
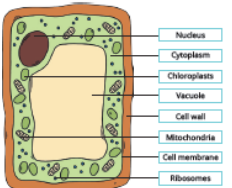
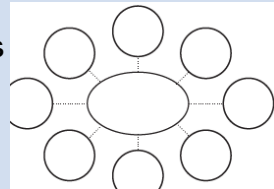






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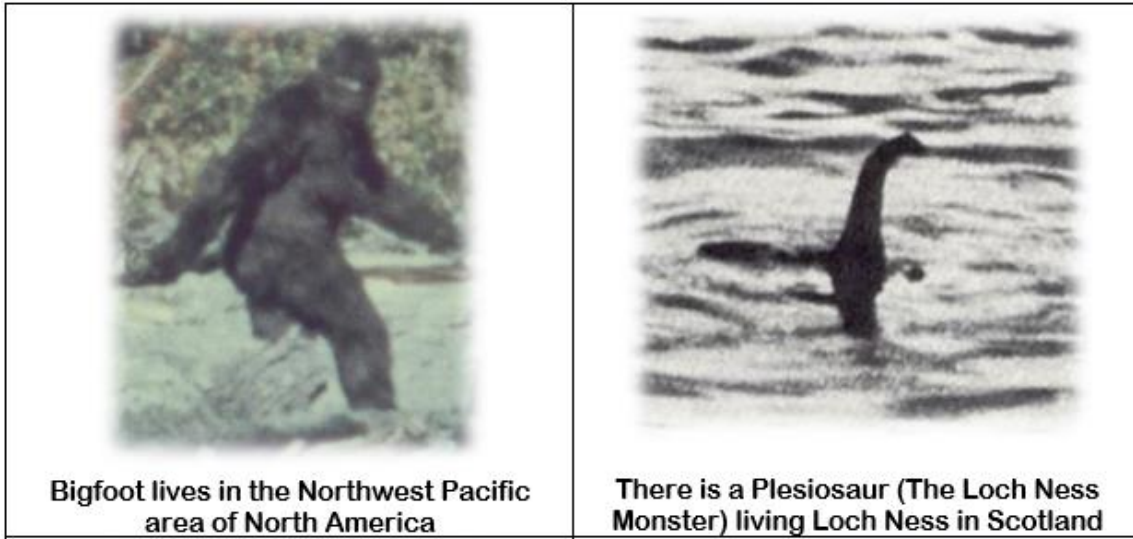
Just reading through your books or a knowledge organiser is not always an effective way to revise. Instead, you should do something with the information. Choose an example of the revision methods on the pages or see if you can come up with another method.

Subject	Page Number	Subject	Page Number
Multidisciplinary Lesson	3	Geography	40
Art	4	Spanish	42
DT	9	History	45
Food	10	English	47
Recipes	16	Maths	52
PE	19	RE	54
Science	22	Music	56
Computer Science	39	A range of bonus ideas to prevent boredom	59

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>

## What is a conspiracy theory?

Some people believe in things that other people do not. Here are a couple of examples for which there is little evidence.



However, some people then believe that other people are covering it all up. This can lead to some surprising places.

**Activity 1:** If there was Bigfoot or a Plesiosaur as shown above then how difficult would it be to keep it a secret? Look up how big Loch Ness is and how many people visit it every year.

**Activity 2:** Think about these questions / discuss them in a video chat with friends: What happens to you when you believe that the entire sections of society are keeping secrets? How could all scientists or the entire government keep a secret? How difficult would it be for 1000s of people to keep a secret? Why do film makers like conspiracy theories for their movies?

**Activity 3:** Listen to this radio programme. It is available on BBC Sounds. <https://www.bbc.co.uk/sounds/play/m000dfqn>

How many conspiracy theories are mentioned? Which ones have you heard about?

**Activity 4:** Mr Ford once, for a joke spread the rumour that the canteen at his college was serving Weetabix that were so cheap, the box they came in had more nutritional value as at least it contained roughage in the cardboard box. he got into a lot of trouble and had to write an apology to be displayed at the college canteen till. Write a letter for Mr Ford, to try to explain that he now understands how serious disinformation can be, highlighting what might have gone wrong.

**Activity 5:** Craft a conspiracy theory about Mr Ford. Email him with it. How would you get people to believe it? How far could you stretch it? How could you stop it once people started believing it – even if it was you who made it up?

