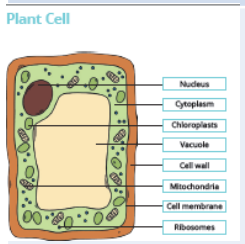
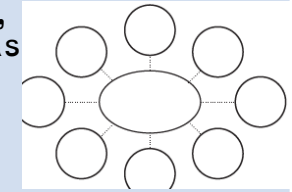
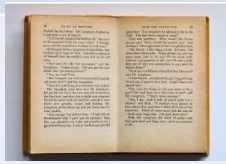
Name:

# Year 9 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.



| Idea | Explanation |
|---|---|
| Make some flash cards or PowerPoint slides. Make top trumps.  | 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. |
|   Make a poster. | 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! |
| Draw spider diagrams, or for the adventurous mind maps.  | 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. |
| Write a song or a rap.  | 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. |
|  Plan a lesson | 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. |
| Write a story or comic strip.  | 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. |
| Write a quiz.<br>Design a game.  | 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. |

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

The Open University

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?

8. Can I…

9. Can I create a paper chain of poetry?

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

11. Can I design my own reading den?


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

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

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?

MAYFLOWER COMMUNITY ACADEMY & NURSERY

## 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.)

---

### 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?

---

### 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?

---

### 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?

Accelerated Reader™

# To improve my Book Level:

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

| | |
|---|---|
| 100% | This book was comfortable for you, perhaps try a book higher up in your ZPD range next time. |
| 90% | This book was perfect for you. Perhaps try one or two book levels higher next time. |
| 80% | This book was a little difficult for you. Perhaps choose one or two book levels lower next time. |
| 70% | This book was quite challenging for you. Perhaps try a book at the lower end of your ZPD range next time. |
| 60% or below | This book was too challenging. Perhaps try a book at the low end of your ZPD or speak to your teacher for help. |

# 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 sure my book within my ZPD range

I will make notes when reading

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

I will read **fewer long** books

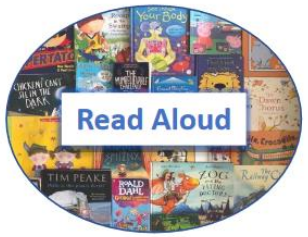
I will stick with a book and **finish it**

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.

# Supporting Readers at Home

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




**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.


**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.

**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.

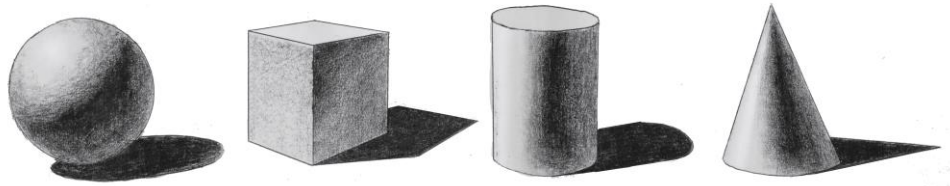

I wonder if…why…what…who…

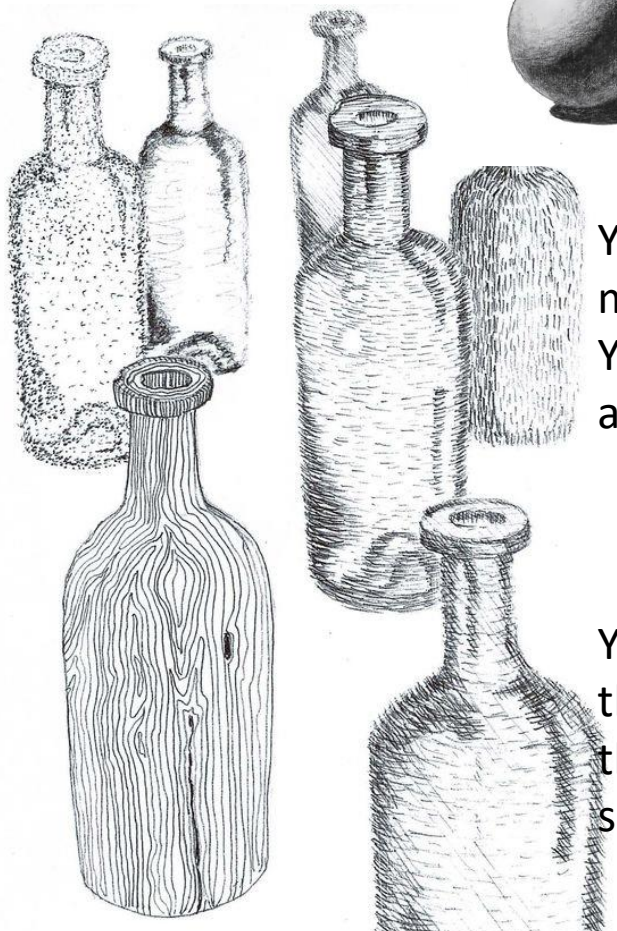
**Book chats** encourage readers. Invite them to make connections and share their views. Join in with your views too! (Please see the next page for suggested questions you can ask about any book.)

Adapted from Open University 'Supporting Reading at Home': https://researchrichpedagogies.org/_downloads/Supporting_Readers_at_Home_Poster_.pdf
For more ideas see: https://www/researchrichpedadgogies.org

# Year 9 Art Knowledge Organiser - Autumn Term:

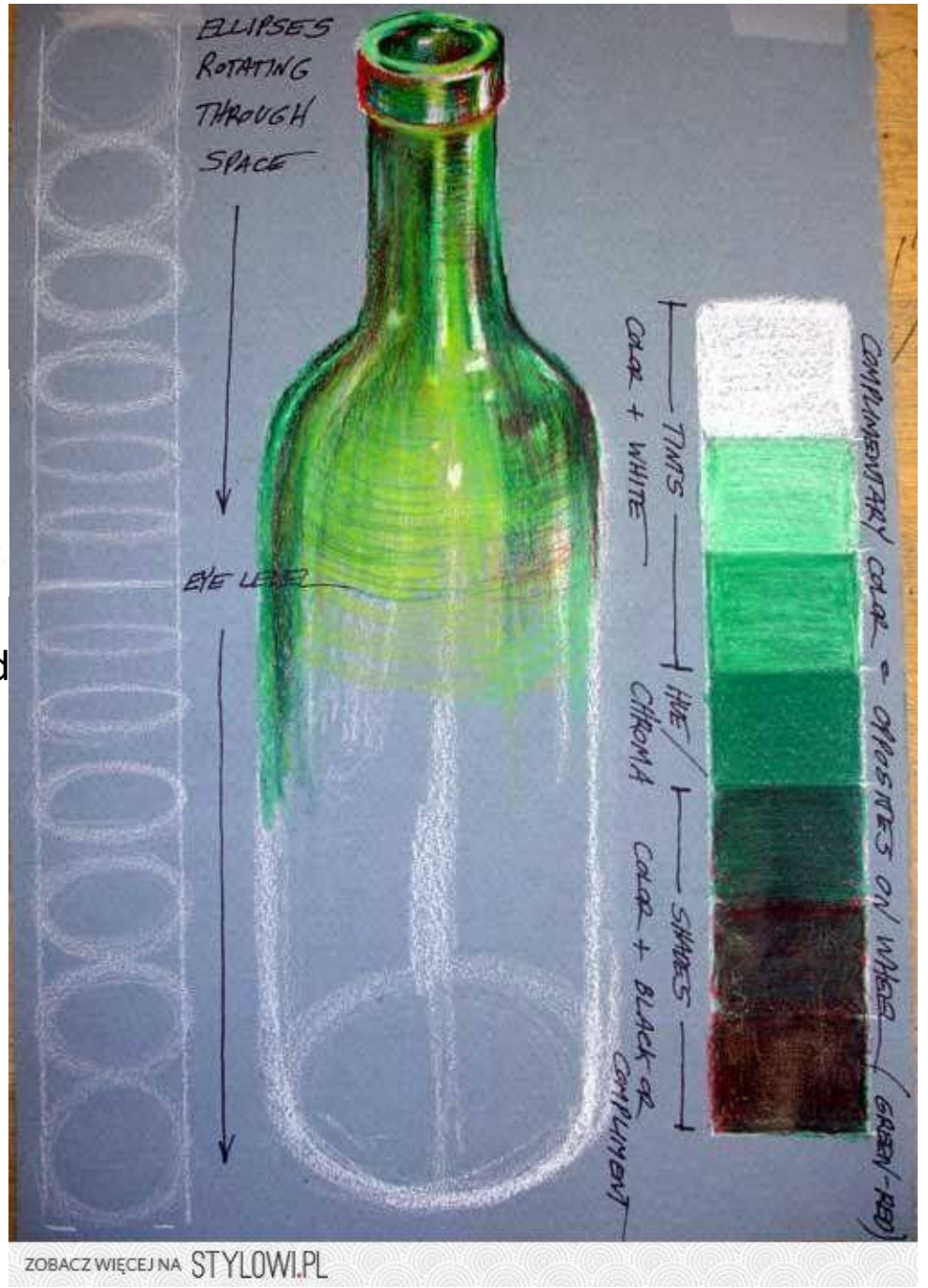
- At the start of Year 9 we do a series of lessons reminding students of the basic formal elements of Art such as **TONE**, **FORM**, **LINE**….etc… See next page for full breakdown of the art elements.
- You continue your learning on observational drawing and using tone to show 3D form. See example b[illegible]





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.




We will be making enlarged drawings of these objects and Using different techniques on them.

The first big project we do in Year 9 is on Pop Art which is a style of Art that uses Items from popular culture as it's subject.
See examples below:

# common images

## everyday

- Advertisements
- Consumer goods
- Celebrities
- Photographs
- Comic strips

# Autumn 2 half term: Year 9 Metal and sustainability

## Metals

**For your focused practical task you worked with aluminium. This is a metal. Metal has 2 classifications: ferrous and non-ferrous. Watch these videos to learn about types of metals and where they come from**

**https://www.youtube.com/watch?v=zwnblxXyERE**

**https://www.technologystudent.com/joints/fermetal1.html**

**This half term you will also be learning about sustainability. Sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs. In addition to natural resources, we also need social and economic resources.**

**You will be discussing whether metal is sustainable.**

## Life Cycle Assessment (LCA)

**For us to be more sustainable we need to assess how we can live more responsibly. We can use a life cycle assessment to do this. There are 6 stages of life cycle assessment.**


**What can you do to be more sustainable?**
**What can companies do to be more sustainable?**
**What does carbon footprint mean?**
**How can you reduce your carbon footprint?**
**Do you know what renewable energy is and where it comes from?**

### FERROUS METALS - IRON

Wrought Iron was used by the Romans. Roman iron weapons were forged, not cast. Iron was forged by heating it to high temperatures (to red heat) and hammering it into shape.
Britain had numerous Roman iron ore mines. It also had large forests, which provided the wood required for smelting (extracting the iron form the ore).

