finish it

I will fit in extra reading time:  
Before bed?  
On the bus?  
During lunch?

I will read fewer long books

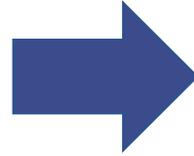
I will read several shorter books

If you are able to understand a book as you read, but struggle to remember events when you quiz, ask Miss Ling for a reading reminder sheet.



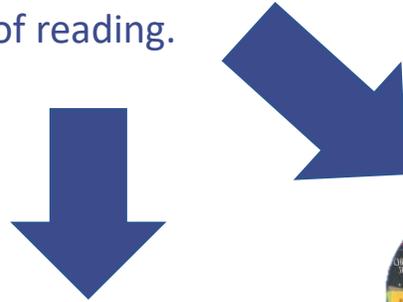
**Open University** research suggests there are three important ways to support readers and a love of reading.

## Supporting Readers at Home



**Reading aloud** to your children shows them reading is a pleasure, not a chore. Older children can also read to younger ones.

- \*Reading together doesn't have to be a story (recipes, news articles etc. all count too!)
- \*If you are not confident in reading aloud, why not listen to an audiobook together.



**Children who read**, and are supported as readers, develop strong reading skills and do better at school. Research also shows that reading aids relaxation and has benefits for mental health.

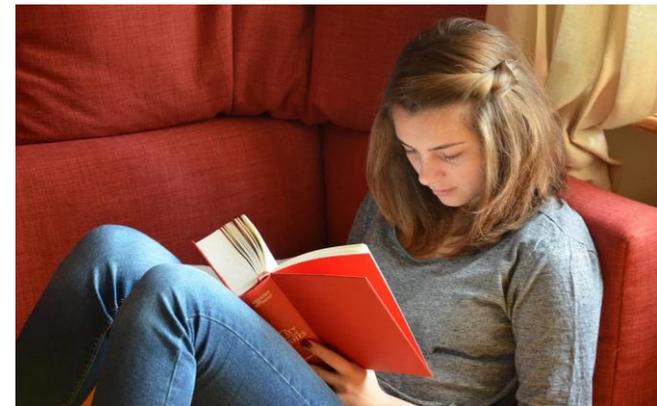


**Making time to read** alongside one another helps develop children's reading stamina and interest, Let them chose what to read and relax together (you don't need to be reading the same thing.)

- \* Where can you 'fit' reading in? It could be 10 minutes before tea, when they come home from school, waiting in the car, before bed etc. You may find it easier to set a regular time aside, or fit it in around your other commitments.

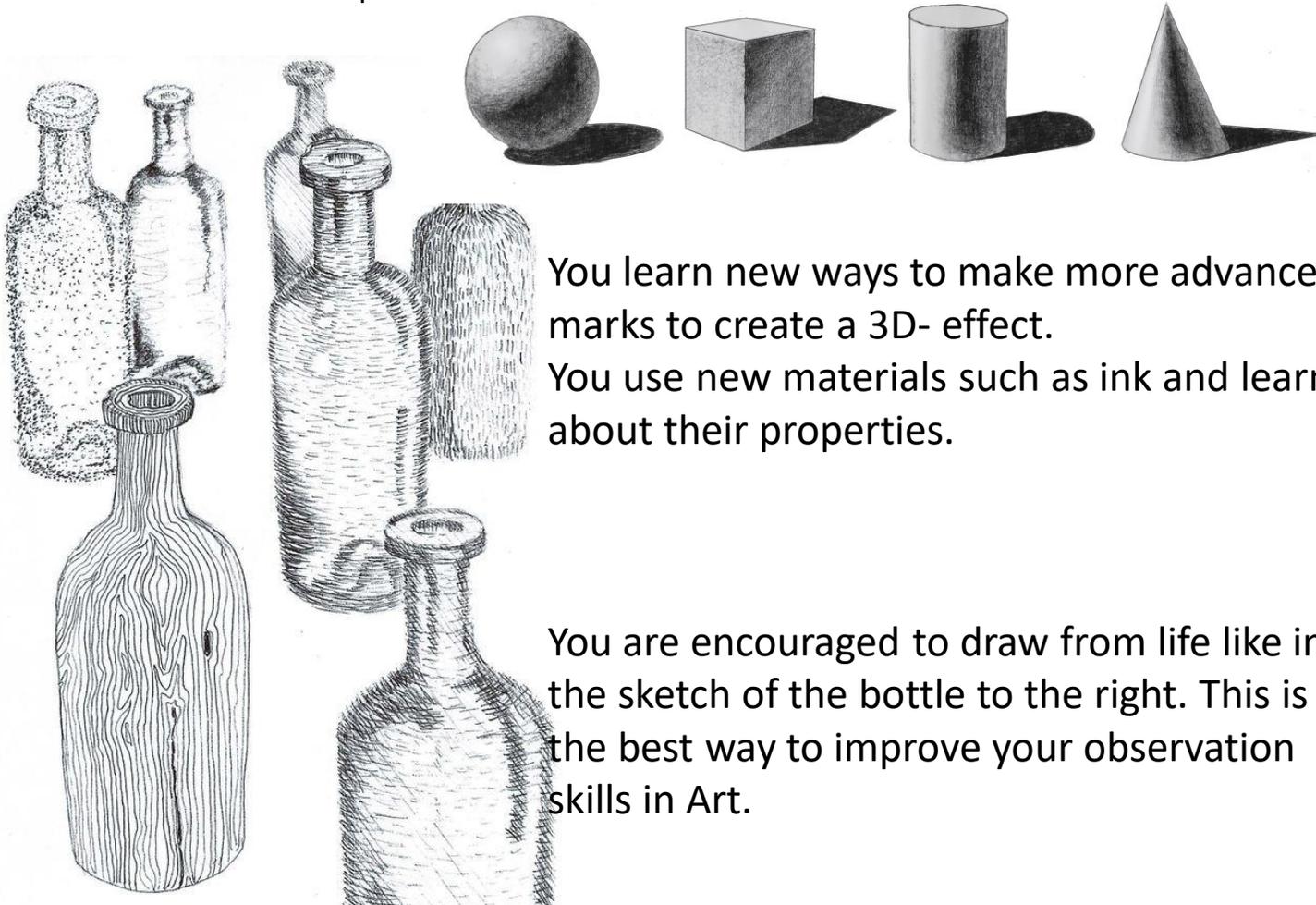


**Book chats** encourage readers. Invite them to make connections and share their views. Join in with your views too! (Please see the next page for suggested questions you can ask about any book.)



## Year 8 Art Knowledge Organiser - Autumn Term:

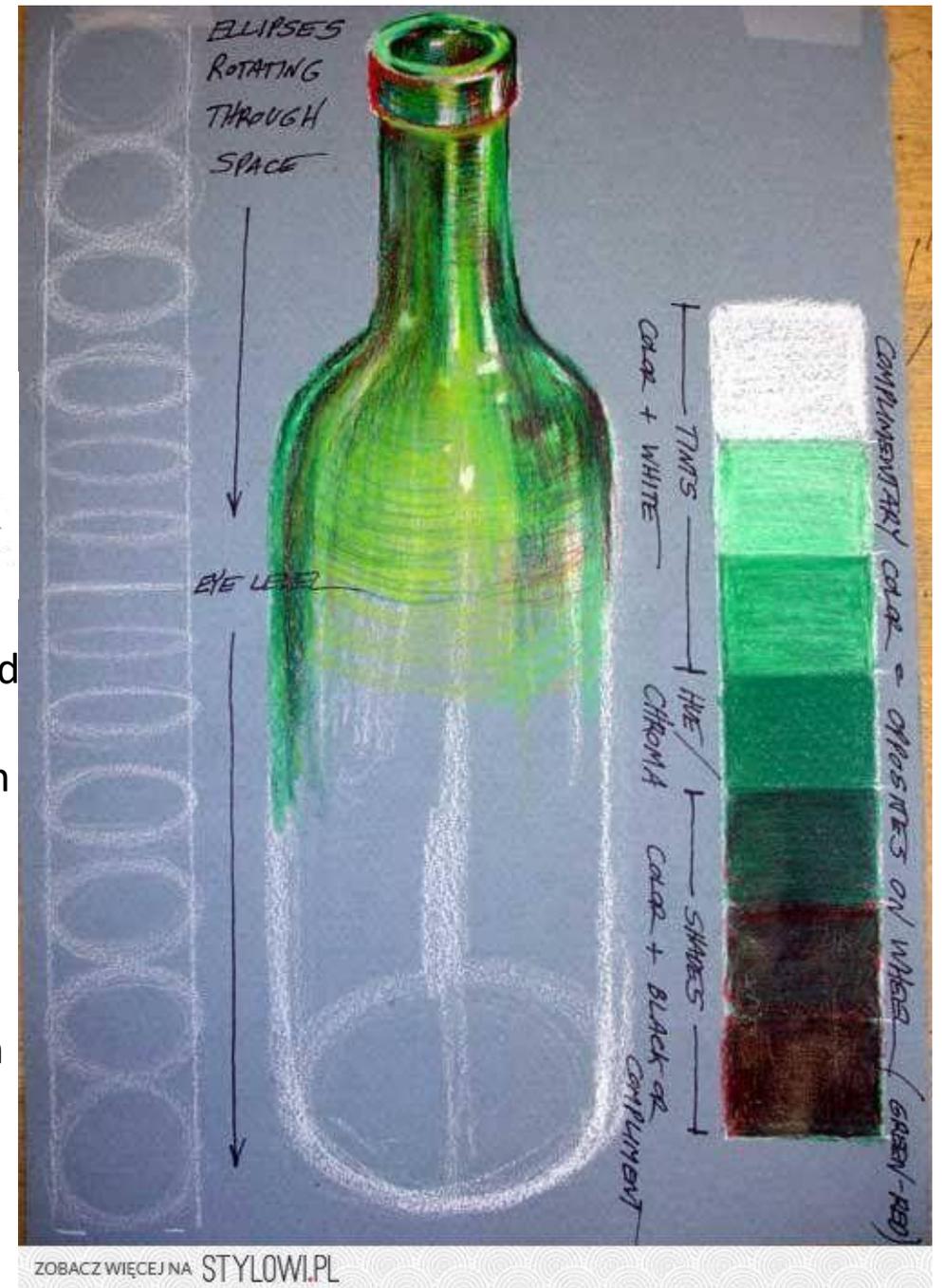
- At the start of Year 8 we do a series of lessons reminding students of the basic formal elements of Art such as **TONE, FORM, LINE**....etc... See next page for full breakdown of the art elements.
- You continue your learning on observational drawing and using tone to show 3D form. See example below...



You learn new ways to make more advanced marks to create a 3D- effect.

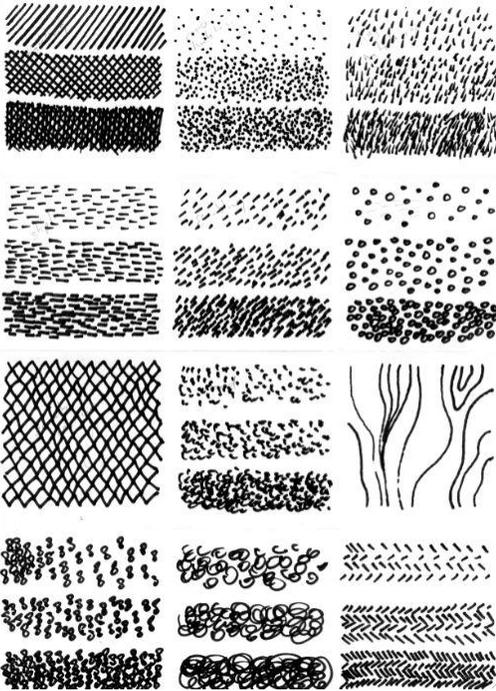
You use new materials such as ink and learn about their properties.