For those of you with access to Disney watch Lion Guard “Beware of the Zimwi” episode. How can belief cause panic?

**Activity 6:** Find out how anti-vaccination conspiracy theory has killed people.

<https://www.iflscience.com/health-and-medicine/one-map-sums-damage-caused-anti-vaccination-movement/>

**Activity 7:** Challenge activity. Research one of the more popular myths and present a clear and referenced case to debunk it.

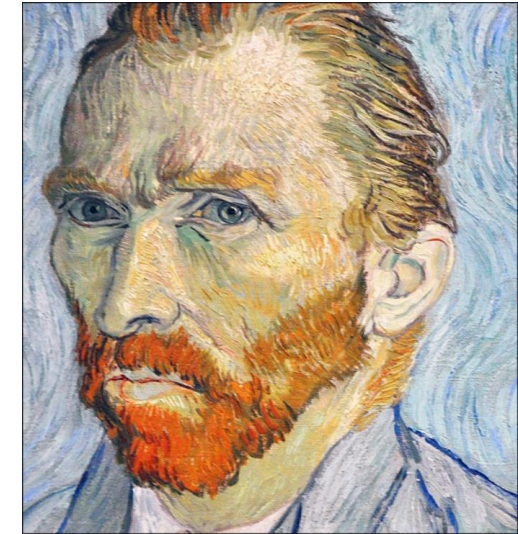
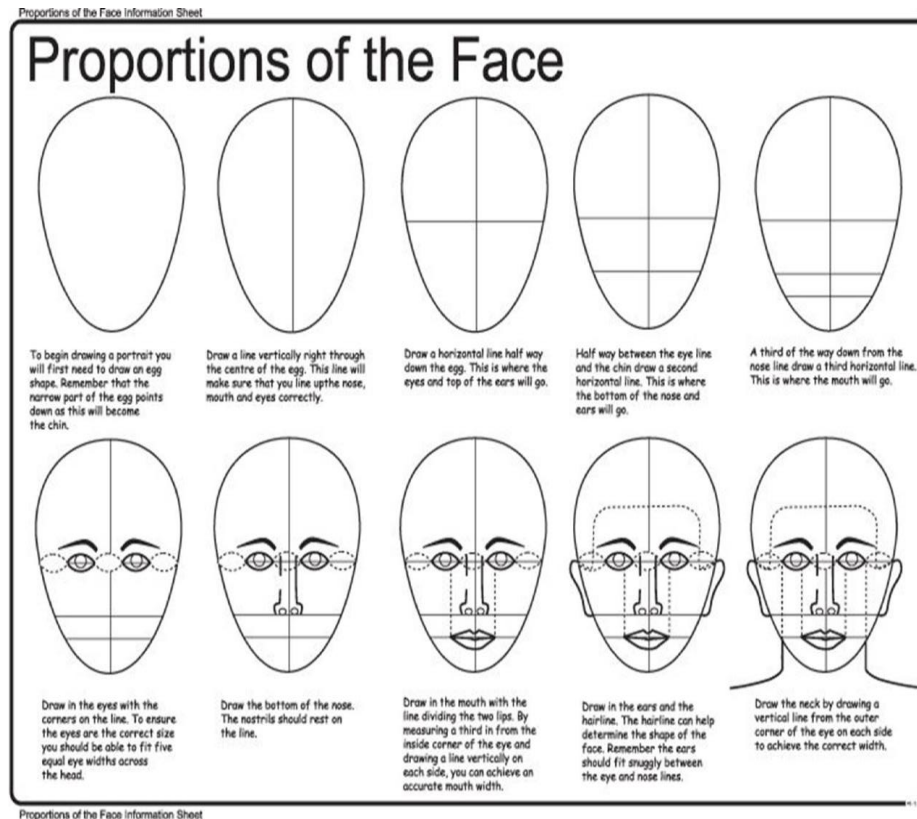
<https://www.osce.org/odihr/441101?download=true>

## Overview:

To create a self-portrait that has both realistic and stylised elements.