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### FERROUS METALS - IRON - INDUSTRIAL REVOLOUTION

Abraham Darby 1st (1678 –1717)

Developed a technique of producing 'pig iron' in large quantities, through casting molten iron, crucial to the industrial revolution. He developed sand casting techniques, making it possible to produce cast products of a high standard.


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### FERROUS METALS - PROPERTIES OF IRON

Cast iron has a carbon content higher than 2.1%. Cast iron is brittle and can snap. Cast iron is likely to break/shatter if dropped or when it receives a 'blow'.

Products include; cast iron garden furniture, house numbers, weathervanes and vices.

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### METALS- WHAT IS AN ALLOY?

An alloy is a metal (parent metal) combined with other substances (alloying agents), resulting in superior properties such as; strength, hardness, durability, ductility, tensile strength and toughness.
The parent metal is the majority of the alloy. For example, mild steel is 0.1 - 0.3% Carbon and 99.9 - 99.7% Iron.

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### FERROUS METALS THE ALLOY STEEL

Iron is the most used metal in the world, largely due to it being the main constituent of the alloy steel.

Common steel typically has 0.2 to 2.1% carbon content, with the rest being iron.

Our modern world relies on steel

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### FERROUS METALS - MILD STEEL

Carbon 0.1 - 0.3%
Iron 99.9 - 99.7%

Alloy of carbon and iron. Tough. High tensile strength. Can be case hardened. Rusts very easily unless the surface is protected from moisture.

Most common metal used in school workshops. Used in general metal products and engineering.

### FERROUS METALS CARBON STEEL

Carbon 0.6 - 1.4%
Iron 99.4 - 98.6%

Alloy of iron and carbon. Higher carbon content than mild steel. Tough and strong. Carbon steel can be heat treated e.g. hardening and tempering.
Used for cutting tools such as drills and lathe tools.

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### FERROUS METALS STAINLESS STEEL

Alloy of iron, nickel and 10.5% to 11% chromium.
Tough, resistant to rust and stains. Does not corrode.
Cutlery, medical instruments, specialist corrosion resistant products such as pipes. Stainless steel pots and bans. Jewellery and watches.

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### NON-FERROUS METALS ALUMINIUM

Light grey in colour. Smelted from bauxite ore. Aluminium 95%, Copper 4%, Manganese 1%

Ductile, soft, malleable, machines well on lathes and milling machines. Very light and resists corrosion. Can be cast into products from ingots.

Used widely in aircraft, drinks cans, window frames, ladders, and kitchen ware.

### NON-FERROUS METALS COPPER

Reddish brown in colour, darkens slowly when in contact with air. This metal is not an alloy.

Ductile, can be beaten into shape as it is relatively soft. Conducts electricity and heat.

Electrical wiring, tubing, kettles, bowls, pipes and plumbing. Used also in the production of printed circuit boards.

### NON-FERROUS METALS BRASS

A copper alloy. Deep yellow to golden colour. An alloy, mixture of copper and zinc 65% - 35%.

Casts and machines well. Surface tarnishes slowly on contact with air. Conducts electricity. Resists corrosion.

Parts for electrical fittings, engineering, ornaments, musical instruments.

### NON-FERROUS METALS BRONZE

A copper / tin alloy. Tin content up to 10%.
Engineers well on lathes and works quite well with handtools.

Once used for ship fittings, due to its resistance to corrosion. Now replaced by stainless steel. Used for ornaments, cast bronze sculptures and ships propellers. Used also for bearings in engineering.

### Carbon footprint

*noun*

the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community.

### NON-FERROUS METALS PEWTER

Pewter is a soft, malleable alloy, 85% to 99% tin. Other metals are copper, lead, antimony and bismuth. Has a low melting point compared to many metals (170–230 °C) making it highly suitable for casting.

Usually purchased in ingots and cast to shape in a workshop.

Used for making tankards and other decorative pieces.

### FERROUS AND NON-FERROUS METALS

***Ferrous metals contain IRON***
These are metals that contain iron. Consequently they tend to rust / suffer from corrosion. They need protecting with paint, oil or a surface finish. They react to a magnet.

***Non-ferrous metals do not contain IRON***
Non-ferrous metals do not contain iron. Consequently, they do not to rust or suffer unduly from contact with moisture. They do not react to a magnet.

**Is metal sustainable?**
**Is metal renewable?**

### ENERGY SOURCES

# Special Diets

Tips on how you can….

| | Definition | Foods they can't eat |
|---|---|---|
| Vegetarian | Someone who chooses to not eat any meat. | Meat, fish, poultry. |
| Vegan | Someone who doesn't eat any products derived from animals. | Meat, fish, poultry, dairy. |
| Lactose Intolerant | A digestive problem where the body can't digest lactose (milk sugars). | Milk, cheese, yogurt, chocolate, butter, icecream, cream. |
| Coeliac disease | Where the digestive system is sensitive to gluten and can't digest it. | Pasta, bread, noodles, pizza base, couscous, gluten. |

Lactose is CARBOHYDRATE
Gluten is PROTEIN

| | |
|---|---|
| Reduce the amount of sat fat | • Use less cheese and meat<br>• Cut the visible fat off meat and remove chicken skin<br>• Cook with oil and not butter |
| Reduce the amount of kcal | • Cut down on energy dense foods<br>• Use leaner cuts of meat<br>• Swap meat for beans and pulses |
| Lower the amount of salt | • Cut down on the amount of cheese<br>• Cut down on the amount of saturated fat<br>• Use a low fat stock cube<br>• Don't add salt to the dish<br>• Avoid using premade packs of seasoning |
| Increase the fibre content | • Add beans and pulses<br>• Swap to whole meal<br>• Add more vegetables<br>• Keep the skin on potatoes |

| **Key word** | **Definition** |
|---|---|
| Seasonal ingredients | Foods that are available at certain times of the year, e.g. British-grown asparagus is only available in May, June. |
| Sustainable | A sustainable process or material is one that can be used without causing permanent damage to the environment or using up finite resources. |
| Food Miles | The distance a food product travels from where it's produced or grown to where it's sold/ |
| Organic foods | A more natural method of farming e.g. growing crops without artificial pesticides and fertilisers. |
| Locally sourced foods | Items that have been purchased nearby from a farmer, fishmonger or any other fresh produce creator. |
| Food Waste | Food loss and waste is food that is not eaten. Overall, around 1/3 of the worlds food is thrown away. |

# Sausage Pasta

Ingredients (serves 2)
1 onion
1 carrot
1 stick of celery
4 sausages , (250g in total)
1 tsp dried oregano
Optional:  dried chilli flakes
1 tsp dried rosemary
4 cloves of garlic
2 tablespoons balsamic vinegar
1 tin of chopped tomatoes
300 g dried penne
olive oil

Equipment
Grater
Fork
Bowl
Chopping board
Knife
Frying pan
Wooden spatula
Saucepan

Method

1. Fill up a pan half way with water and put on the hob to the boil. When the water is boiled add the pasta.
2. Finely chop the onion, celery and garlic. Grate the carrot.
3. Heat up the oil in the pan and squeeze out the sausage meat from the skins. Add the oregano, rosemary and dried chilli flakes if using.
4. Cook for 5 minutes and then add the chopped vegetables and garlic.
5. Add the can of chopped tomatoes, fill the can up half way with water and add to the mixture. Leave to simmer for 10 minutes. Stir through the balsamic vinegar.
6. When the pasta is cooked add to the sauce and mix thoroughly. Serve with grated parmesan.

You are welcome to follow this recipe, make a chilli con carne or a spaghetti Bolognese.

# Mushroom and Parsley Risotto

Ingredients

One large white onion
Two celery sticks
1 garlic clove
15g butter
250g mixed mushrooms
½ pack of fresh parsley
1 vegetable stock cube
400ml boiling water
200g risotto rice
50g grated parmesan

1. Finely dice the onion, finely slice the celery and mince the garlic. Pick the parsley leaves off the stem and finely chop.
2. Soften the onion, garlic, celery and parsley stalks in oil for 10 minutes.
3. Meanwhile cut the squash into chunks and put the squash, if using or mushrooms onto a baking tray. Drizzle with oil and roast for 20 minutes.
4. Make the stock by putting the stock in a jug and adding the boiling water. Stir until the stock cube dissolves.
5. Add the rice to the frying pan with the onions and fry for a few minutes. Add the stock in a ladle at a time, stirring as you add until it is absorbed. Repeat until the rice is cooked.
6. Chop up half the roasted vegetables and add to the rice along with the parmesan, butter and chopped up parsley.
7. Serve with the remaining vegetables on top.

# Tomato risotto

Ingredients

One large white onion
Two celery sticks
1 garlic clove
15g butter
1 red pepper
½ can chopped tomatoes
100g chorizo
1 vegetable stock cube
300ml boiling water
200g risotto rice
50g grated parmesan

1. Finely dice the onion, finely slice the celery and mince the garlic. Dice the pepper into 2cm size pieces.
2. Soften the onion, garlic and celery for 10 minutes.
3. Make the stock by putting the stock in a jug and adding the boiling water. Stir until the stock cube dissolves and add the tomatoes.
4. Add the rice and pepper to the frying pan with the onions and fry for a few minutes. Add the stock in a ladle at a time, stirring as you add until it is absorbed. Repeat until the rice is cooked.
5. Stir through the butter and parmesan. Serve.

# Shepherds/Cottage Pie

**Ingredients**

For the filling:

200g minced beef/lamb

1 onion

1 carrot (grated)

1 stock cube

1 tbsp flour

For the mash:

300g potatoes

10g butter or margarine

50ml milk

Optional:

25g grated cheese for top

Baked beans

Sweetcorn

Gravy granules

Equipment;

Sauce pan, chopping board, knife, wooden spoon, jug, sauce pan, grater, peeler, masher

Method

1. Peel and chop potatoes evenly. Just cover with fresh cold water. Add I level tsp of salt. Bring potatoes to boil and then simmer for 20 minutes (time them from when they come up to boil).

2. Chop the onions finely. Grate the carrot.

3. Gently fry the onions until translucent and soft. Add the mince and cook. Once the mince is browned add the grated carrot.

4. Add stock cube and 200ml water to the mixture and bring to boil, stirring in the stock cube.

5. When potatoes are cooked, drain through a colander and mash them finely, adding butter and milk to soften and give a creamy consistency. Add pepper if wanted.

6. Place meat sauce into an ovenproof dish. Place mashed potatoes evenly over the meat. Smooth and then fork mixture round, following the shape of the dish.

7. Cover with grated cheese. Cook for 25 minutes.

# Year 9 Knowledge Organiser – Physical Education (Autumn 2 – Body Composition)

**Body composition** is the relative ratio of fat mass to fat-free mass (vital organs, muscle, bone) in the body. It is important to have a blend of both fat-free mass and fat to cop with everyday life. In sport this is also important depending on what you play.

Some sports performers such as rowers will need a large muscle mass to give them power and strength, whereas marathon runners will require less body fat and muscle mass to avoid them carrying too much weight. Sumo wrestlers on the other hand will require a large body mass in their performances to be successful.