You are encouraged to draw from life like in the sketch of the bottle to the right. This is the best way to improve your observation skills in Art.



# VAN GOGH:

We study the artist Vincent Van Gogh after half term in Year 8 and his use of mark making and pen and ink to inspire our own landscapes.



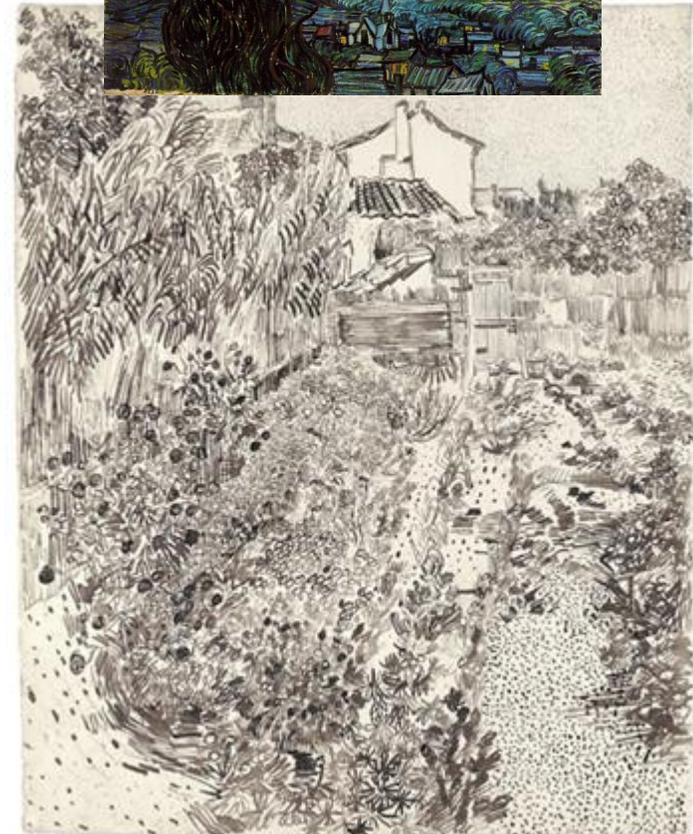
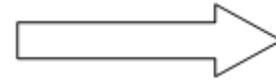
Choose a view from somewhere around your home - this could be:

- A view through a window
- A view through a door
- A view of your garden

Make a detailed drawing of the scene using pencil or pen to show all the different textures and surfaces.

Try to work in a style similar to the one Van Gogh has used in this drawing of a garden.

He has used his pen to create many different marks.



- **PHOTOGRAPHS:** If you have a camera - take a series of photographs of the scene you have drawn to show the different details, print your photographs.
- **WRITTEN DESCRIPTION:** produce a written description of the scene you have drawn – shapes, colours, textures, this should be about 100 words

## Nutrients

Macro nutrients - needed in large quantities in the diet. The three macro nutrients are: PROTEIN, CARBOHYDRATES, FAT

Micro nutrients - needed in small quantities in the diet. The two micro nutrients are: VITAMINS, MINERALS

## Protein

Proteins are made up of amino acids, often referred to as the 'building blocks' of the body. Non-essential amino acids can be made by the body, however, essential amino acids can't be made by the body and we must get from the food we eat.

High biological Value (HBV) proteins contain all the essential amino acids we need and generally come from animal sources. Low biological value (LBV) proteins are missing one or more essential amino acids and generally come from plant sources.

### Food sources

HBV - beef, pork, lamb, poultry (chicken, turkey, duck), fish, cheese, butter milk

LBV - beans, chickpeas, lentils, peas, nuts, seeds, found in smaller amounts in some vegetables such as spinach and broccoli.

### Function

Needed for growth from childhood to adulthood and the growth of nails, hair and muscle mass, repair of muscles, tissues and organs after illness or injury and to make enzymes for digestion and antibodies to stop us getting ill.

### Example exam questions:

What are the two types of fat? (2 marks)  
Explain the difference between a HBV and LBV protein (6 marks)

## Carbohydrates

There are two types of carbohydrates, complex and simple. They are also known as starchy (complex) and sugary (simple).

### Food sources

Starchy - bread, rice, pasta, potatoes, bagels, oats, flour, cereal and some vegetables.

Simple - fruit, some vegetables, chocolate, sweets, biscuits, cakes

### Function

Starchy/complex carbohydrates are digested slowly and provide long term energy.

Sugary/simple carbohydrates are digested slowly and provide short term energy

## Dietary related health problems

### Too much sugar can cause:

1. Weight gain (which can lead to obesity)
2. Tooth decay
3. Diabetes (your body cannot produce enough/any insulin to regulate your blood sugar levels)

### Too much salt can cause:

1. High blood pressure (this can increase your risk of heart disease and a stroke).

### Too much saturated fat can cause:

1. Weight gain (which can lead to obesity)
2. High cholesterol (this narrows arteries making it harder for the blood to travel around, putting you at risk of heart disease).

## Fat

There are two types of fat, saturated and non saturated.

Saturated fats are classed as 'unhealthy fats', they are solid at room temperature and are generally animal based.

Unsaturated fats are classed as 'healthier fats' and are liquid or soft at room temperature and come from plant based sources.

### Food sources

Animal - beef, chicken skin, processed meat (sausages, salami, pepperoni), bacon, butter, cheese, full fat milk

Plant - vegetable oils (sunflower, olive, rapeseed), avocado, nuts, seeds

### Function

Keeps us warm (provides insulation), secondary source of energy, protects vital organs and bones.

# Sausage rolls

## Ingredients

375g pack of sausage meat  
OR pack of 12 sausages  
1 ready rolled puff pastry  
1 egg  
Salt and pepper  
Mixed herbs

## Optional extras:

Cheddar cheese  
1 red pepper  
1 red onion  
2 garlic cloves  
4 rashers bacon  
2 celery sticks

## Equipment

Frying pan, spatula, mixing bowl, chopping board, knife, grater, baking tray, egg brush and bowl, scraps bowl.

## Skills

Frying, seasoning, portioning, baking.

## Method:

If you are not adding any extras start from step 3:

1. Half and thinly slice any vegetables you are using, Mince your garlic and slice the bacon. Grate the cheese
2. Fry any vegetables until soft, fry the bacon until slightly crisp. Mix the fried vegetables and bacon with the sausage meat.
3. Add salt, pepper and mixed herbs to your sausage meat. Make sure you season it well.
4. Roll out your pastry and cut in half horizontally. If you are using cheese, sprinkle the cheese on the pastry.
5. Split your sausage meat in half and lay out half on each half of the pastry. Brush the edge with water, fold the pastry and seal.
6. Brush with egg and cut into bite size pieces. Place on a baking tray with baking paper and cook for 20 minutes until golden.

Extension: Try plaiting the pastry around the sausage meat for a decorative look.



# Chilli-con-carne

## Ingredients

250g-500g minced beef or  
quorn mince

1 onion

1 pepper

1 carrot

2 garlic cloves

Can of chopped tomatoes

Can of kidney beans

1 stock cube

2 tbsp tomato puree

2 tsp chilli powder

1 tsp paprika

1 tsp ground cumin

1 tsp mixed herbs

## Equipment

Chopping board, knife, grater,  
frying pan, spoon, tea spoon,  
table spoon.

## Skills

Chopping, frying, grating,  
seasoning.

## Method:

1. Prepare all the vegetables; dice the onion, and pepper, grate the carrot and mince the garlic.
2. Meanwhile, heat a small amount of oil in your frying pan and fry the onions until softened, around 10 minutes. Add your garlic, peppers. Grated carrot and seasoning.
3. Leave to cook for around 5 minutes and then add your mince. Cook the mince until it is all brown (no pink).
4. Add the chopped tomatoes, 200ml of water, stock cube, drained kidney beans and 2 tbsp of tomato puree.
5. Stir well, turn down the heat and simmer for 15-20 minutes stirring occasionally

# Practical Assessment 1: Marble Cake

## Ingredients

100g caster sugar  
100g soft margarine  
2 eggs  
100g self raising flour  
1 x 15ml spoon coco powder

## Equipment

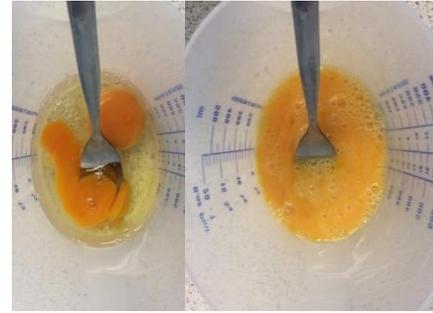
Mixing bowl  
Measuring bowl  
Measuring scales  
Wooden spoon  
Jug  
Fork

## Skills

Creaming  
Weighing  
Baking



1. Cream the butter and sugar together until light and fluffy.



2. Crack the eggs in a jug and beat with a fork.



3. Add the egg to the mixture a little bit at a time until all the egg is mixed in.



4. Fold in the flour.



5. Place half the mixture into the tin, leaving space for the chocolate mixture.



Mix chocolate powder into the remaining cake mixture. Fill the gaps in the cake tin with the chocolate mix and swirl lightly together.

## Automata

An automaton generally refers to a moving, mechanical device, usually constructed to look like a human or animal figure. Automata are built to give the illusion of acting as if by their own power, despite comprising only of mechanical systems. Sometimes referred to as Mechanical Toys or Kinetic Art, they are marvellous small machines that utilize most of the mechanical processes which can be found in almost every modern machine employing cams, gears, ratchets and cranks.

## Mechanisms

Mechanical devices all have an input motion, which transforms into force to make an output motion. The four types of motion are:

Linear



rotary



reciprocating



oscillating



## Making your box

Your CAM box will be made from pine and acrylic in the workshop

Pine is a **SOFT WOOD**

Acrylic is a **THERMO PLASTIC**



**PINE** is medium-weight and relatively soft. Its strength and elasticity are good. Pine wood can be worked easily by hand or machine.

**ACRYLIC** is known for its attractive glossy surface that is available in clear or nearly any colour and in transparent, translucent and opaque options.

Equipment and tools needed to make your CAM box:

Awl



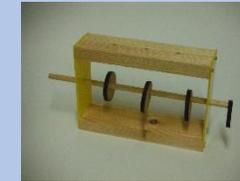
Screw driver



Screw



Vice



When you are in the Academy workshop it is so important you are safe. We will show you what tools to use and how to use them safely. You must listen to and respond first time to all instructions.

Can you think of any more workshop rules? Why is it so important to follow these rules?

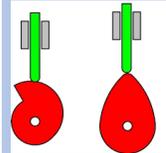
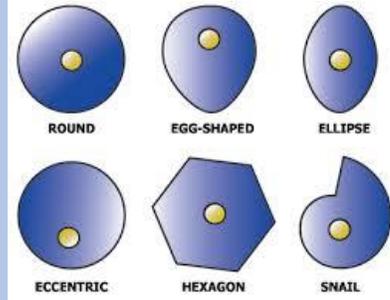
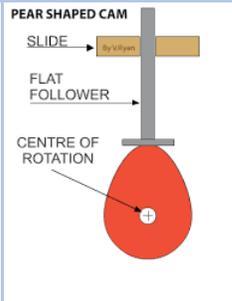
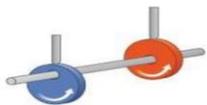
## CAMS

CAMS are a type of mechanism. You will be learning about CAM mechanisms – what they do, how to use CAMS to make a moving toy, and what movement each CAM shape makes. You will be making a box this term and working out what CAM profile to use to make your puppet move.