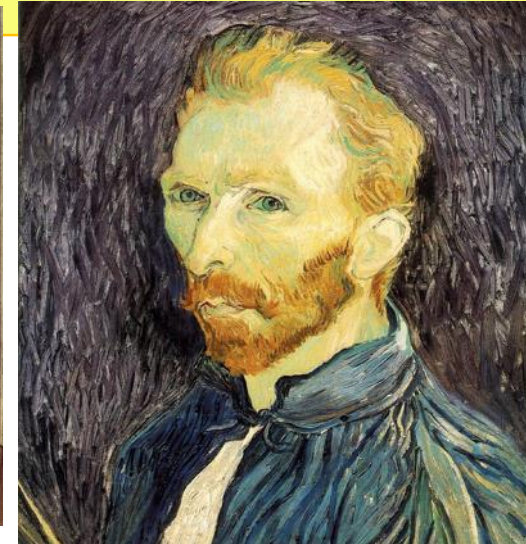
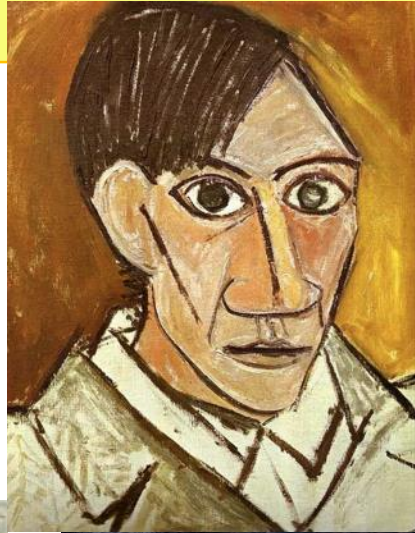
To demonstrate the portraiture and mixed media skills you have learned so far this year in Art.

This diagram shows the rough proportions of the human face. You will learn about this and how to draw facial features like the Eyes below:





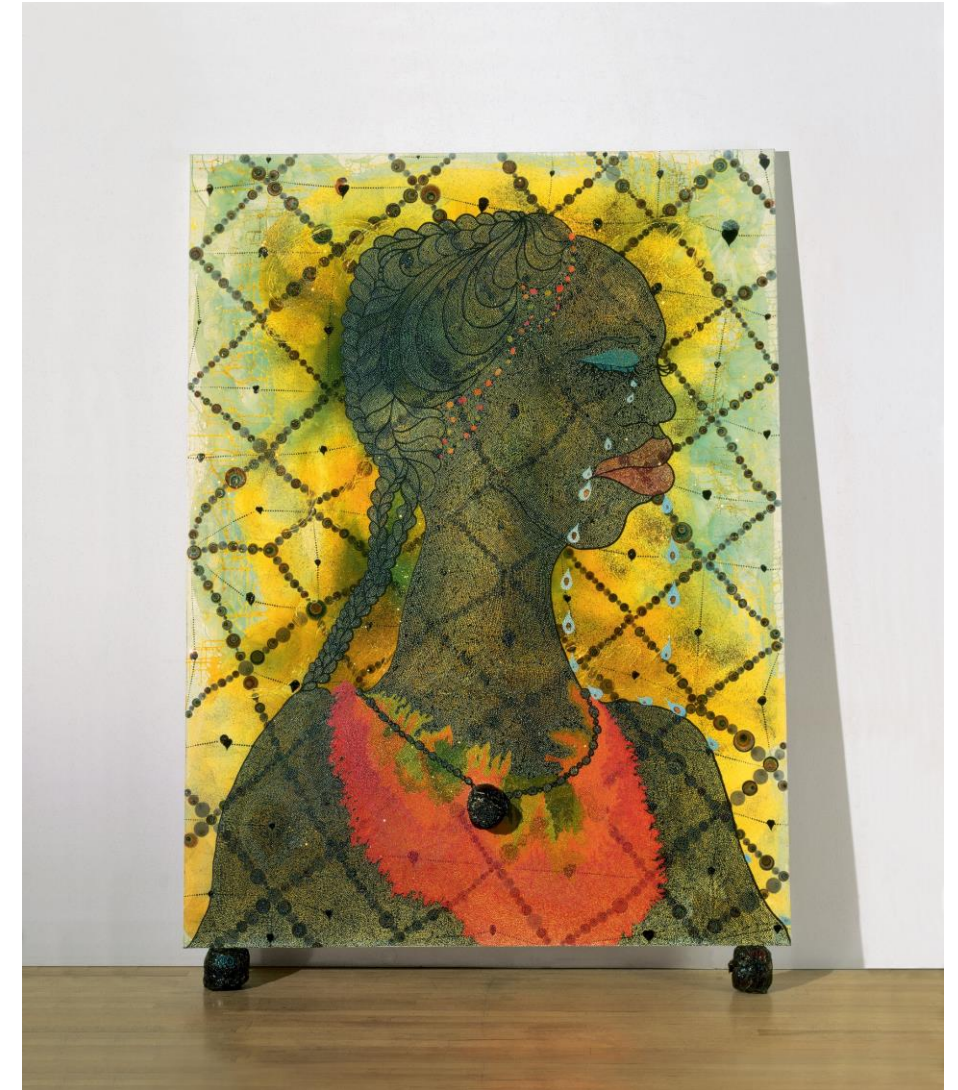
# PORTRAITS self or not? Year 9







**PORTRAITS CAN BE REALISTIC.... Or  
..... ABSTRACT**

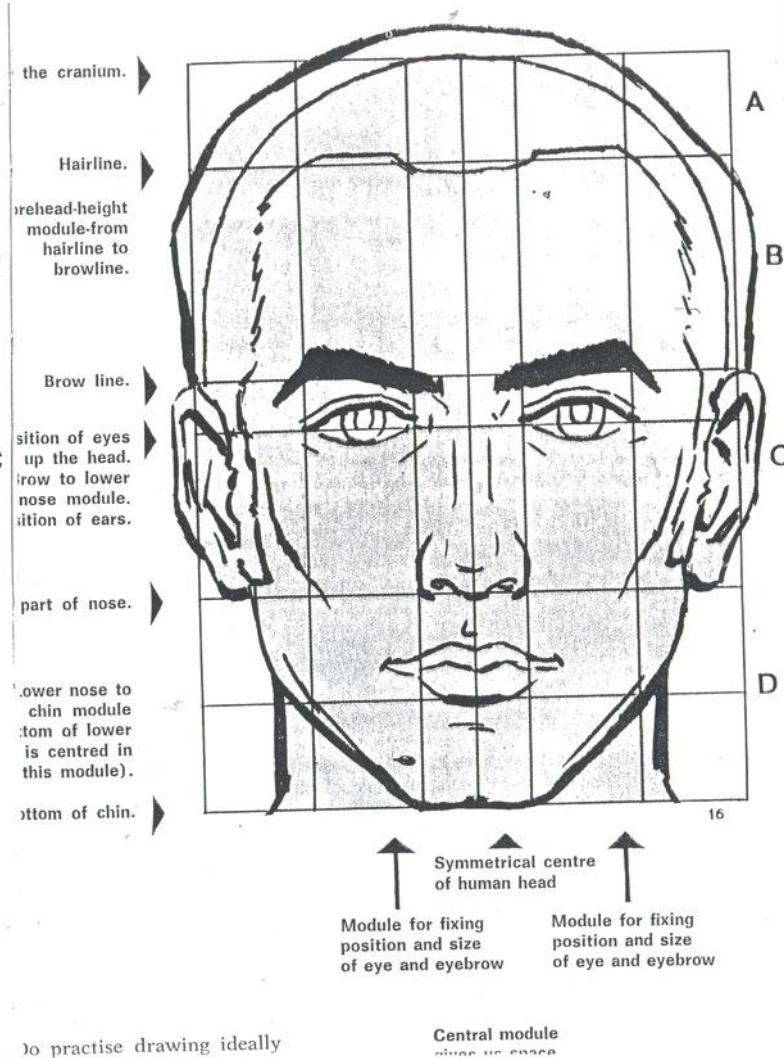
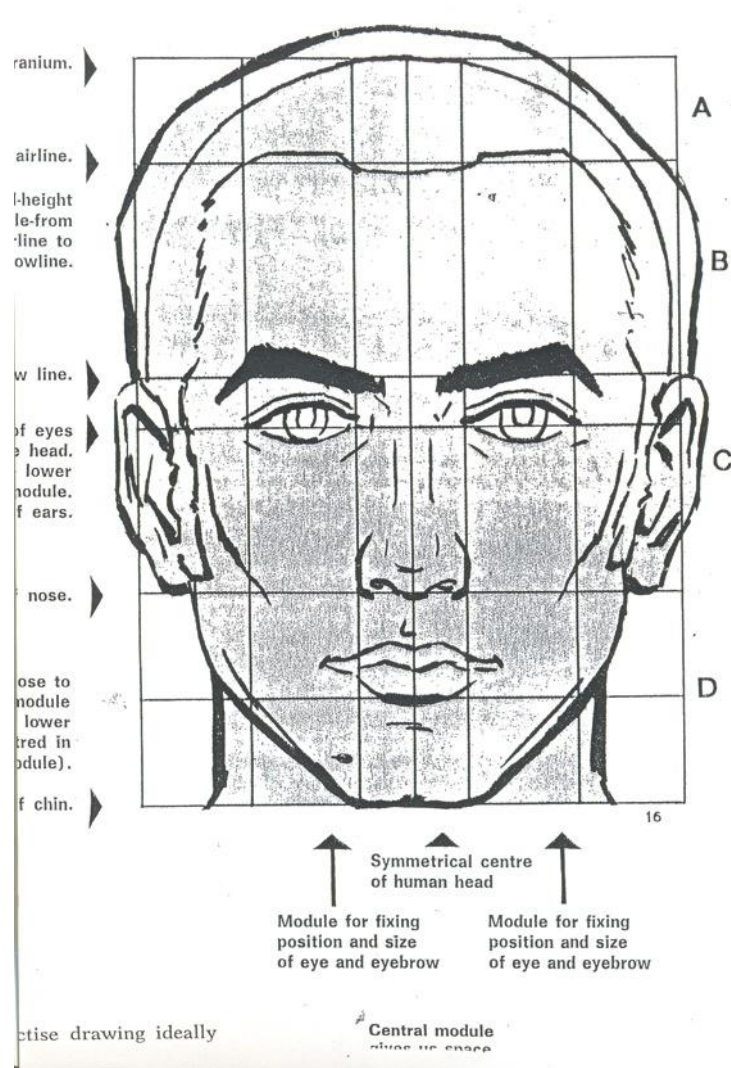