**How to measure your body composition**

| | | |
|---|---|---|
| Body Mass index (BMI)<br>BMI= Weight (kg) ÷ Height (m) x Height (m) | The advantage of this test is that it is **easy to complete** | The disadvantage is that sometimes you can have **misleading results** |
| Skinfold test<br>Use callipers to measure skin on bicep, triceps, shoulder blade and hip. | The advantage of this test is that it is an **accurate measurement of percentage of body fat** | Unfortunately, the disadvantage sit that you need to use **Specialist equipment** to carry this out. |

This QR code will show you the tests for body composition and is linked to our BTEC Sport course in Year 10.

**Can you complete these 30 challenges?**

Attempt each day and record how you feel after each day.

Do you feel healthier? Do you feel more energized?

How would completing these challenges help your body composition?

## 30-DAY PLANK CHALLENGE

| | |
|---|---|
| Day 1: 20 sec | Day 16: 2 min |
| Day 2: 20 sec | Day 17: 2 min |
| Day 3: 30 sec | Day 18: 2.5 min |
| Day 4: 30 sec | Day 19: Rest |
| Day 5: 40 sec | Day 20: 2.5 min |
| Day 6: Rest | Day 21: 2.5 min |
| Day 7: 45 sec | Day 22: 3 min |
| Day 8: 45 sec | Day 23: 3 min |
| Day 9: 1 min | Day 24: 3.5 min |
| Day 10: 1 min | Day 25: 3.5 min |
| Day 11: 1 min | Day 26: Rest |
| Day 12: 1.5 min | Day 27: 4 min |
| Day 13: Rest | Day 28: 4 min |
| Day 14: 1.5 min | Day 29: 4.5 min |
| Day 15: 1.5 min | Day 30: 5 min |

## 30-DAY CRUNCH CHALLENGE

| | |
|---|---|
| Day 1: 25 | Day 16: Rest |
| Day 2: 30 | Day 17: 100 |
| Day 3: 35 | Day 18: 105 |
| Day 4: Rest | Day 19: 110 |
| Day 5: 40 | Day 20: Rest |
| Day 6: 45 | Day 21: 115 |
| Day 7: 50 | Day 22: 120 |
| Day 8: Rest | Day 23: 125 |
| Day 9: 60 | Day 24: Rest |
| Day 10: 65 | Day 25: 130 |
| Day 11: 70 | Day 26: 135 |
| Day 12: Rest | Day 27: 140 |
| Day 13: 80 | Day 28: Rest |
| Day 14: 90 | Day 29: 145 |
| Day 15: 95 | Day 30: 150 |

Owen Farrell

Dina Asher-Smith

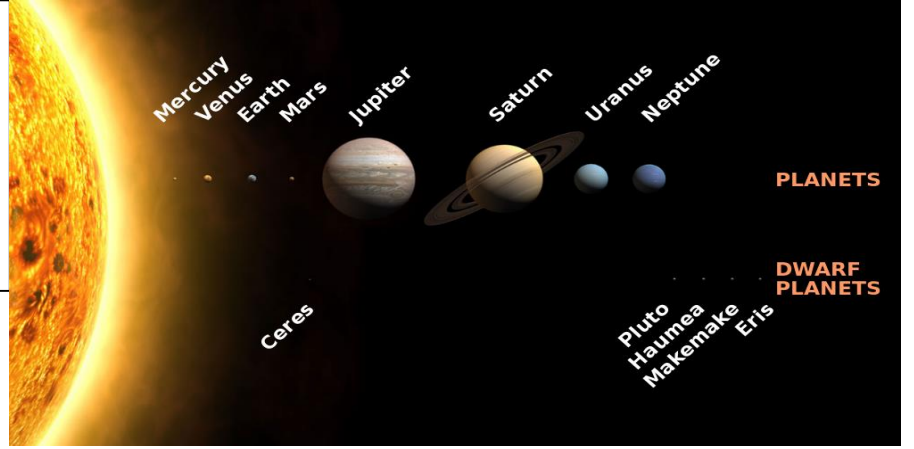

Lebron James

Look at the sports performers pictured on this page. Each one has a different set of fitness requirements for their sports and requires different body compositions.

Create a circuit traninig session for your chosen performer using the internet to help you. What will you need to consider? What equipment will you need? How will it support an athletes body composition?

Remember, everyone is born with a different level of body composition. You can make changes to your body composition by changing your exercise habits and changing your diet. However, your body composition has to be suitable for the sport you play!

# SCIENCE
# YEAR 9 AUT 2
# ASTRONAUT




Weight = mass X gravitational field strength

| | | |
|---|---|---|
| Weight | *Force acting upon an object due to gravity* | Newton (N) |
| Mass | *How much matter* | Kilograms (Kg) |

**Gravity**

| | | |
|---|---|---|
| Gravitational field strength | *Gravity exerted around an object.* | Earth's gfs = 9.8N/kg |

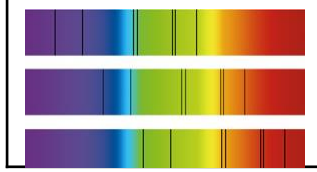
| | | |
|---|---|---|
| Gravitational Potential energy | *Energy gained by an object raised above the ground* | Mass X gravitational field strength X height mgh |

| | |
|---|---|
| The Big Bang | *Universe began 13.8 billion years ago* |
| All matter and space expanded violently from a single point. | Red—shift provides evidence for expansion. |

| | |
|---|---|
| Planet | *A large body orbiting the Sun* |
| Moon | *A natural satellite orbiting a planet* |
| Dwarf planet | *A body large enough to have its own gravity which caused a spherical shape* |
| Solar system | *Any object orbiting the Sun due to gravity* |
| Galaxy | *Collection of billions of stars* |
| Universe | *Collection of galaxies* |

What is our skeleton for? What do our muscles do? How would weightlessness affect them ?
What can astronauts do about it?

| | |
|---|---|
| Red-shift | *The observed increase in wavelength of light from most distance galaxies. Light moves towards the red end of the spectrum.* |
| Hubble (1929) | *He studied light from distant galaxies; found as frequency decreases, wavelength increases.* |



| |
|---|
| Light from star in our galaxy. |
| Light from star in nearby galaxy. |
| Light from star in distant galaxy. |

Light from distant galaxies is red-shifted, so galaxy is moving away from us.

Galaxies are moving away from us in all directions.

Galaxies further away have bigger red-shift so are moving faster away.

# SCIENCE YEAR 9 AUT 2 ASTRONAUT

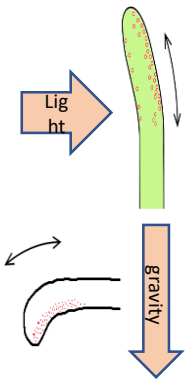
## Identification of common gases

| Gas | Test | Positive result |
|---|---|---|
| **Hydrogen** | *Burning splint* | 'Pop' sound. |
| **Oxygen** | *Glowing splint* | Re-lights the splint. |
| **Chlorine** | *Litmus paper (damp)* | Bleaches the paper white. |
| **Carbon dioxide** | *Limewater* | Goes cloudy (as a solid calcium carbonate forms). |

## Growing plants in space - Photosynthesis

The plant manufactures glucose from carbon dioxide and water using energy transferred from the environment to the chloroplasts by light

| | | |
|---|---|---|
| **Photosynthesis** | *Plants make use of light energy from the environment (ENDOTHERMIC) to make food (glucose)* | Carbon dioxide + Water → Oxygen + Glucose |
| | | $CO_2$ + $H_2O$ → $O_2$ + $C_6H_{12}O_6$ |

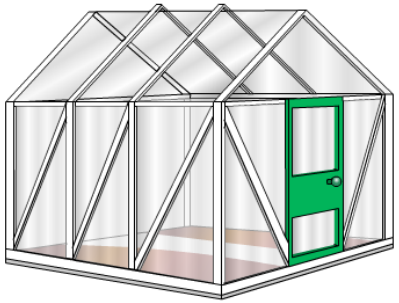



| | | |
|---|---|---|
| **Plant responses using hormones (auxins)** | *Light (phototropism)* | Light breaks down auxins and they become unequally distributed in the shoot. The side with the highest concentration of auxins has the highest growth rate and the shoot grows toward the light. |
| | *Gravity (geotropism or gravitropism)* | Gravity causes an unequal distribution of auxins. In roots the side with the lowest concentration has the highest growth rate and the root grows in the direction of gravity. |
| | | In new shoots from a seedling the unequal distribution of auxins causes the shoot to grow away from gravity. |

**Factors affecting the rate of photosynthesis**

| Factor | How the rate is affected |
|---|---|
| **Temperature** | *As the temperature of the environment the plant is in increases rate of photosynthesis increases (up to a point) as there is more energy for the chemical reaction.* |
| **Light intensity** | *Light intensity increases as the distance between the plant and the light sources increases. As light intensity increases so does the rate of photosynthesis (up to a point) as more energy is available for the chemical reaction.* |
| **Carbon dioxide concentration** | *Carbon dioxide is needed for plants to make glucose. The rate of photosynthesis will increase when a plant is given higher concentrations of carbon dioxide (up to a point).* |
| **Amount of chlorophyll** | *Chlorophyll is a photosynthetic pigment that absorbs light and allows the reaction between water and carbon dioxide to occur (photosynthesis)* |

# SCIENCE
# YEAR 9 AUT 2
# ARCHITECT



## Common atmospheric pollutants

### Atmospheric pollutants from fuels

| | |
|---|---|
| **Combustion of fuels** | ***Source of atmospheric pollutants. Most fuels may also contain some sulfur.*** |
| **Gases from burning fuels** | ***Carbon dioxide, water vapour, carbon monoxide, sulfur dioxide and oxides of nitrogen.*** |
| **Particulates** | ***Solid particles and unburned hydrocarbons released when burning fuels.*** |

### Properties and effects of atmospheric pollutants

| | |
|---|---|
| **Carbon monoxide** | ***Toxic, colourless and odourless gas. Not easily detected, can kill.*** |
| **Sulfur dioxide and oxides of nitrogen** | ***Cause respiratory problems in humans and acid rain which affects the environment.*** |
| **Particulates** | ***Cause global dimming and health problems in humans.*** |

## $CO_2$ and methane as greenhouse gases

### Carbon footprints

The total amount of greenhouse gases emitted over the full life cycle of a product/event. This can be reduced by reducing emissions of carbon dioxide and methane.