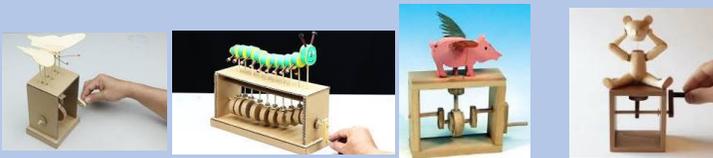
### How do cams make life easier?

Cams turn rotary motion into up-and-down motions.

Cams allow machines to apply pressure at particular moments in the cam's cycle. They are used in sewing machines to push the needle and thread through material in regular patterns.



These are examples of mechanical toys using CAMS

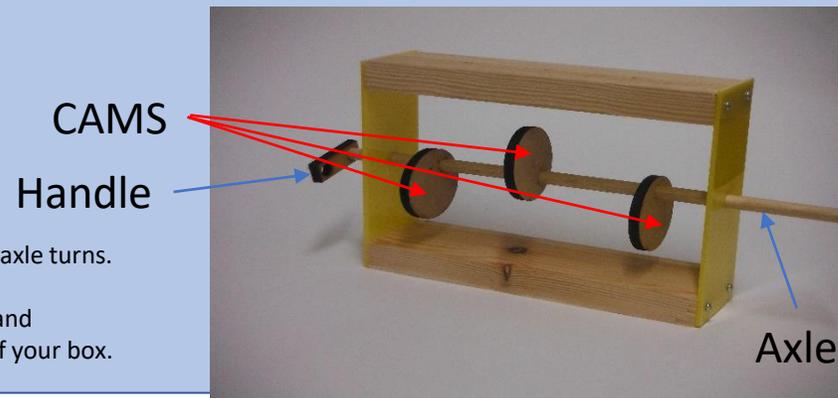


When the handle is turned the axle turns. The CAM on the axle turns. This makes the follower move and causes movement on the top of your box.

## Model making

Once you have made your box in the workshop you will play with the different CAM shapes (profiles) to learn what types of motion they produce. Model making is an important part of Design Technology.

A model helps you to see how your product might work. Model making for this project will allow you to experiment with different shaped CAMS to see which one you will use for your product.



Use the link below to go to the Academy Design Technology resource. Click on 'focus on mechanisms' to explore 'motion' and 'cams and followers'

<http://www.focuselearning.co.uk/u/36704/kEqzvqCnaryBiCzryjckywwninaFozsEm>

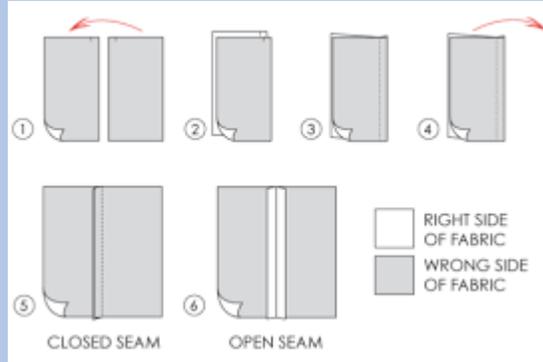


## Joining fabric

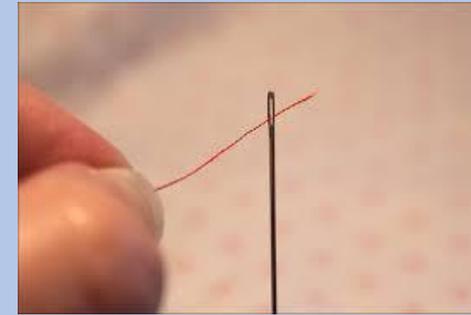
You will be practicing joining fabric on the sewing machine and by hand. The seam you will use is called a plain seam. Here are the instructions for producing a plain seam. Be aware of the right and wrong side of the fabric – always put right sides facing each other when joining fabric.

Research different seams. There are lots. Have a look at your clothes and see what type of seam they have. What seams are the most common? Why do you think there are so many different seams?

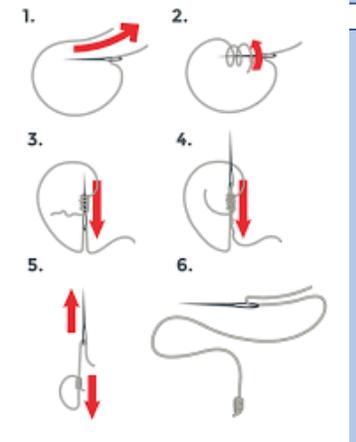
Careers: fashion designer, tailor, teacher, textile artist, sewing machinist.



## Hand Sewing



For this project you will learn the basics of Textiles. Threading a needle, tying a knot, finishing off your stitch, sewing on a button securely and using an iron.



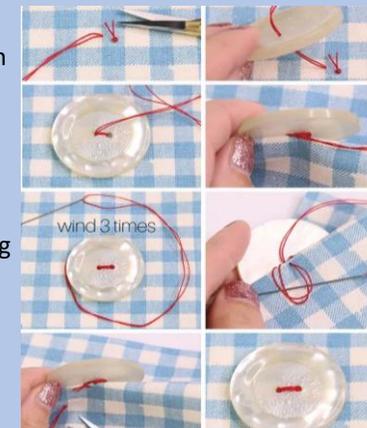
## Sewing on a button

Thread your needle. Make a stitch to secure your thread first. You are now ready to sew your button on.

Put your needle back through the other hole.

Wind your thread around your sewing as shown in the picture.

Cut off your thread



Put your needle up through one of the holes in your button.

Do this 4 times to secure your button.

Make a loop at the back of your work and put your needle through it to secure the button.

Admire your work, well done.

## Sewing Machine

### SEWING MACHINE

An electrical machine for sewing or stitching fabric.  
JANOME 2522LE



This is the sewing machine we use in the Academy. It is a Janome 7025. You will learn how to thread it and use a running stitch to join fabric. Learn what the basic parts of the machine are and what they do.



## Links to help you learn textiles skills

<https://www.youtube.com/watch?v=NUsT0pIWt6Y> How to thread a sewing machine

<https://www.youtube.com/watch?v=S6u173Ap2mc> How to thread a needle

<https://www.youtube.com/watch?v=8mIGGn3AS1E> How to sew on a button

<https://www.youtube.com/watch?v=RPBJQ-wvy1M> How to produce a plain seam on a sewing machine

Practice makes perfect, have a go at sewing by hand at home and threading a needle.

### Components of Physical Fitness

#### Flexibility

'The **range** of motion in all **joints** of the body and the ability to move a joint **fluidly** through its complete range of movement'.

What sports would you usually see flexibility being used? E.g. Flexibility is needed in .....

Watch  
this!



#### Flexibility training

Flexibility training is used to develop flexibility at a joint. This is conducted using stretching. The three stretching categories are Static, Ballistic and Proprioceptive Neuromuscular Facilitation (PNF)

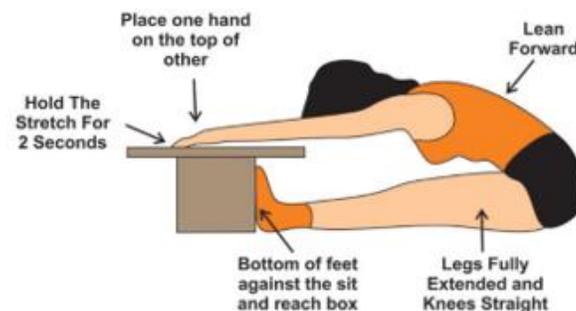
Ballistic stretching is used for warming up before exercise, static stretching is used to cool down after exercise and PNF stretching is used to stretch a muscle to its full capacity, usually used in sports injury rehabilitation.



### How to test your flexibility.

Flexibility is important for success in many sports. For certain sports such as gymnastics, it is one of the most important physical attributes. In many other sports, including team sports, good flexibility is an important part of the overall fitness requirements. Good flexibility is also important for injury prevention. Stretching exercises can be used in injury rehabilitation, preparation for sport (warm up), and for recovery after exercise.

#### Sit And Reach Test



To complete a sit and reach test at home, all you need is a step and a ruler. With your feet flat on the step, try to reach as far as possible using the ruler to see how far you can achieve.

Using the link below or by scanning the QR code, watch the video on how to perform the sit and reach test at home.

<https://www.youtube.com/watch?v=nZgZppi8PEY>



# Career Link

Working with someone to improve their flexibility is usually seen in sports science. Careers in which you could help people improve their flexibility and overall fitness can be found in:

- Sports physiotherapy
- Personal trainer
- Sports massage and injury rehabilitation
- Sports performer



## Key words and terminologies

Sit and reach	Static
Proprioceptive Neuromuscular Facilitation	Flexibility
Fitness	Stretching
Ballistic	Physiotherapy



## What are flexibility exercises?

Flexibility exercises are activities that improve the ability of a joint to maintain the movement necessary for carrying out daily tasks and physical activity.

Examples of flexibility activities include:

Stretching  
Yoga  
Tai chi  
Pilates

## What are the benefits of flexibility activities?

Muscle-strengthening activities help maintain the ability to perform everyday tasks and slow down the rate of bone and muscle loss associated with ageing.

Health professionals believe that improving your flexibility can improve your posture, reduce aches and pains, and lower your risk of injury.

Good flexibility can also help you to continue carrying out everyday tasks.

## How often should I do flexibility exercises?

It's a good idea to do muscle-strengthening activities that work all the major muscle groups (legs, hips, back, abdomen, chest, shoulders and arms) on 2 or more days a week.

Use the link below or scan the QR code to take part in some flexibility exercises with Joe Wicks.

<https://www.youtube.com/watch?v=SfXX1CkIXDE>



# Chemical changes (chemist)

State	Solid	Liquid	Gas
Diagram			
Arrangement of particles	Regular arrangement	Randomly arranged	Randomly arranged
Movement of particles	Vibrate about a fixed position	Move around each other	Move quickly in all directions
Closeness of particles	Very close	Close	Far apart

## STATES OF MATTER RECAP

Keyword	Definition
<b>Reaction</b>	When reactants react to produce products
<b>Reactants</b>	The chemicals that are reacting to produce a chemical reaction
<b>Products</b>	The chemicals (elements or compounds) that are made when a chemical reaction occurs
<b>Endothermic</b>	Reactions that take in heat
<b>Exothermic</b>	Reactions that give out heat
<b>Oxidation Combustion</b>	Reaction of other elements with oxygen Burning fuel in oxygen
<b>Thermal Decomposition</b>	When a substance is broken down into 2 or more products by heat

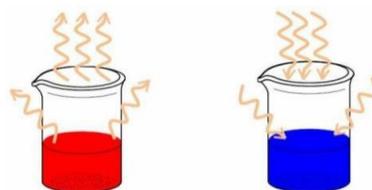
### Endothermic Reactions

In an endothermic reaction, thermal energy is taken in from the surroundings, therefore there is a temperature decrease. Thermal decomposition is an example.

### Exothermic Reactions

In an exothermic reaction, thermal energy is given out to the surroundings, therefore there is a temperature increase.

Combustion, oxidation and neutralisation reactions are all examples.



### Combustion

Combustion is another name for burning. It is an example of an exothermic reaction. There are two types of combustion – complete combustion and incomplete combustion.

#### Complete Combustion

Coal, oil and gas are fuels. They contain hydrocarbons (compounds of hydrogen and carbon atoms only). When these fuels burn, it reacts with oxygen in the air to produce carbon dioxide and water vapour.

Fuel + Oxygen → Carbon Dioxide + Water

#### Incomplete Combustion

If there is not enough oxygen in the air for complete combustion, incomplete combustion will happen instead.

This time either carbon monoxide is produced (a toxic gas which can lead to death) or carbon is produced (appears as soot and smoke which can cause breathing problems).

Fuel + Oxygen → Carbon Monoxide + Water  
Fuel + Oxygen → Carbon + Water

### Oxidation Reactions

In an oxidation reaction, a substance gains oxygen. Metals and non-metals can take part in oxidation reactions.

Metals react with oxygen in the air to produce metal oxides. For example, copper reacts with oxygen to produce copper oxide when it is heated in the air.



Copper + Oxygen → Copper Oxide  $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$

### Thermal Decomposition

Some compounds break down when heated, forming two or more products from one reactants.

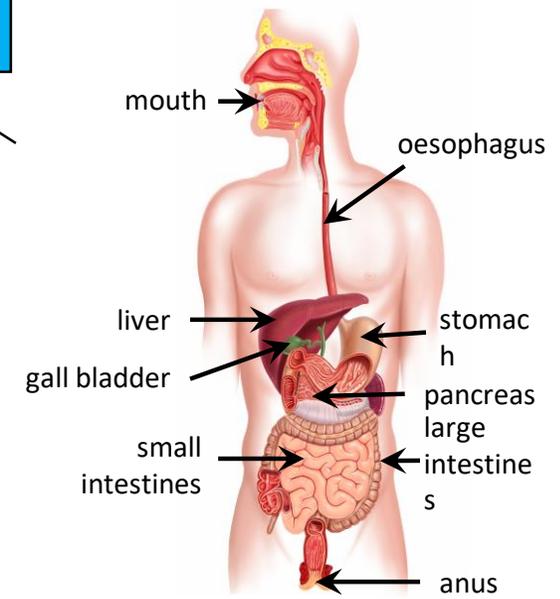
Many metal carbonates can break down easily when it is heated: Copper Carbonate → Copper Oxide + Carbon Dioxide

Copper carbonate is green, copper oxide is black. We can test for carbon dioxide using limewater. Limewater is colourless, but turns cloudy when carbon dioxide is bubbled through it.

**Carbohydrates** (sometimes referred to as Starch) are required by our bodies as a source of energy. Example of food which carbohydrates can be found in are pasta, potatoes and rice.  
**Fats** are needed to insulate our bodies and to make cell membranes. They also contain fat-soluble vitamins. Example of food which fats can be found in are cheese, butter, oils and margarine.  
**Protein** are required for growth and repair. Examples of food which contain protein are meat, fish, eggs and cheese.  
**Fibre** is important because it allows the muscles in our intestines to move the material along (called **peristalsis**) and prevents constipation. Fibre is not digested in our diet. Examples of food which contain fibre are wholemeal products e.g. bread, fruit and vegetables.  
**Minerals** - different elements, e.g. iron is used to make haemoglobin  
**Vitamins** - different structures, e.g. vitamin C Vitamin C prevents scurvy  
**Water** - water all chemical reactions take place in water

An organ system in which organs work together to digest and absorb food.

The human digestive system



You are what you eat

Food groups

Food tests

Organ	Function
Oesophagus	Also known as the gullet. Connects the mouth to the stomach. Food is pushed down using contractions of muscles.
Liver	Production of bile.
Stomach	Churns and mixes the food with hydrochloric acid and enzymes.
Pancreas	Produces biological catalysts called enzymes which speeds up the digestive reactions.
Small Intestine	Absorption of digested food into the bloodstream, production of enzymes to aid digestion.
Large Intestine	Absorption of excess water.
Rectum	Storage of faeces (undigested material) before excretion.
Anus	Where faeces are excreted (removed from the body).

Sugars (glucose)	Benedict's test	Orange to brick red precipitate.
Starch	Iodine test	Turns black.
Biuret	Biuret reagent	Mauve or purple solution.

Test for carbohydrates starch.

Orangey-brown iodine turns blue-black when it reacts with starch.



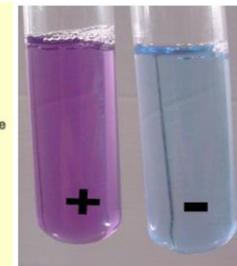
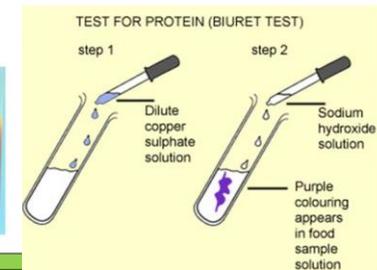
Benedict's Test for sugar

- Mash food up
- Put in a test tube with Benedict's solution
- Heat in a water bath

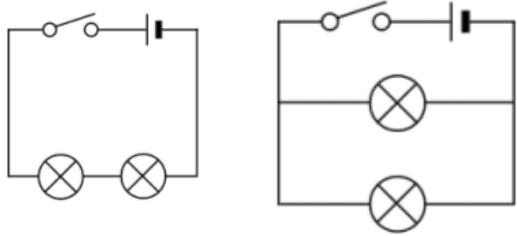
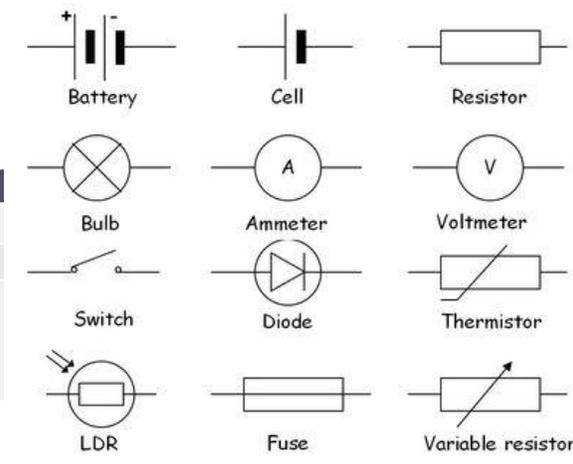
- Blue = no sugar
- Orange = sugar



Test for Protein



# AMATEUR ELECTRICIAN



SERIES CIRCUIT

PARALLEL CIRCUIT

**Key Terms**

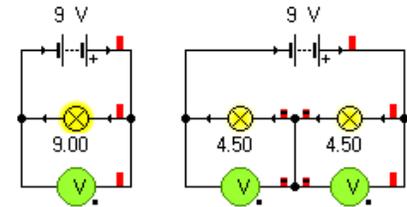
**Series Circuit**  
A circuit where all the components are in the same loop.

**Parallel Circuit**  
A circuit where the components are in different loops in the circuit.

**Ammeter**  
An electrical component that measures the size of electric current, it is connected in series in a circuit.

**Voltmeter**  
An electrical component that measures the size of the potential difference, it is connected in parallel

	Current	Potential difference
Unit	ampere, A	volt, V
Measuring device	Ammeter in series	Voltmeter in parallel
Circuit symbol of measuring device		



Circuits can be connected in two ways:

1. Series Circuits
2. Parallel Circuits

In a series circuit all of the components are in the same loop, below is an example of two lamps in a series circuit. If either of the lamps were to break the circuit would not be complete and the light bulb would go out.

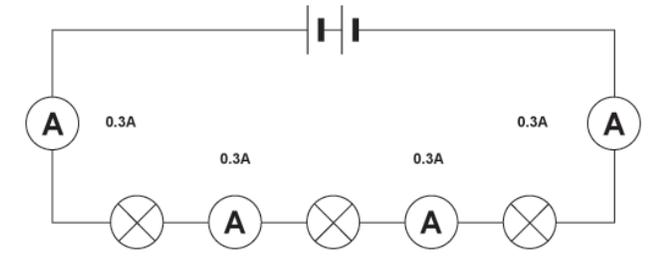
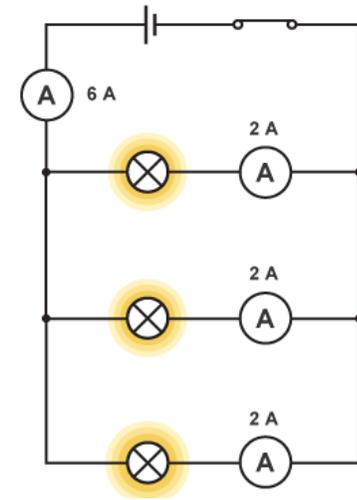
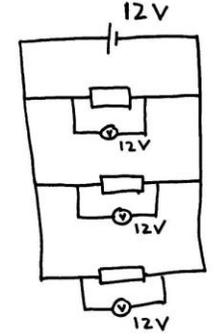
The current is the same at any point in a series circuit as current is always conserved in a circuit.

**Parallel Circuits**  
In a parallel circuit components are in more than one loop. Lights in a house are connected in parallel, when one light bulb breaks the whole circuit is not broken so the other light bulb will stay alight.

**Parallel Circuits**  
In a parallel circuit components are in more than one loop. Lights in a house are connected in parallel, when one light bulb breaks the whole circuit is not broken so the other light bulb will stay alight.

In a parallel circuit the current splits at junctions, see the example. The current on the different branches of the circuit must add up to the total current. In a series circuit the current is the same all the way around the circuit

The voltmeter is connected in parallel with the component. The supply voltage is shared between components in a series circuit, so the sum of the voltages across all of the components in a series circuit is equal to the supply voltage. In a parallel circuit the voltage across each component is the same as the voltage from the power supply



### Summary

Computers require input hardware, processing hardware, storage hardware and output hardware.

**CPU** - The Central Processing Unit or CPU is arguably the most important component of a computer. You can think of the CPU as being like the brain in a human.

**Storage** - stores programs and files long term, even when they are not in use. Devices such as hard drives, USB memory sticks or SD cards are used to store files such as photos, music and software applications long term.

An **input device** is any piece of computer hardware used to provide data to a computer system. Examples include: keyboard, mouse, scanner, digital camera and webcam.

An **output device** is any piece of computer hardware used to communicate the results of data that has been processed. Examples include: monitor, printer, projector and speaker.

**Binary** is still the language for computers. Binary's 0 and 1 method is quick to detect an electrical signal's off or on state.

Binary is the most efficient way to control logic gates

### Key Vocabulary

<b>Binary</b>	Base 2. Symbols include up of 1 and 0
<b>Decimal</b>	Base 10 also known as denary. Symbols include up of 0 1 2 3 4 5 6 7 8 and 9.
<b>CPU</b>	Central Processing Unit - the brains of the computer that processes program instructions. Also called a microprocessor.
<b>Logic gate</b>	Compares the state switch inputs to decide what the state at their output should be
<b>Hardware</b>	The physical parts of a computer system, e.g. a graphics card, hard disk drive and CD drive.
<b>Input Device</b>	Hardware that sends data to a computer, allowing you to interact with and control it.
<b>Output Device</b>	Hardware which converts information into human-readable form. It can be text, graphics, tactile, audio, and video.
<b>Storage</b>	Hardware on which information can be stored
<b>Software</b>	Software is the programs that run on a computer. Commonly called apps

#### Logic gates

**AND Gate** will only turn on if both switches are in the on position.

**OR Gate**—When any switch is turned on, the power is turned on

**NOT Gate**—A light switch.

#### Decimal to Binary

Converting binary to decimal  
Each place is calculated to the power of 2

25:  $16 + 8 + 1$

85:  $64 + 16 + 4 + 1$

322:  $256 + 64 + 2$

#### Computer system

**Input** → **Process** → **Output**

**Storage** is connected to **Process**.

**Feedback** loop from **Output** back to **Input**.

#### Binary to Decimal

The **Central Processing Unit** or **CPU** is arguably the most important component of a computer.