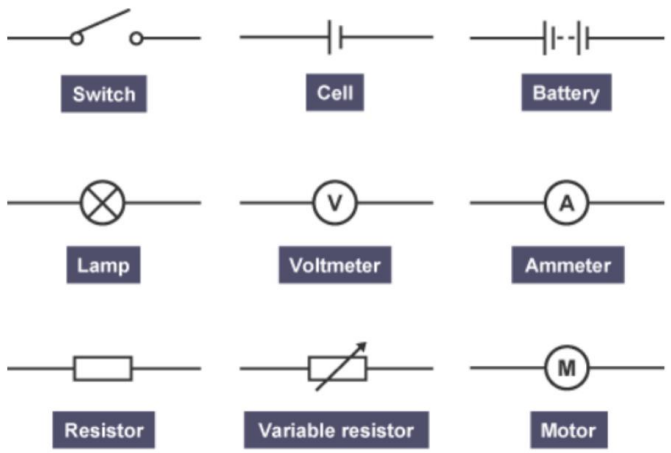
### Greenhouse gases

| | |
|---|---|
| **Carbon dioxide** | ***Human activities that increase carbon dioxide levels include burning fossil fuels and deforestation.*** |
| **Methane** | ***Human activities that increase methane levels include raising livestock (for food) and using landfills (the decay of organic matter released methane).*** |
| **Climate change** | ***There is evidence to suggest that human activities will cause the Earth's atmospheric temperature to increase and cause climate change.*** |

# SCIENCE
# YEAR 9 AUT 2
# ARCHITECT

| Energy resource | How it works | Uses |
|---|---|---|
| Fossil Fuels (coal, oil and gas) | *Burnt to release thermal energy used to turn water into steam to turn turbines* | Generating electricity, heating and transport |
| Nuclear | *Nuclear fission process* | Generating electricity |
| Biofuel | *Plant matter burnt to release thermal energy* | Transport and generating electricity |
| Tides | *Every day tides rise and fall, so generation of electricity can be predicted* | Generating electricity |
| Waves | *Up and down motion turns turbines* | Generating electricity |
| Hydroelectric | *Falling water spins a turbine* | Generating electricity |
| Wind | *Movement causes turbine to spin which turns a generator* | Generating electricity |
| Solar | *Directly heats objects in solar panels or sunlight captured in photovoltaic cells* | Generating electricity and some heating |
| Geothermal | *Hot rocks under the ground heats water to produce steam to turn turbine* | Generating electricity and heating |

**Circuit Symbols**



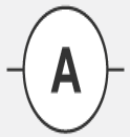

**Key Terms**

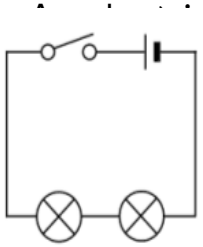
**Series Circuit**
A circuit where all the components are in the same loop.

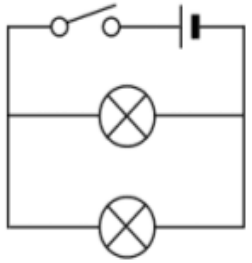
**Parallel Circuit**
A circuit where the components are in different loops in the circuit.

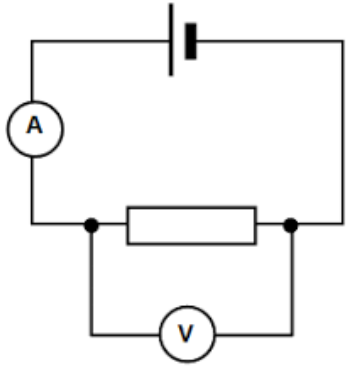
**Ammeter**
An electrical component that measures the size of electric current, it is connected in series
in a circuit.

**Voltmeter**

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

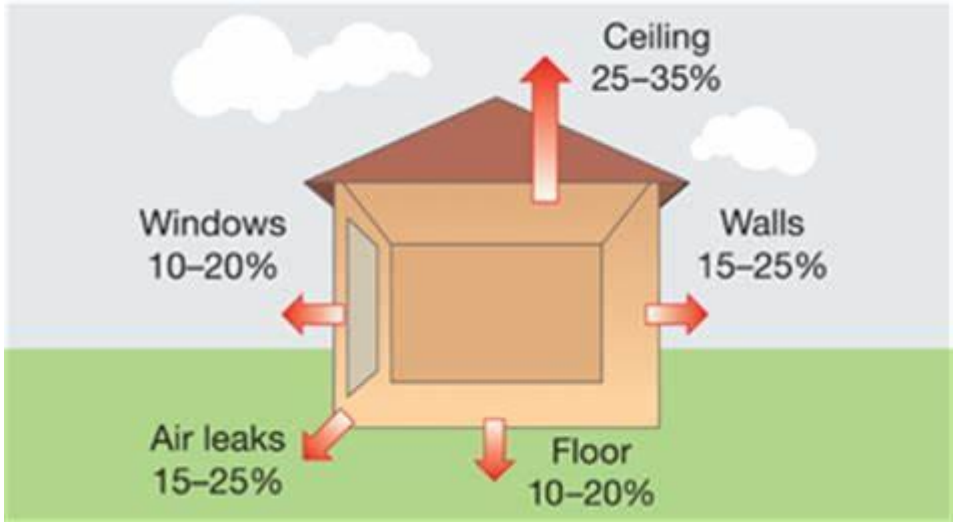




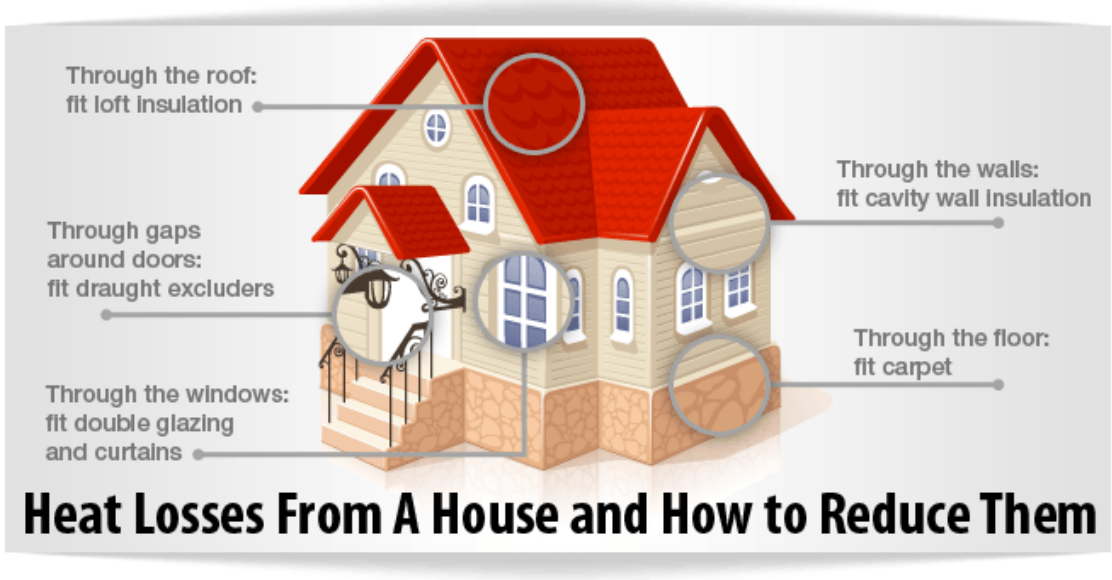


# SCIENCE
# YEAR 9 AUT 2
# ARCHITECT

| | | |
|---|---|---|
| Principle of conservation of energy | ***The amount of energy always stays the same.*** | Energy cannot be created or destroyed, only changed from one store to another. |
| Ways to reduce 'wasted' energy | ***Energy transferred usefully*** | Insulation, streamline design, lubrication of moving parts. |




Energy loss from homes



# Knowledge Organiser: Year 9 Autum Term Part 2 - Understanding computers *and data representaion*

## Summary

**Computers use binary** - the digits 0 and 1 - to store data. A **binary** digit, or bit , is the smallest unit of data in computing. ... **Binary** numbers are made up of **binary** digits (bits). . The circuits in a computer's processor are made up of billions of transistors

**Boolean algebra** and truth tables can be used to describe logical expressions. The most common Boolean operators are **AND**, **OR** and **NOT** (always in capitals). Each operator has a standard symbol that can be used when drawing logic gate circuits.

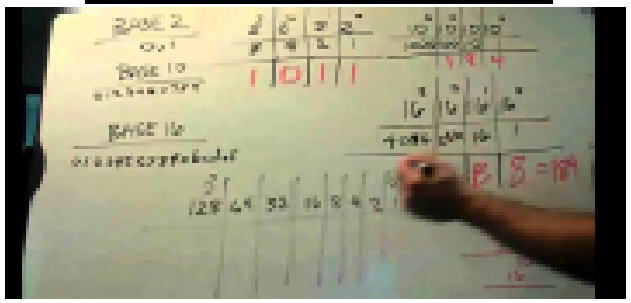
A bit pattern could represent different types of data including **text**, **image**, sound and **integer**.

Computers require input hardware, processing hardware and output hardware. The hardware that defines a computer is the **CPU** and **memory**. Without these a computer could not function. The CPU and memory work together to run programs.

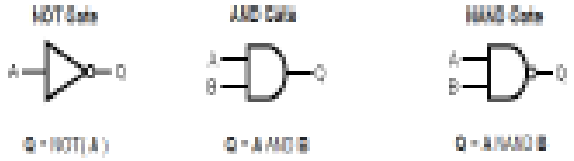
**CPU** - executes programs using the **fetch-decode-execute cycle.**

**Memory** - stores program operations and data while a program is being executed. There are several types of memory, including: **registers**, **cache**, **RAM** and **virtual memory**.

## Decimal, binary and hexadecimal



## Boolean Algebra




Q = NOT( A )

Q = A AND B

Q = A NAND B

Truth Table

| Input A | Output Q |
|---|---|
| 0 | 1 |
| 1 | 0 |

Truth Table

| Input A | Input B | Output Q |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |

Truth Table

| Input A | Input B | Output Q |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

## Central Processing Unit

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

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

It is responsible for all of a computer's processing.

## The Fetch – Decode – Execute cycle

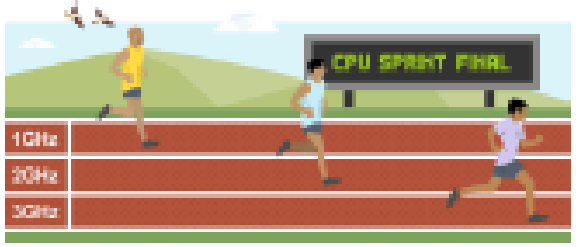
The CPU operates by repeating three operations:

**FETCH** – causes the next instruction and any data involved to be fetched from main memory

**DECODE** – decodes the instruction to make sure it can be carried out

**EXECUTE** – carries out the instruction

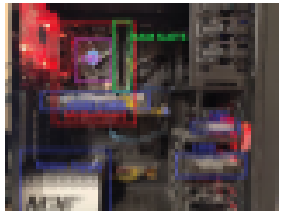
Repeat...