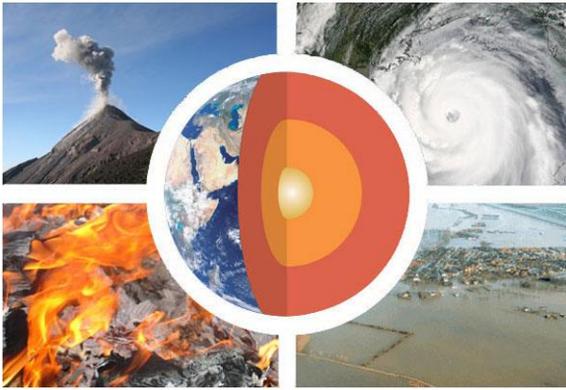
You can think of the CPU as being like the brain in a human.

#### Units of information

<b>Bit</b>	1 or 0
<b>Byte</b>	8 bits
<b>Kilobyte</b>	1,000 bytes
<b>Megabyte</b>	1,000 kilobytes
<b>Gigabyte</b>	1,000 Megabytes
<b>Terabyte</b>	1,000 Gigabytes.

<http://bit.ly/2Qxi9ab>





# Year 8 Knowledge Organiser: Natural Hazards



## Topics covered

- ✓ Types of natural hazards
- ✓ The structure of the earth
- ✓ Tectonic plates
- ✓ Plate boundaries
- ✓ Earthquakes and volcanoes distribution
- ✓ Earthquake effects
- ✓ Earthquake management
- ✓ Volcano types
- ✓ Effects of volcanoes
- ✓ Managing volcanoes

## Key Ideas:

1. I can describe types of natural hazards
2. I can describe the movement of tectonic plates
3. I can describe earthquakes and volcanoes effects
4. I can explain how the dangers of earthquakes and volcanoes can be managed

## Skills

- ❑ To investigate earthquake frequency using **USGS** website
- ❑ To use mapping to identify earthquake and volcano distribution (spread)
- ❑ To read written accounts of earthquakes
- ❑ To classify earthquake effects
- ❑ To use **ICT/MS Office** to present to my class on an earthquake 'proof' design building

## Places and Environments

- ❖ Edinburgh Castle
- ❖ Loch Ness
- ❖ Iceland
- ❖ San Andreas Fault
- ❖ Himalayas
- ❖ Ring of Fire
- ❖ Yellowstone NP

## Key Terms Used in this Unit

- ❑ Geophysical hazards
- ❑ Atmospheric hazards
- ❑ Core/Mantle/Crust
- ❑ Destructive/Constructive/Conservative/Collision plate boundary
- ❑ Seismograph
- ❑ Richter Scale
- ❑ Mercalli Scale
- ❑ Aftershock
- ❑ Magma/Lava
- ❑ Pyroclastic Flow
- ❑ Composite volcano
- ❑ Shield volcano
- ❑ Volcanic Bomb
- ❑ Exclusion Zone
- ❑ Shock absorbers
- ❑ Liquefaction



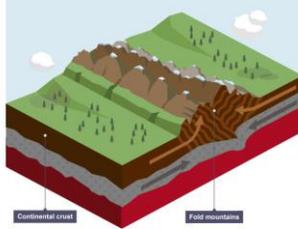
Natural hazards can take many forms on Earth. All can affect peoples lives and the environment, some can be deadly.

Try to list as many types of natural hazard

CHALLENGE – Why are some more deadly than others?



Fold mountains are caused by continental crust **colliding** together. The tallest mountains on Earth are produced this way. These areas have their own unique characteristics, e.g. some have famous ski slopes.

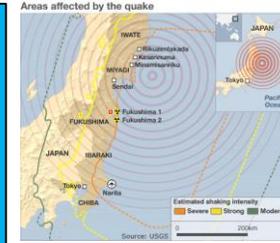


Try to list as many mountain ranges as possible  
CHALLENGE – How are these used by people?

Earthquakes are produced by tectonic plate movements.

Where 2 plates collide or slide past each other these can be very powerful and destructive.

The epicentre is where the shockwaves hit the surface. The focus (or origin) is deep in Earth's crust.



Name 5 different locations on Earth that have had earthquakes in the past 5 years.  
CHALLENGE – How can earthquakes be measured?

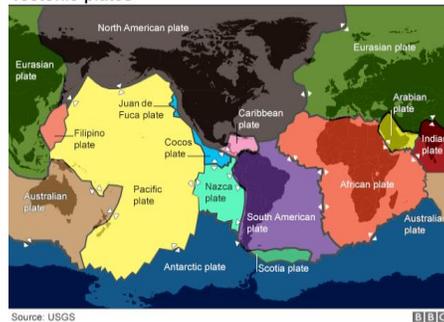
Shockwaves are sent outwards by an earthquake through the rock. These are known as 'seismic waves'. Their strength can be measured on the **Richter Scale**. Where plates move under seas they can create similar waves or **tsunami's** (huge waves followed by high levels of water)

Tectonic plates form a jigsaw puzzle that splits the surface of the Earth into huge slabs of its **crust**.

These slabs contain both **continents** and oceans.

Several are breaking apart or colliding to create earthquakes and volcanoes.

Tectonic plates



What plate is the UK on? Where is our nearest boundary?  
CHALLENGE – Which plates are moving apart and which together?

Earthquakes affect several countries that are close to or that contain tectonic plate boundaries.

These are impossible to predict when they will occur, but we do know which parts of the world they are most likely.

People are often killed by falling debris from collapsed buildings. Survivors have been known to be trapped in the darkness of rubble and survive.

Poorer countries can take decades to recover and may require International help.



List 10 effects on peoples lives  
CHALLENGE – Why do poorer countries (developing) cope less than richer countries?

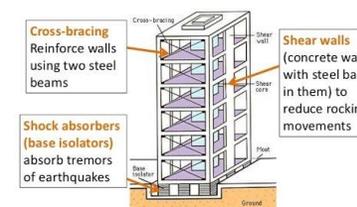
Often earthquakes although less predictable than volcanoes they can be protected against.

If people know that earthquakes are a regular threat then having a plan and being prepared can help.

Simple earthquake drills for example in Japanese schools can prepare people for the worst. In wealthier countries a larger number of buildings will be designed to stay upright in an earthquake.

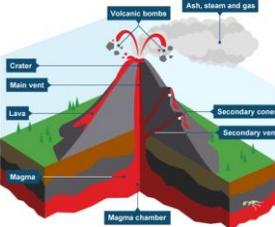
A number of techniques can be used to make buildings 'earthquake proof'.

Earthquake Resistant Building



Can you design an earthquake proof building?

CHALLENGE – How would you manage an entire city after an earthquake?



Volcanoes are produced where **lava** (or **magma** under ground) erupts through cracks or **fissures**.

Sometimes these eruptions can be explosive if the lava becomes stuck (**acid lava**).

Most volcanoes have similar characteristics.

What are the different volcano shapes like? Where is our nearest 'active' volcano?

CHALLENGE – Which volcanoes are the most deadly and why?

Natural hazards like hurricanes, earthquakes and volcanoes can all affect people's lives and change the environment. For some volcanoes can actually be a blessing, for example in Italy providing **fertile soil** (good for growing) or **'geothermal energy'** (hot rock energy) in Iceland.



What are the arguments for and against living near volcanoes?  
CHALLENGE – How do people in volcanic areas 'manage' their lives so that they are safer?

Here is the vocabulary you will need for Module 5.

Remember to listen to the German by copying and pasting the blue codes next to the speaker icons [here](#). The full address is: <https://www.activeteachonline.com/view>

In der Stadt • In town	
Es gibt ...	There is ... / There are ...
Es gibt ein/eine/einen ...	There is/are a ...
Es gibt kein/keine/keinen ...	There isn't/aren't ...
in der Nähe von ...	near to
in der Nähe ...	nearby
der Bahnhof(-e)	railway station(s)
der Imbiss(-e)/ die Imbissstube(-n)	snack stand(s)
die Kegelbahn(-en)	bowling alley(s)
das Kino(-s)	cinema(s)
die Kirche(-n)	church(es)
der Marktplatz(-e)	market square(s)
der Park(-s)	park(s)
das Schloss(-er)	castle(s)
das Schwimmbad(-er)	swimming pool(s)
die Eisbahn(-en)	ice rink(s)
der Fischmarkt(-e)	fish market(s)
das Kindertheater(-)	children's theatre(s)
der Radweg(-e)	cycle path(s)
das Sportzentrum (die Sportzentren)	sports centre (sports centres)
der Stadtpark(-s)	city/town park(s)
der Wasserpark(-s)	water park(s)



EH6VNSDY

In this Module you will learn how to:

- talk about what there is / isn't in a town
- Buy souvenirs
- Buy snacks and drinks
- talk about holiday plans
- Understand longer spoken texts.

Keep practising your German vocabulary on [www.quizlet.com](http://www.quizlet.com)

• Either:

click on this link:

[https://quizlet.com/\\_8iewzt?x=1qqt&i=25q2il](https://quizlet.com/_8iewzt?x=1qqt&i=25q2il)

• Or:

use your class link to go directly to your Quizlet class.

**Souvenirs • Souvenirs**

der Aufkleber	sticker
das Freundschaftsband	friendship bracelet
die Kappe	(baseball) cap
der Kuli	biro
das Kuscheltier	cuddly toy
die Postkarte	postcard
der Schlüsselanhänger	key ring
die Tasse	mug/cup
das Trikot	(football) shirt
Wie viel kostet ...?	How much does ... cost?
Wie viel kostet das?	How much does it cost?
Es kostet €16.	It costs 16 Euros.



DOMB0u9e



**Verkaufsgespräch • Sales conversation**

Ich gehe einkaufen.	I am going shopping.
Ich möchte ...	I would like ...
Ich möchte ... kaufen.	I would like to buy ...
Haben Sie ...?	Do you have ...?
Kann ich dir helfen?	Can I help you?
Sonst noch etwas?	Anything else?
alles zusammen	all together



KzQh4O6W

**Snacks und Getränke kaufen • Buying snacks and drinks**

die Bratwurst	fried sausage
der Hamburger	hamburger
die Pizza	pizza
die Pommes	chips
der Salat	salad
das Eis	ice cream
die Cola	cola
das Mineralwasser	mineral water
der Tee	tea
das Fleisch	meat
der Ketchup	ketchup
die Mayo(nnais)/ Majonäse	mayo(nnais)
der Senf	mustard
Ich möchte einmal/ zweimal/dreimal ...	I would like one/two/three ...
Ich hätte gern ...	I would like ...
Das macht €8.	That's €8.
Ich esse ... gern.	I like eating ...
Ich trinke ... gern.	I like drinking ...



AiOY2qJX

[www.textivate.com](http://www.textivate.com)

Username: openacademy

Password: firstsecond123

Go to 'my resources' to find your work.

**In den Sommerferien**  
• During the summer holidays

Was wirst du machen?	<i>What will you do?</i>
Ich werde ...	<i>I will ...</i>
Wir werden ...	<i>We will ...</i>
klettern	<i>climb</i>
im Meer schwimmen	<i>swim in the sea</i>
rodeln	<i>toboggan</i>
im See baden	<i>bathe in the lake</i>
segeln	<i>sail</i>
an den Strand gehen	<i>go to the beach</i>
tauchen	<i>dive</i>
wandern	<i>hike</i>
windsurfen	<i>windsurf</i>
Was kann man dort machen?	<i>What can you do there?</i>
Man kann ... besuchen.	<i>One/People/You can visit ...</i>
Die Stadt ist bekannt für ...	<i>The town is well known for ...</i>
Ich werde (eine Woche) bleiben.	<i>I will stay (for a week).</i>



WrkzCZgE

Read the Strategy Box for ideas to link sounds and spelling.

**Oft benutzte Wörter**  
• High-frequency words

am Montag	<i>on Monday</i>
am Dienstag	<i>on Tuesday</i>
am Mittwoch	<i>on Wednesday</i>
am Donnerstag	<i>on Thursday</i>
am Freitag	<i>on Friday</i>
am Wochenende	<i>at the weekend</i>
sehr	<i>very</i>
nicht sehr	<i>not very</i>
ziemlich	<i>quite</i>
immer	<i>always</i>
nicht immer	<i>not always</i>
oft	<i>often</i>
nicht oft	<i>not often</i>
nie	<i>never</i>
alles	<i>everything</i>
dort	<i>there</i>
teuer	<i>expensive</i>



smdDsO8S

**Strategie 5**  
**Using your key phonics words to make links**

You learned the key sounds of German in Chapter 1 (page 8). One good strategy for remembering new words is to group them together with others with the same sound-spelling pattern. Here are some from Chapter 5:

-  Freund → Deutschland
-  Biene → Kuscheltier
-  Sterne → Imbissstube, Strand
-  Wildwassersport → Mineralwasser, ich werde, wandern, windsurfen
-  Schlange → Schloss, Schwimmbad, Schlüsselanhänger, schwimmen

Look back at the Wörter pages from Chapters 1–4 and add to your lists.

 Some words have more than one key phonics sound. How many can you spot in the examples above? For example, *Kuscheltier*.

[www.textivate.com](http://www.textivate.com)  
Username: openacademy  
Password: firstsecond123  
Go to 'myresources' to find your work.

# Year 8 History: Poverty and Scientific developments in the 16<sup>th</sup> and 17<sup>th</sup> centuries

<b>Key words</b>	
<b>Reformation</b>	The action or process of changing something
<b>The English reformation</b>	the Church of England breaks away from the authority of the Pope and the Roman Catholic Church
<b>The 'middle way'</b>	1559 Elizabeth I's religious settlement which decided on a 'middle way': Protestant but tolerant of Catholicism
<b>Vagabond/sturdy beggar</b>	A person who wanders from place to place without a home or job
<b>1601 Poor Law</b>	Placed paupers into four groups, each group was treated differently
<b>Class</b>	A group of people with the same economic or social statuses
<b>Familiar</b>	A demon, in the form of an animal that accompanies a witch
<b>Superstitious</b>	Someone who believes in omens and ghosts
<b>Age of Reason</b>	Also known as the Enlightenment, the period during the 1600s and 1700s when people began to explore the world and make new discoveries

The Elizabethans passed Poor Laws to give help to the sick and the old but there were harsh punishments for 'sturdy beggars'; Physical mutilation and execution by hanging!

During the 16<sup>th</sup> century the living standards of many people improved. Many farmers were able to sell their produce at higher prices than before and could afford to rebuild their farmhouse and even amongst those less well off, the fear of famine was less. By 1600 this had changed and there were more poor people than ever before:

- Population: This went up quickly and there was less food
- Inflation: Prices started to go up
- Unemployment: There were less jobs as the farming industry changed from crop to sheep farming
- Henry VIII had shut the monasteries so there was less help for the poor

This led to increased begging and a divide between the 'impotent poor' (deserving poor; wanted to work but couldn't as too old or sick) and those who were poor and were turning to crime (the Tudors nicknamed these people Vagabonds)

**Factfile**



**Name:** Matthew Hopkins **Address:** Lives in Essex  
**Work details:** Began career as a witch finder in 1645.

**Methods used:**

- Strip search of accused to look for devil's marks.
- Keeps accused awake till they confess.
- The water test: ties the accused up and lowers into a river or pond. If she lives, she is guilty.
- Encourages local people to make accusations of witchcraft.

**Payment:**

- Fee paid for survey of possible witches.
- Fee to be paid for each witch found.

Many people, mainly women, were accused and executed for witchcraft in the 16<sup>th</sup> and 17<sup>th</sup> centuries. People struggled to understand the world around them. Religious and superstitious beliefs influenced ideas that "witches" were to blame for bad things that happened to them

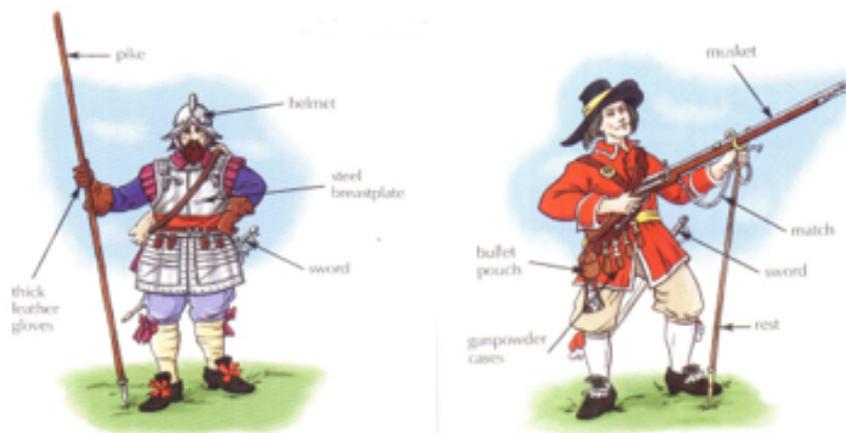
**Key Scientists:** William Harvey, Robert Hooke, Isaac Newton, Christopher Wren, Robert Boyle

Did Science change views about witches?	
Yes	No
New discoveries & Inventions Less trouble between religious groups Information and news spread more easily People are less superstitious	People still superstitious Religion was still very important People still believed in witchcraft

# Year 8 History: The English Civil War

Key words	
Roundhead	Nickname for the parliamentary soldiers (from their haircut)
Cavalier	Nickname for the soldiers in the royalist army
New Model Army	New and improved parliamentary army with excellent training and character
Treason	The crime of betraying your country
Puritan	Protestants who wanted to 'purify' the Church of England from its Catholic ways
Catholic	Christians who believed that the Pope, in Rome, was the head of the church
Protestant	Christians who refused to accept the Pope as the head
Ship Tax	A sum of money, introduced by Charles I paid for people living by the sea
Royalist	A supporter of the King during the civil war
Parliamentarian	A supporter of parliament during the civil war

Pikeman and Musketeer



Key battles: Edgehill (1642) Marston Moor (1644), Naseby (1645)

Between 1642 and 1646 King Charles I fought a civil war against his enemies in Parliament. He lost in 1646 and was executed by beheading in 1649. Cromwell led England as a Republic between 1653 and 1658. The Monarchy was restored in 1660.

Causes of the English Civil War:

- His marriage to the French Princess, Henrietta Maria, worried Protestants about another Civil War (France was a huge Catholic superpower)
- Soon there were religious changes such as to the prayer book which angered Protestants
- Charles spent money on wars with Scotland and Irish rebels. Taxes were raised unfairly and the wars were lost
- Wealthier members of society (Lords and Rich Gentlemen) had more political rights than others
- Charles showed little respect for Parliament; shutting it down when it would not approve his requests for money or laws which were not in the favour of the people (Ship Tax)

Oliver Cromwell as Lord Protector

**A Harsh & Unpopular Ruler (Villain)**

Cromwell's actions in Ireland, particularly at Drogheda, are still remembered for their cruelty and bloodshed

Popular entertainment and hobbies such as gambling, the theatre and even makeup were banned

Most popular aspects of Christmas were banned!

**A Tolerant Defender of Democracy (Hero)**

Cromwell was surprisingly tolerant of other religions and was the first ruler to allow Jews to re-settle

Prevented the King from destroying Parliament (although he eventually got rid of it himself!)

Built England into a formidable military power

## Vocabulary to learn

Conscious  
Deliberate  
Report  
Summarise  
Compare  
Inference  
Associate  
Child labour  
Convey  
Emphasise  
Inflict  
Emotive  
Gallows

## Structure analysis - methods:

- Zoom in/out
- Repetition of an image/idea
- Links and connections between paragraphs
- Shifts:
  - inside to outside (and vice versa)
  - focus
  - time
  - topic
  - setting/place
  - mood/atmosphere
  - description to dialogue (and vice versa)

## Language analysis Checklist:

- Link to task
- Relevant quote
- Meaning of quote
- Method named
- Effects explained
- Word zoomed in on
- Meaning of word
- Implied meanings
- Aim higher: layers of meaning

## Evaluate

weigh up, form a judgement

This question asks you to **evaluate** the **extent** to which you agree with a given statement about a text.

how much

You will need to consider:

- The impressions (**opinions**) you have of the text in relation to the statement
- The methods the writer has used to create these impressions
- How the particular methods create these impressions

Words/phrases  
Linguistic devices  
Structural features  
Sentence forms

## Useful site links for understanding format and language for this unit

<https://www.bbc.co.uk/newsround>

<https://www.independent.co.uk/>

<https://www.bbc.co.uk/news>

Sentence Form	Definition	Example
Fragment sentence	An incomplete idea.	<i>Rolling thunder.</i>
Simple sentence	Contains one complete idea in an independent clause.	<i>The lightning flashed.</i>
Compound sentence	Contains two independent clauses linked by a conjunction or a semi-colon.	<i>The lightning flashed <b>and</b> the rain fell. The lightning flashed; the rain fell.</i>
Complex sentence	Contains an independent clause and at least one dependent clause.	<i>Despite the thunder and lightning, there was no rain.</i>

## Literary devices and word class

- Metaphor – a literal comparison – *she was a monster*
- Personification – human qualities – *the grass danced in the wind*
- Simile – as/like/as if – *he was like a man possessed*
- Onomatopoeia – the sound words – *bang, pop, sizzle*
- Alliteration – same starting sounds - *really rather raucous*
- Lists – to emphasise many reasons
- Verbs – doing words
- Adjectives – describing words
- Nouns – objects or abstract things e.g. love
- Adverbs – describe doing words e.g. wrote **neatly**
- connotations of words – associations – night-time = mystery

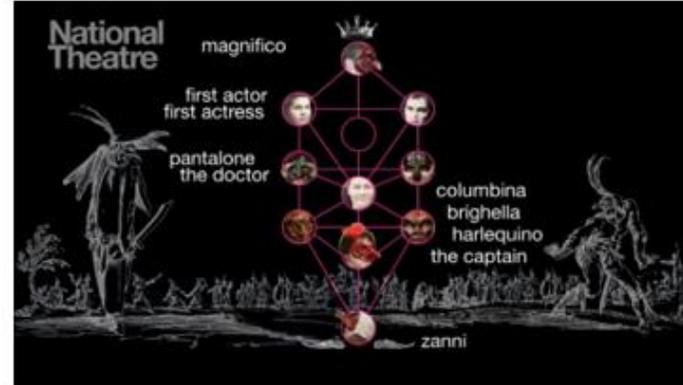


# Year 8 Drama Topic 1

## Knowledge Organiser – Commedia dell'arte



Commedia dell'arte began in Italy in the 16th century. It was a popular form of street theatre based on improvised scenarios between stock characters. These characters were universal types of masters, servants and lovers.