## Key Vocabulary

| | |
|---|---|
| Clock speed | The speed of a computer CPU, measured in hertz. |
| Cache | A piece of temporary memory. It can refer to a part of the RAM, storage disk, CPU, or an area for storing web pages. |
| CPU | Central Processing Unit - the brains of the computer that processes program instructions. Also called a microprocessor. |
| Execute | To run a computer program. |
| GHz | Gigahertz. One billion hertz per second = one gigahertz. This is a measure of frequency and is used to describe bus speeds and CPU clock speeds. |
| Hardware | The physical parts of a computer system, e.g. a graphics card, hard disk drive and CD drive. |
| Mother-board | The circuit board inside a computer that houses the CPU, memory and connections to other devices. |
| RAM | Memory that is constantly being written to and read from. It does not retain its contents without a constant supply of power, i.e. when a computer is turned off, everything stored in its RAM is lost. |
| Registers | The section of high speed memory within the CPU that stores data to be processed. |
| Software | Software is the programs that run on a computer. |
| Virtual memory | A section of a computer storage drive which is temporarily used as RAM. |

## PC Components



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BBC Bitesize

# Year 9 Knowledge organiser: Population

## Topics covered

- ✓ Population explosion
- ✓ Birth Rates, Death rates and Life expectancy
- ✓ Factors affecting population growth
- ✓ Population Density and Distribution
- ✓ Population Distribution Factors
- ✓ Population Pyramids
- ✓ Population Control
- ✓ Youthful Populations
- ✓ Ageing Populations
- ✓ Population Migration

## Key Ideas:

1. I can describe the growth in world population over time
2. I can describe the distribution (spread) of people on earth
3. I can explain what affects growth and distribution of people
4. I can assess how population is impacted by youth and ageing
5. I can evaluate the benefits and challenges of migration

## Skills

- ❑ To draw a line graph showing population growth/label key events ('living graph')
- ❑ To construct a 'choropleth' map, shading dense and sparse population density
- ❑ To construct population pyramid graphs
- ❑ To write a detailed piece of extended writing
- ❑ To interpret flow maps of people movement

## Places and Environments

- ❖ UK
- ❖ China
- ❖ Africa
- ❖ Australia
- ❖ Canada
- ❖ Russia
- ❖ Singapore
- ❖ Syria
- ❖ Germany

## Key Terms Used in this Unit

- ❑ Population growth
- ❑ Birth Rate/Death Rate
- ❑ Dense/Sparse
- ❑ Distribution
- ❑ Working Age Group
- ❑ Fertility Rate
- ❑ Infant Mortality Rate
- ❑ Rate of Natural Increase
- ❑ Sterilisation
- ❑ Birth Control
- ❑ Incentives
- ❑ Forced Abortion
- ❑ Infanticide
- ❑ Gender imbalance
- ❑ Retirement
- ❑ Push/pull factors
- ❑ Immigration
- ❑ Forced migration


World populations can be measured according to the countries average quality of life. How we measure peoples living standards can vary but most agree that Income, education and life expectancy are all important.

As these numbers are based upon averages there will always be people above and below. Averages are not always the same within different areas of a country.

Italy, the UK, South Africa, Mexico and China are just some areas of the world with differences within their own countries.

**Developing countries** tend to have bigger differences than richer developed countries.

What would show peoples quality of life?

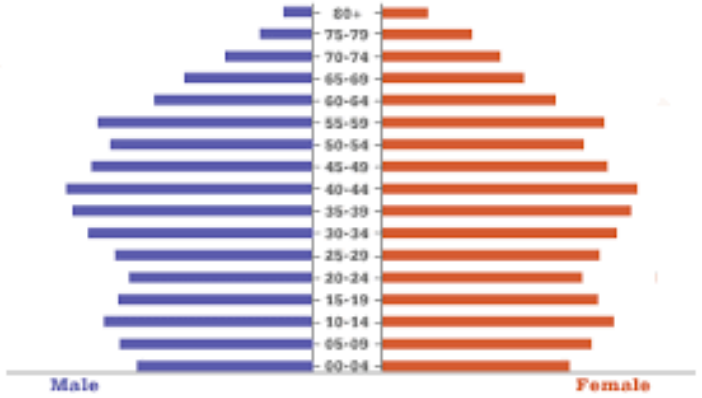
CHALLENGE – Are there any problems with using data to calculate this?

**Population pyramids** are simply graphs that show the amount of males and females living in a country at differing age groups.

As a country becomes more developed it will change shape from a wide Aztec pyramid shape to a tall skyscraper shape.

A wide base means a high **Birth Rate** and a low height means a low life expectancy.

Deep steps in at the side show a high **death rate**.



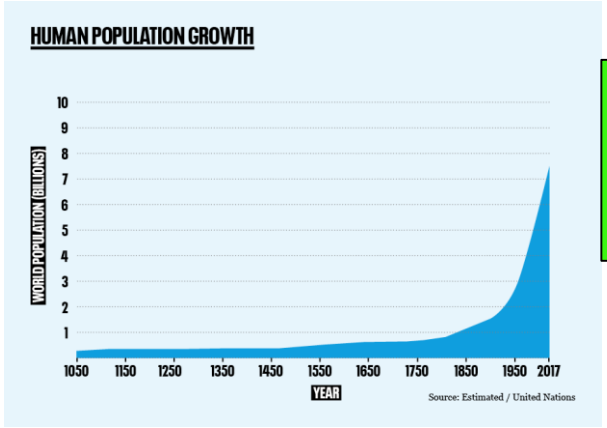

Some countries have run population control policies to try to either reduce their totals or in some cases actually increase them. China is the most famous for doing this with **a 1 Child policy**, which has now been relaxed. India also carried out population control aimed at reducing its total.

India and China contain the world's largest populations, with both countries around 1.3 billion people.
Controlling population growth sounds simple but can have both positive and negative results.

List 3 reasons why life might be better if there were less people on planet Earth

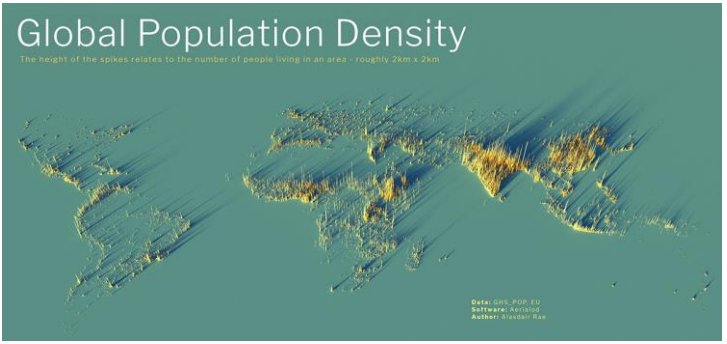
CHALLENGE - Can you suggest ways that a country could stop its population from getting too large without being too forceful?

World population has risen to well over 7.5 billion and will soon reach 8 billion. The growth rate is currently rapid.
Not everywhere in the world is rising rapidly and much of the most rapid growth rate is occurring in developing and emerging countries (poorer countries). This will present challenges for **resources** like food, water and space.




Can you use data in your answer to describe the rapid rise of world population?

CHALLENGE EXPLAIN why poorer countries are growing more quickly than richer countries




Global population is not spread evenly across the planet. Some areas have attracted more people than others.

Areas with more people are known as '**densely populated**' and those with few as '**sparsely populated'.**

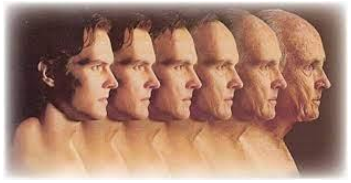
Areas with dense populations often have a number of **human and physical factors** that attract people to live there.

Physical factors include things like mountain ranges or swamps or frozen soils that make some areas **uninhabitable**.

Can you name densely populated areas of the world?

CHALLENGE – What human and physical factors explain the UK **population density map**?

The global population is not only increasing due to more people being born. As countries become more developed which most are over time, people tend to live longer then previous generations. This can put added pressures on resources like **pensions** but can also provide benefits to countries.



List 5 problems that ageing may cause to an individual or their family.

CHALLENGE – Suggest ways that ageing populations can be managed

World population has always been moving around. The most common type of movement or migration is from countryside areas to towns and cities. This is called '**Urbanisation**'.

People are sometimes forced to move e.g. fleeing genocide (known as **push factors**) or sometimes people choose to move e.g. better pay (**pull factors**).

Movements of people can have positive and negative effects on regions or countries.

Young people (in poorer countries these are young children) are the most common type to move.

**Immigrants** are people arriving, **emigrants** are people leaving.


Give reasons why people might want to enter the UK.

CHALLENGE – Suggest reasons why migration can provoke strong opinions.

# German

## Module 1: Ich Liebe Ferien (I Love Holidays)

In this Module you will learn how to:

Compare places, then and now

Describe activities in the past using, hatte es gab and war.

Talking about what you did in the past using the perfect tense.

Talk about how you travelled on holiday using 'sein.'

Talking about the weather, comparing the past and present.

# German

## Früher und heute • Then and today

| | |
|---|---|
| Die Stadt ist/war ... | *The town is/was ...* |
| alt/modern | *old/modern* |
| klein/groß | *small/big* |
| schön/industriell | *beautiful/industrial* |
| historisch/touristisch | *historic/touristy* |
| laut/ruhig | *noisy/quiet* |
| Die Stadt hat/hatte ... | *The town has/had ...* |
| Es gibt/gab ... | *There is/was ...* |
| einen Strand | *a beach* |
| einen Marktplatz | *a town square* |
| einen Olympiapark | *an Olympic park* |
| einen Hafen | *a harbour* |
| eine Arena | *an arena* |
| eine Skatehalle | *a skate hall* |
| ein Einkaufszentrum | *a shopping centre* |
| ein Stadion | *a stadium* |

| | |
|---|---|
| Innsbruck ist/war ... | historisch<br>touristisch<br>alt<br>modern<br>klein<br>groß<br>laut<br>ruhig<br>schön<br>industriell |
| Innsbruck hat/hatte ...<br>Es gibt/gab ... | einen Marktplatz<br>einen Strand<br>eine Arena<br>eine Skatehalle<br>ein Einkaufszentrum<br>ein Olympiastadion |

Read the Strategy Box about using war and hatte (was and had) wth adjectives to describe a place.

Keep practising your German vocabulary on www.quizlet.com

- *Either*:

click on this link: Quizlet Gute Reise

*Or*: use your class code.

Practise your vocab using the link below:

Textivate Ich Liebe Ferien

# German

**Was hast du gemacht?**
• What did you do?

| | |
|---|---|
| Ich habe viele Sachen gemacht. | *I did a lot of things.* |
| Ich habe/Wir haben ... | *I/We ...* |
| Musik gehört. | *listened to music.* |
| Volleyball gespielt. | *played volleyball.* |
| einen Bootsausflug gemacht. | *did a boat trip.* |
| viele Souvenirs gekauft. | *bought lots of souvenirs.* |
| viel Fisch gegessen. | *ate lots of fish.* |
| die Kirche gesehen. | *saw the church.* |
| ein Buch gelesen. | *read a book.* |
| Ich bin zu Hause geblieben. | *I stayed at home.* |

**Wohin bist du gefahren?**
• Where did you travel to?

| | |
|---|---|
| Ich bin ... gefahren. | *I travelled ...* |
| nach Deutschland | *to Germany* |
| nach Wien | *to Vienna* |

**Wie bist du gefahren?**
• How did you travel?

| | |
|---|---|
| Ich bin ... gefahren. | *I travelled ...* |
| mit dem Auto | *by car* |
| mit dem Reisebus | *by coach* |
| mit dem Schiff | *by boat* |
| Ich bin geflogen. | *I flew.* |
| Ich bin zu Fuß gegangen. | *I walked.* |

**Mit wem bist du gefahren?**
• Who did you travel with?

| | |
|---|---|
| Ich bin ... gefahren. | *I travelled ...* |
| mit meiner Familie | *with my family* |
| mit Freunden | *with friends* |

**Wo hast du gewohnt?**
• Where did you stay?

| | |
|---|---|
| Ich habe ... gewohnt. | *I stayed ...* |
| in einem Hotel | *in a hotel* |
| in einem Ferienhaus | *in a holiday house* |
| in einem Wohnwagen | *in a caravan* |
| in einer Jugendherberge | *in a youth hostel* |
| auf einem Campingplatz | *on a campsite* |
| bei Freunden | *with friends* |

**Was hast du noch gemacht?**
• What else did you do?

| | |
|---|---|
| Ich bin ... gegangen. | *I went ...* |
| an den Strand | *to the beach* |
| in die Stadt | *into town* |
| windsurfen | *windsurfing* |
| kitesurfen | *kite surfing* |
| schwimmen | *swimming* |
| Ich bin ... gefahren. | *I went ...* |
| Wakeboard | *wakeboarding* |
| Snowboard | *snowboarding* |
| Ski | *skiing* |
| Banane | *banana boating* |
| Ich habe Snowtubing gemacht. | *I went snowtubing.* |
| Ich habe Eistennis gespielt. | *I played ice tennis.* |

**Grammatik** Page 23

When you refer to others, the pronoun and part of ***sein*** change.
You have learned ***sein*** (to be) already.

| | |
|---|---|
| *ich bin* | ***ge**fahr**en** (drove/ travelled/went)* |
| *du bist* | |
| *er/sie/es ist* | |
| *wir sind* | |
| *ihr seid* | |
| *Sie sind* | |
| *sie sind* | |

Use this verb box to make sentences.

www.textivate.com
Username: openacademy
Password: first name initial and surname and 800
Go to 'my resources' to find your work.
Or go directly to the link and complete the sequence on The Perfect Tense paragraph; Textivate;Perfect Tense Paragraph

## Strategie 1

### Partnerarbeit

Two heads are often better than one when it comes to learning vocabulary. Working with someone else helps you to concentrate for longer and makes learning fun. Here are some activities to try with a partner:

- Play word association. Your partner says a word from Chapter 1 and you say a word that is related to it in some way. Be prepared to justify your thinking!
  - *Winter*
  - *Es schneit.*
- Play hangman or pictionary with the words from these ***Wörter*** pages.

Try doing this with a friend or sibling at home

## Wie ist/war das Wetter?

• How is/was the weather?

| | |
|---|---|
| Es ist/war ... | *It is/was ...* |
| sonnig | *sunny* |
| kalt | *cold* |
| heiß | *hot* |
| wolkig | *cloudy* |
| windig | *windy* |
| neblig | *foggy* |
| Es regnet. | *It is raining./It rains.* |
| Es schneit. | *It is snowing./It snows.* |
| Es donnert und blitzt. | *There is thunder and lightning.* |

Practise your vocab using Quizlet Quizlet;Weather

# Year 9 History: Democracy, dictatorships and the causes of the Second World War

| Key words | |
|---|---|
| **Democracy** | A political system in which the public can vote in free elections and have freedom expression and religion |
| **Dictatorship** | A political system in which one Party or person rules the country, with no elections or freedom of expression |
| **Cause** | An event that leads to another event |
| **Consequence** | An event or an impact that happens as a result of a cause |
| **Diversity** | Differences between people, places or events |
| **Second World War** | A war that took place on several continents between 1939 and 1945 |
| **Nazi Party** | Shortened name for the National Socialist German Workers Party, a far-right Party who ruled Germany between 1933 and 1945, led by Adolf Hitler |
| **Soviet Union** | Also known as the USSR, a collection of communist countries in eastern Europe, including Russia |
| **Communism** | A political system in which everything is shared equally among people and everyone has equal rights |

| Terms of the Treaty of Versailles | Detail |
|---|---|
| **Blame** | **Germany had to accept full responsibility for starting the war, even though they hadn't!** |
| **Reparations** | **Germany had to pay £6.6 billion to repair the damage of the war** |
| **Army** | **The German army was reduced to 100,000 men, no submarines, no airforce and only 6 ships. The Rhineland was also de-militarised** |
| **Territories** | **Germany gave up many areas of land, such as Alsace-Lorraine, the Sudetenland and the Polish corridor** |

After the First World War, the leaders of Britain, France and the USA forced Germany to sign the **Treaty of Versailles.** The terms of this Treaty can be remembered using the word BRAT (see above)

As a result of the Reparations payments, the German economy collapsed and led to **hyperinflation in 1923.** This meant that they value of money decreased rapidly.

Although Germany recovered after 1923, the **Wall Street Crash** in 1929 led to further economic collapse in Germany. Many people turned to extreme political Parties like the Nazis and the Communists.

1919: Treaty of Versailles

1920: League of Nations formed

1923: Hyperinflation

1929: Wall Street Crash

1933: Adolf Hitler becomes Chancellor of Germany

1938: Germany marches into Austria; Munich Agreement signed

1939: Nazi-Soviet pact formed, Germany invades Czechoslovakia and Poland, WWII begins

**The actions of Adolf Hitler**

When Hitler became dictator of Germany in 1933, he began on his plans to rebuild Germany as a military power. He rebuilt the German army and then used it to march into Austria, invade Czechoslovakia and eventually Poland in September 1939.

**The Treaty of Versailles**

Although it was meant to prevent war, the harsh terms of the Treaty of Versailles actually led to a lot of anger in Germany, which helped Parties like the Nazi Party gain support. Hitler promised to end the Treaty of Versailles and take back German territories. This is exactly what he did!

What were the causes of WWII?

**The Nazi-Soviet Pact**

Despite being enemies, Nazi Germany and the Soviet Union made an agreement in August 1939 that neither would attack each other, at least for now. They also agreed to divide up Poland between them.

**Appeasement and the Munich Agreement**

In an attempt to avoid another war, British Prime Minister Neville Chamberlain made an agreement with Germany in September 1938 that Britain and Germany would not go to war with each other. The agreement also allowed Germany to take back territories in Czechoslovakia without Britain interfering.

**The failure of the League of Nations**

The League of Nations, set up at the end of the First World War, was to keep the peace between nations by solving issues by negotiation rather than war. They also wanted **disarmament** to occur around the world. However, the League did not enforce its ideas.

## Vocabulary to learn

Savagery
Dictatorship
Civilisation
Democracy
Rationalism
Incarnation
Predicament
Tension
Aggression
Idealise


*Lord of the Flies* explores the dark side of humanity, the savagery that underlies even the most civilized human beings.

**Structure analysis checklist:**

- 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

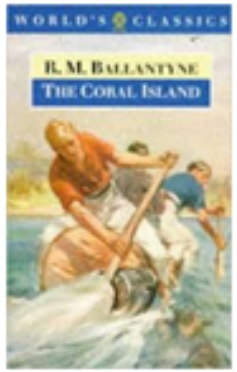
Evaluate

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

**Methods**

- **Linguistic devices** – *simile, metaphor, personification, repetition, rhetorical question etc.*
- **Word choices** – *nouns, adjectives, verbs, adverbs etc.*
- **Sentence forms** – *fragment, simple, compound, complex*

You might also like:




| Descriptor from GCSE assessment criteria |
|---|
| Level 4: simple vocabulary<br>Bad Good Light Happy |
| Level 5: effective vocabulary<br>Negative Positive Bright Jolly |
| Level 6: sophisticated vocabulary<br>Awful Fantastic Brilliant Ecstatic |
| Levels 7-9: ambitious vocabulary<br>Immoral Virtuous Dazzling Elated |

**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

Why study English?
https://www.prospects.ac.uk/careers-advice/what-can-i-do-with-my-degree/english

## Vocabulary to learn

Pathetic fallacy
Genre
Gothic
Gothicism
Adaptation
Protagonist
Connotation
Unnatural
Imagery
Suspense
Tension
Ominous
Atmosphere
Foreboding

**Structure analysis checklist:**

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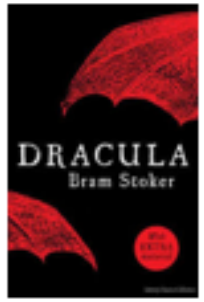
| Levels 7-9: ambitious vocabulary<br>Immoral Virtuous Dazzling Elated |

## Suggested Reading



**Literary devices and word class**

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# YEAR 9 - KNOWLEDGE ORGANISER 1

## FRANTIC ASSEMBLY

Frantic Assembly are contemporary theatre practitioners who uses physical theatre to tell stories.

Physical theatre shows that you don't have to use words to express ideas. It uses techniques such as movement, mime, gesture and dance and can be used to explore complex social and cultural issues.

Frantic assembly devise using a serious of 'building blocks' to create complex work.

- Chair duets
- Hymn hands
- Round – by – through

All the movement is built up slowly using the idea of action/reaction. Working this way the story becomes secondary to the movement.

## STAGE COMBAT

Stage combat is fighting on stage. It is used by performers to keep themselves, and other safe, whilst performing fight choreography to an audience.

Things to consider:

- The victim is in control – this way they can end the process whenever they want to and stay safe.
- Distance – make sure you work a safe distance from each other (and objects) and use 'masking' techniques to hide the distance from the audience.
- Communication – talk to your partner. Plan what visual or sound cues you are using.
- Reactions are key! How you respond is vital for a believable performance.