Commedia dell'arte is a very physical form as many of the characters wear masks so their facial expressions can't be seen by the audience. As a result, actors must rely more on their bodies to be understood.

Stock Character(s)	Status	Costume
Arlecchino/ Harlequino	Servant (sometimes to two masters)	Colourful tight-fitting jacket and trousers
Il Dottore/ The doctor	Head of the household	Black scholarly robe
Il Capitano	Indigent loner	Military uniform
Innamorati	High-class hopeless lovers	Nicely dressed on par with the time
Pantalone	Older wealthy man	Dark capes and red trousers
Colombina	Perky maid / servant	Can be colourful on par with Arlecchino or black and white

The plots were arguably vehicles for a number of comic routines known as lazzi.

These were either based on an individual's habits or on interactions between particular characters that the audience would come to expect.

The lazzi were hugely, if not entirely dependent on movement, such as Arlecchino catching and eating a fly in a stylised way, pretending to be a statue as a way of hiding, or getting beaten round the head by his master.

@whisto\_maths

## What do I need to be able to do?

- By the end of this unit you should be able to:
- Label and identify lines parallel to the axes
  - Recognise and use basic straight lines
  - Identify positive and negative gradients
  - Link linear graphs to sequences
  - Plot  $y = mx + c$  graphs

## Keywords

**Quadrant:** four quarters of the coordinate plane.

**Coordinate:** a set of values that show an exact position.

**Horizontal a straight line:** from left to right (parallel to the x axis)

**Vertical a straight line:** from top to bottom (parallel to the y axis)

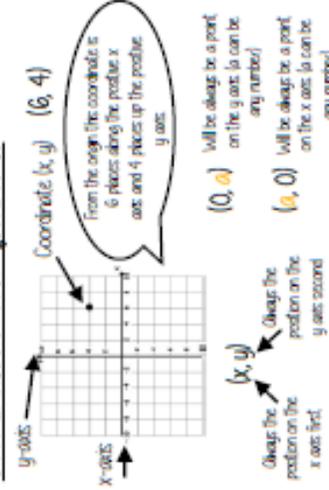
**Origin:** (0,0) on a graph. The point the two axes cross

**Parallel:** Lines that never meet

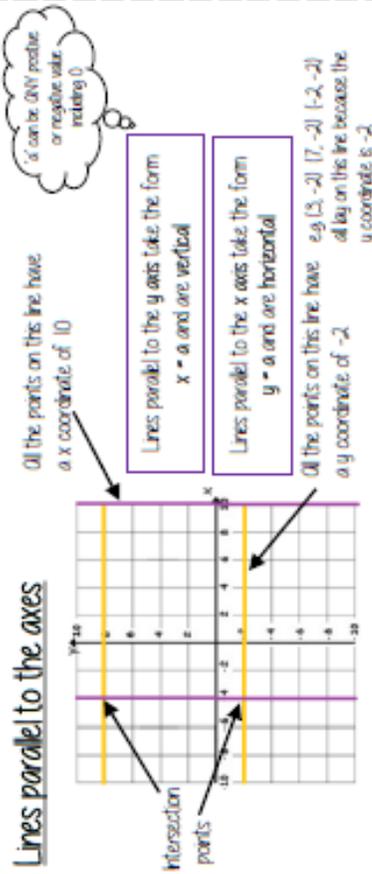
**Gradient:** The steepness of a line

**Intercept:** Where lines cross

## Coordinates in four quadrants



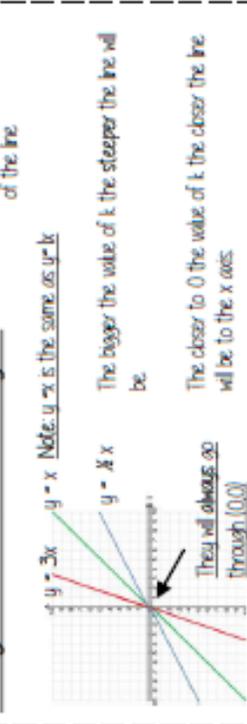
## Lines parallel to the axes



## Recognise and use the line $y = kx$

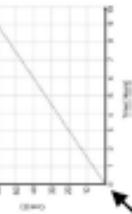


## Recognise and use the lines $y = kx$



## Direct Proportion using $y = kx$

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



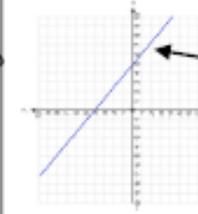
Direct proportion graphs always start at (0,0) as they are describing relationships between two variables

## Lines with negative gradients

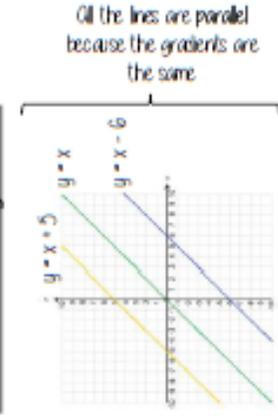
Any straight line graph with a negative x value has a negative gradient.

$$\begin{aligned} \text{E.g. } y &= -2x \\ y &= -x \\ y &= x - 12 \end{aligned}$$

Direction of all negative gradients



## Lines in the form $y = x + a$

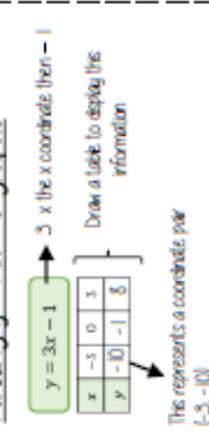


This is the line  $y = x + a$  the y and x coordinate are the same

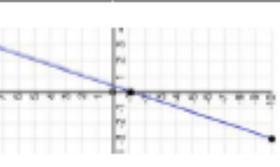
This shows the translation of that line. e.g.  $y = x + 5$  is the line  $y = x$  moved 5 places up the graph

5 has been added to each of the x coordinates

## Plotting $y = mx + c$ graphs



You only need two points to form a straight line



Plotting more points helps you check if your calculations are correct. If they do make a straight line!

Remember to join the points to make a line

# YEAR 8 - REPRESENTATIONS...

# Tables and Probability

@whisto\_maths

## What do I need to be able to do?

- By the end of this unit you should be able to:
  - Construct a sample space diagram
  - Systematically list outcomes
  - Find the probability from two-way tables
  - Find the probability from Venn diagrams

## Keywords

- Outcomes:** the result of an event that depends on probability
- Probability:** the chance that something will happen
- Set:** a collection of objects
- Chance:** the likelihood of a particular outcome
- Event:** the outcome of a probability — a set of possible outcomes
- Biased:** a fault in error that makes all values wrong by a certain amount
- Union Notation 'U'** meaning the set made by comparing the elements of two sets

## Construct sample space diagrams



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

The possible outcomes from rolling a dice

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

The possible outcomes from tossing a coin

## Probability from sample space

The possible outcomes from rolling a dice

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

The possible outcomes from tossing a coin

This is the set notation that represents the question P

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

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

There are three even numbers with tails

**Numerator:** the event

**Denominator:** the total number of outcomes

In between the ( ) is the event asked for

This is the set notation to list the outcomes S =

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

In between the ( ) are a, the possible outcomes

## Probability from two-way tables

	Car	Bus	Walk	Total
Boys	16	24	14	53
Girls	6	20	21	47
Total	21	44	35	100

## Product Rule

The number of items in event a

X

The number of items in event b

The event

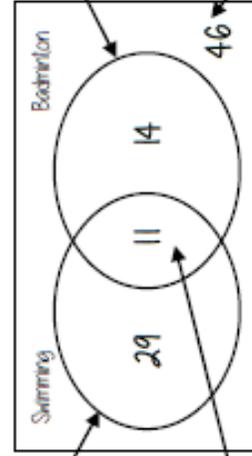
$$P(\text{Girl walk to school}) = \frac{21}{100}$$

The total in the set

## Probability from Venn diagrams

This whole curve includes everyone that went swimming

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



The intersection represents both Swimming AND badminton

This whole curve includes everyone that went to badminton

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

The number outside represents those that did neither badminton or swimming

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

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

$$100 - 29 - 11 = 60$$

# YEAR 8 - REPRESENTATIONS...

# Representing Data

@whisto\_maths

## What do I need to be able to do?

- By the end of this unit you should be able to:
  - Draw and interpret scatter graphs
  - Describe correlation and relationships.
  - Identify different types of non-linear relationships.
  - Design and complete an ungrouped frequency table.
  - Read and interpret grouped tables (discrete and continuous data)
  - Represent data in two way tables.

## Keywords

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

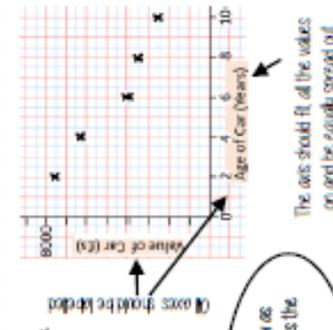
## Draw and interpret a scatter graph

Age of Car (Years)	2	4	6	8	10
Value of Car (£k)	7500	6250	4000	3000	2500

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

The link between the data can be explained verbally

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



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

## Linear Correlation

**Positive Correlation**  
Number of apples vs Cost of apples

As one variable increases so does the other variable

**Negative Correlation**  
Hours of sleep vs Number of cups of coffee before midnight

As one variable increases the other variable decreases

**No Correlation**  
Length of thumbs vs No. Correlation

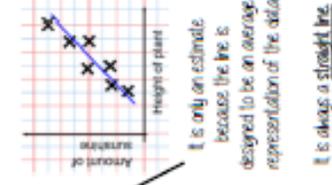
There is no relationship between the two variables

## The line of best fit

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

### Things to know:

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

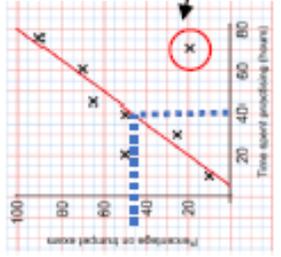


It is always a straight line.

## Using a line of best fit

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

Eg 40 hours viewing predicts a percentage of 45



Extrapolation is where we use our line of best fit to predict information outside of our data  
 \*\* This is not always useful - in this example you cannot score more than 100%. So reasoning for longer can not be estimated\*\*

## Ungrouped Data

The number of times an event happened

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

Best represented by discrete data (Not always a number)

## Grouped Data

The table shows the number of siblings students have. The answers were:

- 3, 1, 2, 2, 0, 3, 4, 1, 1, 2, 0, 2
- 2 people had 0 siblings. This means there are 0 siblings to be counted here

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

## Grouped Data

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

Class of TV sets	Tally	Frequency
101 - 150		7
151 - 200		11
201 - 250		3
251 - 300		3

We don't know the exact value of each item in a group - so an estimate would be based to calculate the overall total (Midpoint)

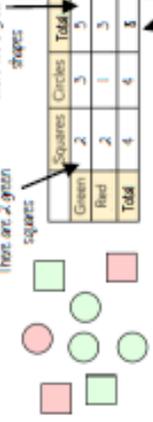
x	Weighting	Frequency
40 < x < 50	1	1
50 < x < 60	3	3
60 < x < 70	5	5

related requires represent the subgroups

To and reworking 70%

## Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allow you to make comparisons, find probability or find total of sub groups



Using your two-way table  
 To find a fraction  
 Eg What fraction of the items are red?  $\frac{3}{8}$  red items but 8 items in total =  $\frac{3}{8}$

Interlocking for your fraction, decimal percentage equivalence knowledge

## Year 8 RS: How do Christians interact with culture and society?

Key words	
Worship	Act of religious honour or devotion
Liturgical worship	service which follows a set pattern
Non-liturgical worship	service which does not follow a text or set pattern
Informal Worship	a type of non-liturgical worship which is spontaneous
Private Worship	Someone praises or honours God on their own
Prayer	Communicating with God.

### The Church

Church means a gathering of people and originally the church didn't have special buildings but met at people's homes. The church therefore is about people who meet to worship Christ. *"And God placed all things under his (Jesus') feet and appointed him to be head over everything for the church, which is his body"*. The church as a building provides a place where Christians in the local community can meet, socialise, worship and gain spiritual guidance. Christians meet at church on a Sunday, but many churches have events happening throughout the week. Traditionally the role of the church helped with schooling, medical needs and other services. In modern times the church has projects in the community to help others following the teachings of Jesus.

### Worship

It is a way for Christians to show love and respect for God. It shows Christians how important God is to them. They worship in different ways but the public worship takes place at church on Sunday. Christians prayer to ask for forgiveness, to say thanks, to ask for help or for comfort and strength. There are different types. Liturgical, non-liturgical, informal and private

### Prayer

Prayer is all about communication with God. Christians ask God for help for themselves or others, ask for forgiveness, to be provided with strength or comfort or to say sorry, confess sin and ask for forgiveness or to praise God. People pray in different ways, which might include standing, kneeling or using rosary beads – for Catholics and Orthodox Christians use Icons. Christians do believe God answers prayers, but because he is transcendent (beyond our understanding) we cannot understand when or how he does it and perhaps not in the way we would want or expect. For example when Jesus is praying in the Garden of Gethsemane he asks God to *"remove this cup from me"*. He is asking God to help him not have to go through the crucifixion. God doesn't stop this as there is a purpose to Jesus' suffering.

### The Lord's Prayer

This is the prayer which Jesus taught he disciples to pray. *"Our father who art in heaven...."*. This is an example of set prayer and is important as it sets out how to live, for example to show forgiveness to others. It also reminds how God is part of the whole community and is said out loud together.

Year 8 RS: What does it mean to have a good life?

### Pilgrimage

A pilgrimage is a special religious journey and can be seen as an act of worship in itself.

For Christians the Holy Land, where Jesus lived and died is particularly important. Pilgrimage is important as it allows people to get closer to God, strengthen faith, ask for forgiveness, pray, ask for a cure, help others and meet others who share your faith. Two important places are Lourdes and Iona.

Lourdes – In France dedicated to Mary as Bernadette believed to have seen visions of Mary in the 19<sup>th</sup> Century. A spring of water was discovered which had healing powers. Now millions of people have been to drink from the spring of water in the hope of being healed. Many sick or disabled people go to Lourdes.

Iona – An Island off the west coast of Scotland. In the 6<sup>th</sup> Century St. Columba, an Irish missionary brought Christianity to Scotland and set up a small monastic community there. Pilgrimages happen there in dedication to the virgin Mary. The community in Iona hold daily services in the Church leading a seven-mile hike to holy spots.

### Festivals

Festivals remember important events in a religions calendar, for Christians this is Christmas and Easter. They are centered around Jesus who is the most important person in their religion.

**Christmas** – Remembers the birth of Jesus – his incarnation. It is celebrated on the 25<sup>th</sup> December. Trees and homes are decorated with nativity scenes. Lights remember Jesus is the light of the world. Carol services happen in Churches with readings from the bible. Children act out nativity plays and midnight mass takes place on Christmas Eve. *“I bring you glad tidings that today a king is born”*

**Easter** – It is the most important festival which celebrates Jesus’ resurrection from the dead leading up from holy week. Jesus was crucified on Good Friday and rose on Easter Sunday. Special services take place and processions led by someone carrying a cross. On Easter Sunday special services take place with hymns which celebrate the resurrection. Eggs are used as a reminder of new life. *“Christ is risen from the dead”*.

### The Sacrament of Baptism

This is important as it is the initiation ceremony to become a Christian and part of the church and therefore receives the grace of God. Sins are forgiven and they start a new life in Christ. Jesus was baptized by John in the river Jordan, here is received the Holy Spirt and sets an example for Christians to do the same. *“Therefore go and make disciples of many nations, baptising them in the name of the father, son and Holy Spirit.*

**Infant Baptism** – Catholic, Orthodox, Anglican Methodist practice this. Everyone is a descendent of Adam and Eve and therefore carries Original Sin and so baptism washes this away. It also welcomes them to the church community.

**Believer’s Baptism** – Baptist and Pentecostal’s think children are too young to understand the meaning and therefore don’t baptise infants. They have believers baptisms when a person is old enough to understand the meaning behind what they are doing. This includes a full immersion in a pool to wash away sin and start a new life in Jesus.

## Year 8 revision RS: How do Sikhs interact with culture and society ?

Key words	
<b>Sikh</b>	A follower of a religion called Sikhism.
<b>Guru Nanak</b>	The founder of Sikhism
<b>Waheguru</b>	The Sikh God
<b>Punjab</b>	An area in the Northern part of India where Sikhism was started by Guru Nanak.
<b>Guru Granth Sahib</b>	The holy book for Sikhs.
<b>Gurdwara</b>	The Sikh Temple-place of worship.
<b>The Golden Temple</b>	The Pilgrimage or spiritual place of worship for Sikhs.
<b>Sewa</b>	Serving others, showing love and kindness to all.
<b>Langar</b>	A community kitchen in a Gurdwara, food is cooked and served daily to everyone.

People of all religions are welcomed in and even allowed to say their own religion's prayers.

They must not take meat, alcohol or cigarettes into the Golden Temple and their head must be covered. They take off their shoes when they enter.

The central point of the Golden Temple is the known as the Divine Temple. Here one can see some of the earliest copies of the Guru Granth Sahib as during the day it is placed on the takht in this diwan hall. However, a newer copy is used in daily worship to protect the oldest one.

The walls inside the Harmandir Sahib are carved with verses from the Guru Granth Sahib. People swim in the lake – it is known as a Sarovar (sacred pool) and is said to heal illnesses.

### An Overview of Sikhism.

Sikhism is one of the world's major religions. It is the world's 5<sup>th</sup> major religion, with about 28 million followers. It began over 500 years ago.

Sikhs are people who follow Sikhism. Sikhs believe in One God, who guides and protects them. Sikhs see everybody as being equal in God's eyes.

Leading a good life and making important choices are important in Sikhism.

The Guru Granth Sahib is the holy book in Sikhism. Sikhs worship at home and also in a Gurdwara, their Sikh Temple.

### Pilgrimage in Sikhism.

The Golden Temple's real name is **Harmandir Sahib**. This means 'temple of God.' (Har means God, mandir means temple – you should remember this from Hinduism and Sahib is a way of showing respect to something. It's very similar to sa'lah'lah'hu'alla'him/'peace be upon him' in Islam.)

It is built on a platform in the middle of a man-made lake, on a site chosen by Guru Nanak. This is in the centre of **Amritsar**, a Sikh city. It was first built in 1574. However it was destroyed in 1740 by a Mogul emperor and then was recaptured by a Sikh army and rebuilt. It was later built again in the 19<sup>th</sup> century out of marble and then the top half covered in gold leaf. There are 4 doors, one on every side to show that people of all races, religions and nations are welcome.

- People of all religions are welcomed in and even allowed to say their own religion's prayers.
- They must not take meat, alcohol or cigarettes into the Golden Temple and their head must be covered. They take off their shoes when they enter.

The central point of the Golden Temple is the known as the Divine Temple. Here one can see some of the earliest copies of the Guru Granth Sahib as during the day it is placed on the takht in this diwan hall.

## The 5 K's

Sikhs display their commitment to their religion by adhering to the 5 K's, which are the Sikh Articles of faith.

The 5 Ks are symbols of Sikh faith. Many non-baptised Sikhs will wear them, but all members, both male and female, of the **khalsa** (Sikh community) are obliged to wear them.

They will also change their name as a sign. Men who have joined the khalsa add **Singh** (meaning 'lion' to their name), showing they are strong & fearless, but also caring & kind.

Women add **Kaur** (meaning 'princess'), showing all women should behave & be treated like princesses. The commitment to the 5 Ks first came into place in 1699 when Guru Gobind Singh (the 10<sup>th</sup> guru) made the announcement that they should be worn as a display of faith and devotion to God. They are also a symbol of belonging to the Sikh Community. The 5 K's are Kesh- uncut hair, Kangha-comb, Kara-Steel bracelet, Kirpan- small sword and Kachera- shorts worn under their trousers.

## Where and how do Sikhs worship?

Sikh temples are called Gurdwaras. They are built with a large central dome. Gurdwaras have 4 doors, one on each side of the temple. This shows that they are open to all people of any faith as Sikhs believe that everyone is equal and we all can and should worship together.

3 Principles all Sikhs live by:

**Nam Simran:** Remember God's name always.

**Kifat Karna:** Earn an honest living.

Everyone is obligated to work hard to earn a living if they are able. They cannot have a job which hurts others (running a gambling business, making pornography, dealing illegal drugs, etc.) Shouldn't be about getting rich but just to help them live life.

**Vand Chhakna:** Share in charity with those who are less fortunate. This shows generosity and self-sacrifice. Sikhs believe that the best way to worship God is by caring for other people. We cannot love God if don't take care of his creations. **All beings and creatures are His; He belongs to all.'** This means respect for all living things because God is in everything- including animals. As a result, many Sikhs are vegetarian. They think they are **stewards** of the Earth so they also have to care for it as God created it.



## Year 8 Autumn Term Knowledge Organiser



### Baroque Music 1600 – 1750

- ✓ Melody - a single melodic idea
- ✓ Rhythm – a continuous rhythmic drive
- ✓ Texture - a mixture of homophonic and polyphonic textures (thick and thin)
- ✓ Timbre - orchestral – strings, woodwind and harpsichord with very little percussion
- ✓ Dynamics - sudden shifts from loud to soft and vice versa – achieved by adding or subtracting instruments
- ✓ An overall characteristic of Baroque Music is that each piece has a single mood or expression of feeling – one purpose
  - ✓ Famous composers: Bach, Handel, Purcell, Pachelbel, Vivaldi



We will have studied Pachelbel's Canon and Vivaldi's Four Seasons



### Classical Music 1750 – 1840

- ✓ Melody – short and clearly defined musical phrases with two or more contrasting themes
  - ✓ Rhythm – very defined and regular
- ✓ Texture – mainly homophonic (main melody and accompaniment)
  - ✓ Structure – rondo and sonata forms
- ✓ Timbre – the symphony orchestra was organised into four sections – strings, woodwind, brass and percussion. The harpsichord was seldom used.
  - ✓ Famous composers: Mozart, Beethoven, Haydn and Grieg



We will have studied Beethoven's Fur Elise and Mozart's Eine Kleine Nachtmusik

## Fur Elise

Chords: C D Eb

Bass clef notes: C Eb G Eb G C B F G F G D C Eb G C

Chords: C D Eb D C

Bass clef notes: C Eb G Eb G C B F G F G C Eb G

## Spring

Chords: G G F

Bass clef notes: C/G C/G C/G C/G C/G C/G

Chords: G F E F G F E

Bass clef notes: C/G C/G C F G

Here are three of the pieces we will have studied – can you write in the missing note names? Rhymes for the bass clef are:

If the note is on the line, Good Bike Don't Fall Apart

If the note is in a space, All Cows Eat Grass