# YEAR 10 – SIMILARITY...

@whisto_maths

# Congruence, similarity & enlargement

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

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

- Enlarge by a positive scale factor
- Enlarge by a fractional scale factor
- Identify similar shapes
- Work out missing sides and angles in similar shapes
- Use parallel lines to find missing angles
- Understand similarity and congruence

## Keywords

**Enlarge**: to make a shape bigger (or smaller) by a given multiplier (scale factor)
**Scale Factor**: the multiplier of enlargement
**Centre of enlargement**: the point the shape is enlarged from
**Similar**: when one shape can become another with a reflection, rotation, enlargement or translation
**Congruent**: the same size and shape
**Corresponding**: items that appear in the same place in two similar situations
**Parallel**: straight lines that never meet (equal gradients)

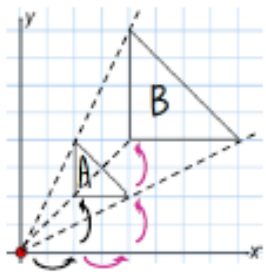
## Positive scale factors (R)

Enlargement from a point

Enlarge shape A by SF 2 from (0,0)

The shape is enlarged by 2

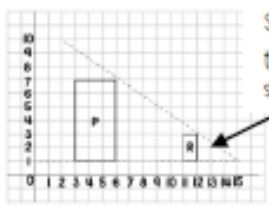
The distance from the point enlarges by 2




## Fractional scale factors (R)

Fractions less than 1 make a shape SMALLER

R is an enlargement of P by a scale factor $\frac{1}{3}$ from centre of enlargement (15,1)




SF $\frac{1}{3}$ - R is three times smaller than P

## Identify similar shapes

Angles in similar shapes do not change.
e.g. if a triangle gets bigger the angles can not go above 180°

Similar shapes


Scale Factor:
Both sides on the bigger shape are 1.5 times bigger

Compare sides: 6 : 9 = 2 : 3 | 8 : 12 = 2 : 3

Both sets of sides are in the same ratio

## Information in similar shapes


Compare the equivalent side on both shapes

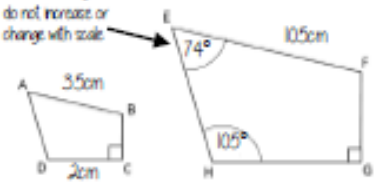
Scale Factor is the multiplicative relationship between the two lengths

Shape ABCD and EFGH are similar

Notation helps us find the corresponding sides

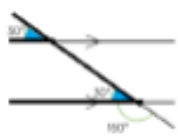
AB and EF are corresponding

Remember angles do not increase or change with scale



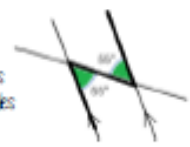

## Angles in parallel lines (R)

**Alternate angles**



Because alternate angles are equal the highlighted angles are the same size

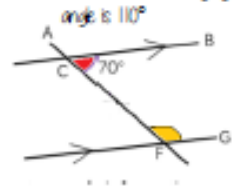
**Corresponding angles**



Because corresponding angles are equal the highlighted angles are the same size

**Co-interior angles**

Because co-interior angles have a sum of 180° the highlighted angle is 110°




As angles on a line add up to 180° co-interior angles can also be calculated from applying alternate/ corresponding rules first

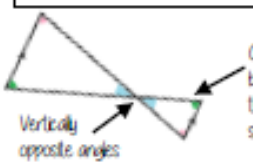
## Similar triangles

Shares a vertex

Because corresponding angles are equal the highlighted angles are the same size

Parallel lines – all angles will be the same in both triangle

As all angles are the same this is similar – it only one pair of sides are needed to show equality

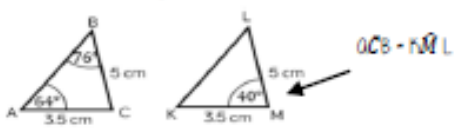


All the angles in both triangles are the same and so similar

Vertically opposite angles

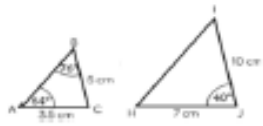
## Congruence and Similarity

Congruent shapes are identical – all corresponding sides and angles are the same size




ΔABC ≡ ΔKLM

Because all the angles are the same and AC=KM BC=LM triangles ABC and KLM are congruent




Because all angles are the same, but all sides are enlarged by 2 ABC and HIJ are similar

## Conditions for congruent triangles

Triangles are congruent if they satisfy any of the following conditions

**Side-side-side**

All three sides on the triangle are the same size

**Angle-side-angle**

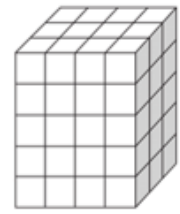
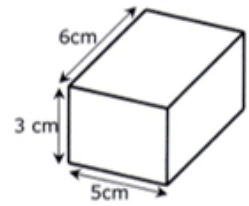
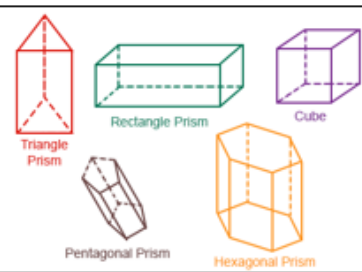
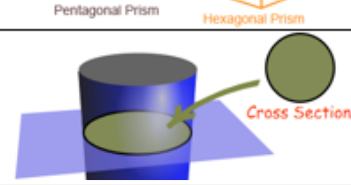
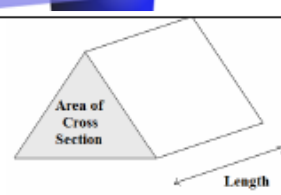
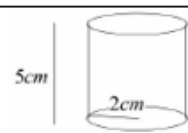
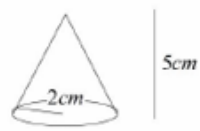
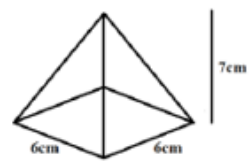
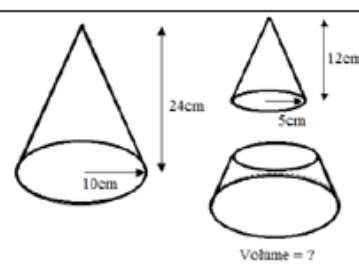
Two angles and the side connecting them are equal in two triangles

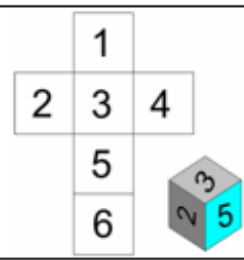
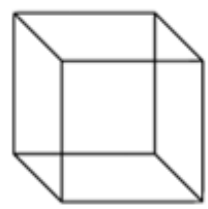
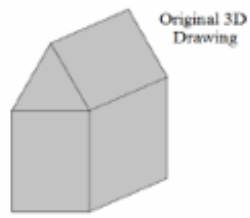
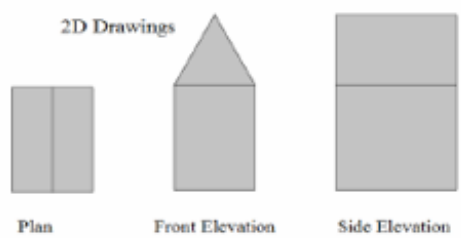
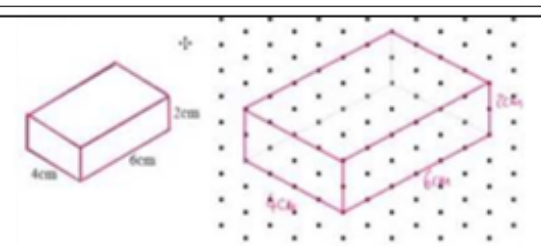
**Side-angle-side**

Two sides and the angle in-between them are equal in two triangles (it will also mean the third side is the same size on both shapes)

**Right angle-hypotenuse-side**

The triangles both have a right angle, the hypotenuse and one side are the same

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 1. Volume | Volume is a measure of the amount of space inside a solid shape.<br><br>Units: $mm^3, cm^3, m^3$ etc. |  |
| 2. Volume of a Cube/Cuboid | $\boldsymbol{V = Length \times Width \times Height}$<br>$\boldsymbol{V = L \times W \times H}$<br><br>You can also use the Volume of a Prism formula for a cube/cuboid. |  <br>volume = 6 x 5 x 3<br>= 90 $cm^3$ |
| 3. Prism | A prism is a 3D shape whose **cross section is the same** throughout. |  |
| 4. Cross Section | The **cross section** is the **shape** that **continues** all the way **through the prism**. |  |
| 5. Volume of a Prism | $\boldsymbol{V = Area\ of\ Cross\ Section \times Length}$<br>$\boldsymbol{V = A \times L}$ |  |
| 6. Volume of a Cylinder | $\boldsymbol{V = \pi r^2 h}$ |  <br>$V = \pi(4)(5)$<br>$= 62.8cm^3$ |
| 7. Volume of a Cone | $\boldsymbol{V = \frac{1}{3}\pi r^2 h}$ |  <br>$V = \frac{1}{3}\pi(4)(5)$<br>$= 20.9cm^3$ |
| 8. Volume of a Pyramid | $\boldsymbol{Volume = \frac{1}{3}Bh}$<br>where B = area of the base |  <br>$V = \frac{1}{3} \times 6 \times 6 \times 7 = 84cm^3$ |
| 9. Volume of a Sphere | $\boldsymbol{V = \frac{4}{3}\pi r^3}$<br><br>Look out for hemispheres – just halve the volume of a sphere. | Find the volume of a sphere with diameter 10cm.<br><br>$V = \frac{4}{3}\pi(5)^3 = \frac{500\pi}{3} cm^3$ |
| 10. Frustums | A frustum is a solid (usually a cone or pyramid) with the **top removed**.<br><br>Find the volume of the whole shape, then take away the volume of the small cone/pyramid removed at the top. |  <br>$V = \frac{1}{3}\pi(10)^2(24) - \frac{1}{3}\pi(5)^2(12)$<br>$= 700\pi cm^3$ |

| Topic/Skill | Definition/Tips | Example |
|---|---|---|
| 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.  |
| 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** |     |
| 4. Isometric Drawing | A method for visually **representing 3D objects in 2D**. |   |

# Year 9 RS: What is meant by sacredness?

| Key words | |
|---|---|
| **Sacred** | Connected with God or religion. Something that is holy or spiritual. |
| **Shrine** | A place or building that is holy and associated with religion. |
| **Worship** | To show devotion to God through actions and service e.g.: prayer |
| **Disciples** | A person who follows and learns from someone else. |
| **Pilgrimage** | A religious or holy journey. |
| **Pilgrim** | A person who performs a journey which has religious significance. |
| **Blessings** | Something said or done which shows the appreciation of God. |

**In every religion there are special places to which people travel; usually because something important happened there. These journeys are called pilgrimages. There are many reasons why people go on pilgrimages: To renew their faith – or their belief in their God. To feel part of a larger group or family. It is commanded in the scriptures or holy writings. To bring something back (an actual souvenir, or something spiritual).** Going on a pilgrimage with your fellow men and women belonging to a single religious group, reaffirms a sense of belonging in a person. Performing the different religious rites in this long and sacred journey alongside these people also breed a sense of harmony, unity, and care for one and another. One of the most important reasons for going on pilgrimage tours and seeing the places of spiritual importance is to meet other saintly people who follow a spiritual path and see how they live.

## The Shrine of Our Lady–Walsingham

Pilgrimage is very important in some religious traditions. Christians believe pilgrimage can help them develop spiritually and bring them closer to God.

Pilgrims have been visiting Walsingham in Norfolk for many centuries. Walsingham is important for Christian pilgrims because an important vision about Mary, the mother of Jesus Christ, took place here.

Many Christians believe that Richeldis de Faverches, a Saxon noblewoman, lived here and had a vision in the year 1061. In this vision, Richeldis believed that she was taken by Mary, the mother of Jesus, to her home in Nazareth.

In this house in Nazareth, it is believed that the Angel Gabriel promised Mary that she would give birth to a son, Jesus. Richeldis was then asked in this vision by Mary to build an exact copy of this house in Walsingham. This is why Walsingham is often called the Nazareth of England.

Today, this copy of Mary's home in Nazareth is called the **Holy House** and is found in the Anglican Shrine or the Parish Church of Saint Mary. A statue of **Our Lady of Walsingham** is also positioned above the altar in this church.

Some Roman Catholics walk barefoot over the last mile from the Slipper Chapel to the Holy House as an act of penance. There are daily services where pilgrims pray together, especially saying the rosary, celebrating mass and receiving blessings.

Every year, on spring bank holiday, there is a national pilgrimage. Pilgrims process from the ruined priory through to the shrine. They also take part in a daily service called the **Sprinkling of the Well** as they believe that the water of the church well has qualities that can bring individual blessings. Christians born and raised in England may choose to go on a local pilgrimage. This is important as many cannot afford or are not able to make the journey to Jerusalem, Bethlehem or Nazareth.

## Western Wall

Going on pilgrimage is a sacred duty for many faiths. Jerusalem is a traditional place of pilgrimage for Jewish people.

The Western wall is the most important sight for Jewish prayer and pilgrimage.

The Western Wall, or the Kotel, is thought to be the only remaining part of the **Second Temple**. The wall is not from the Temple itself, but what remains of the wall that would have surrounded the Temple. Jewish people still visit Jerusalem today as the focal point of their religion and face towards it when they pray as a sign of its importance. In fact, synagogues are traditionally orientated towards Jerusalem and Jews position themselves towards Jerusalem while reciting the Amidah. At the end of every Passover Seder celebration, Jewish people raise their glass in the hope that they will celebrate the festival 'next year in Jerusalem'. Visiting The Western Wall is a reminder to Jewish people of their history, but also gives them a link with the holiest site, the Temple. It is the closest Jewish people can get to the presence of God. Also, as the Western Wall has not been destroyed, it is a symbol of hope to the Jewish people that they too will last forever. Some Jews believe that a third Temple will be built when the Messiah comes in the future. There are many rituals that take place at the Western Wall. People write prayers on small pieces of paper and push them in between the cracks of the wall. As Jews believe that the wall is a symbol of God's presence, many believe that God can actually see what has been written.

## The Ganges

Going on pilgrimage is a sacred duty for many faiths. Many pilgrimage sites are situated near to the River Ganges and reflect how important it is to Hindus.

The River Ganges is important in its own right. Some Hindus believe that it flowed from heaven to purify humans. Sometimes the river is represented in female form because many Hindus refer to it as 'mother Gangaa' or 'she'. There are various locations along the River Ganges which can attract millions of pilgrims. Many Hindus believe water (known as 'Gangaa jal') from anywhere on the River Ganges is purifying and holy.

**Kumbh Mela**

The 55-day **Kumbh Mela** takes place every 12 years at the union of the rivers **Ganges**, **Yamuna** and the **Saraswati**, which is no longer visible. The most recent Kumbh Mela took place in 2013 and 120 million pilgrims attended.

People enter the Ganges in order to purify themselves. Many pilgrims also take home small containers of water from there to give to friends and family who are not able to attend.

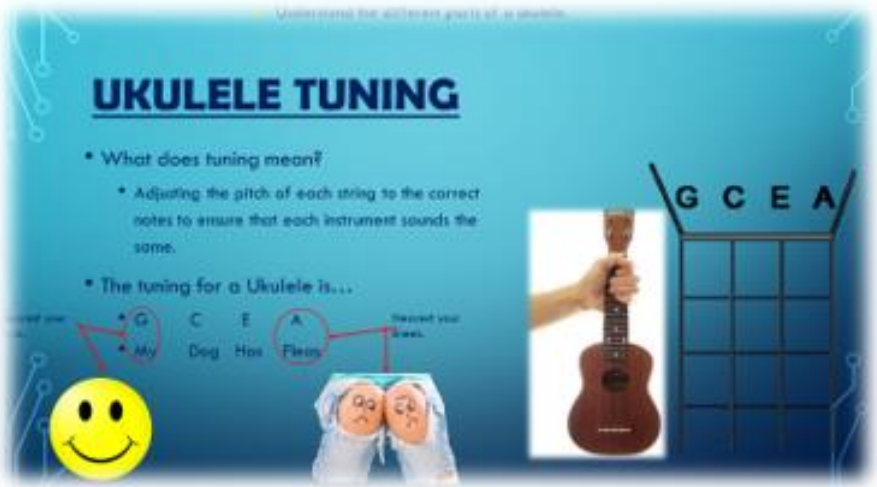
Some Hind.us visit the **Gangotri Temple** in the Himalayas. It is situated near the source of the River Ganges, where the water is believed to be purest.

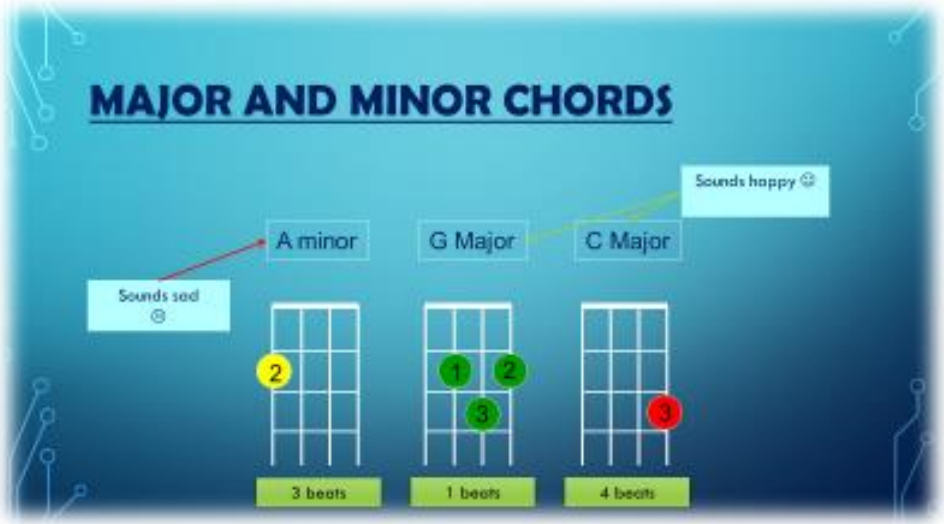
Many pilgrimage sites are situated near to the River Ganges and reflect how important it is to Hindus. Many stories in scripture feature the river. The very popular avatar of Lord Vishnu as Krishna is believed to have lived at **Gokul**, on the Yamuna River, another place of pilgrimage for some Hindus. The young Lord Ganesh is also shown having adventures in and around the river.

The Ganges River is a 1569-mile-long river flowing across India and Bangladesh into the Bay of Bengal. The Ganges River begins in the Himalayas' Gangotri Glacier and by the time it reaches its mouth it is the world's third largest river by discharge. In Hinduism the Ganges River is the most sacred river, and is worshipped as the Goddess Ganga. The Ganges River drains an area of 416,990 square miles, and by 2007 it was the 5th most polluted river in the world. This pollution is greatly attributed to industrial and human waste, which is not only dangerous to the humans who consume it as drinking water, but to the survival of many species that live in its water.

# Year 9 Autumn Term Knowledge Organiser





# World Music

## Samba Music

- Originates from Brazil and is often played at carnivals and festivals
- Can have up to 2000 people in a band, all playing percussion instruments whilst marching to stay in time
- Uses polyrhythms and a fast tempo

## American Music

- Often referred to as Country and Western Music, it relies heavily on guitars and drums
- Often patriotic, religious and deals with adult content
- Repetitive and easy chords but with strong melodies and lyrics

## Chinese Music

- The most recognisable feature of Chinese music is the use of the pentatonic scale, which uses all the black keys on a western keyboard.
- It usually uses flutes, stringed instruments, cymbals and gongs
- The music is soothing, played at a rubato tempo and is meant to reflect nature

## Bhangra Music

- Bhangra is a fusion of traditional Indian Raga music and British influences.
- It developed in the underground party scene of Indian and Pakistani immgrants who had moved to the UK in the 1970/80's
- It uses music technology and traditional singing styles and raga scales

## Modern British Music

- Famous British artists and bands include The Beatles, Oasis, Rolling Stones, Queen, Elton John and Coldplay
- Grunge, grime, dubstep, punk, soft rock are all subgenres of British music
- Often have eccentric personalities and unique singing styles

## Reggae Music

- Originates from Jamaica in the 1960's
- Uses syncopation (off-beat) and a rock-steady tempo
- Bob Marley was the King of Reggae music and made it famous worldwide
- Uses instruments such as drums, guitars, keyboards and trumpets

# Songwriting

1) Decide on the structure on your song using introductions, verses, choruses and bridges
2) Choose your chord progression for each section
3) Add a single melody line to each section using improvisation before settling on a repeating pattern that can be altered slightly in pitch or reversed to add contrast and interest
4) Add harmony using appropriate intervals
5) Add lyrics
6) Finally, choose which instruments to use in your arrangement

**Common Chord Progressions**

**Major Keys: C, D, F, G & A**

| I | IV | V |
|---|---|---|
| C | F | G |
| D | G | A |
| F | Bb | C |
| G | C | D |
| A | D | E |

| I | vi | IV | V |
|---|---|---|---|
| C | Am | F | G |
| D | Bm | G | A |
| F | Dm | Bb | C |
| G | Em | C | D |
| A | F#m | D | E |

| ii | V | I |
|---|---|---|
| Dm7 | G7 | Cmaj7 |
| Em7 | A7 | Dmaj7 |
| Gm7 | C7 | Fmaj7 |
| Am7 | D7 | Gmaj7 |
| Bm7 | E7 | Amaj7 |

| I | vi | ii | V |
|---|---|---|---|
| C | Am | Dm | G |
| D | Bm | Em | A |
| F | Dm | Gm | C |
| G | Em | Am | D |
| A | F#m | Bm | E |

| I | V | vi | IV |
|---|---|---|---|
| C | G | Am | F |
| D | A | Bm | G |
| F | C | Dm | Bb |
| G | D | Em | C |
| A | E | F#m | D |

| I | IV | vi | V |
|---|---|---|---|
| C | F | Am | G |
| D | G | Bm | A |
| F | Bb | Dm | C |
| G | C | Em | D |
| A | D | F#m | E |

| I | iii | IV | V |
|---|---|---|---|
| C | Em | F | G |
| D | F#m | G | A |
| F | Am | Bb | C |
| G | Bm | C | D |
| A | C#m | D | E |

| I | IV | I | V |
|---|---|---|---|
| C | F | C | G |
| D | G | D | A |
| F | Bb | F | C |
| G | C | G | D |
| A | D | A | E |

| I | IV | ii | V |
|---|---|---|---|
| C | F | Dm | G |
| D | G | Em | A |
| F | Bb | Gm | C |
| G | C | Am | D |
| A | D | Bm | E |

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