Chris Ofili

"No Woman, no cry"



# How do you draw the human face?



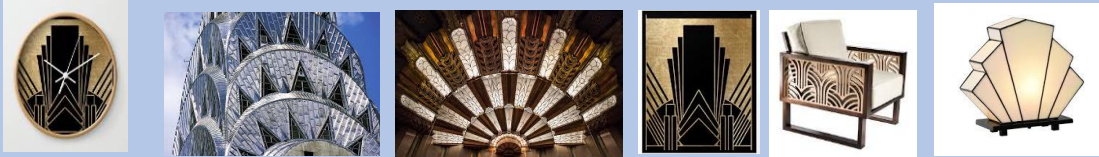




## Art Deco

Art Deco is a movement in the decorative arts and architecture that originated in the 1920s and developed into a major style in western Europe and the United States during the 1930s. Its name was derived from the Exposition Internationale des Arts Décoratifs et Industriels Modernes, held in Paris in 1925, where the style was first exhibited. Art Deco design represented modernism turned into fashion. Its products included both individually crafted luxury items and mass-produced wares, but, in either case, the intention was to create a sleek and anti-traditional elegance that symbolised wealth and sophistication.

The art deco style, which above all reflected modern technology, was characterized by smooth lines, geometric shapes, streamlined forms and bright, sometimes garish colours



Designers and makers are often influenced by past or current designers and art movements. They can start with a design context which leads to a design brief. The context is explored and a design brief is written. The designer needs to carry out research to help them to design and make a successful product.

### The Iterative Design Process

This is the process of prototyping, testing and refining your product, acting on feedback from your primary users and stakeholders.



Questions to think about when designing and making?

Who is going to use it? When and where will it be used?

What material(s) could I use to make it? How can I make it so that it is as environmentally friendly as possible? What impact will it have on the users life? Can it be recycled easily? How long will it last?



### Hardwoods



### Softwoods



## Pine and MDF

Wood comes in 3 categories: soft wood, hard wood and manufactured wood. They have different properties and are used for many things.

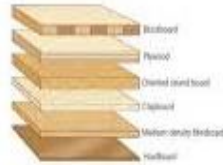
## Acrylic



### Manufactured boards

Making boards and sheets from wood or wood products

- Veneers
- Sawdust
- Wood fibres
- Wood strips
- Wood flakes



## Measuring, marking out and cutting wood and plastic



- Use a ruler to measure accurately, use a set square to mark accurate angles, a ruler to draw a straight line and use a tenon saw, coping saw or fret saw to cut wood. Use a junior hacksaw to cut acrylic.
- MEASURE TWICE – CUT ONCE! Why do we say this in D&T?
- Use wood PVA glue to join wood. Use epoxy resin to join wood to plastic.



This is the clock mechanism you will be using. What information do you need from this to enable you to design and make a successful clock?

## Workshop Rules

You are responsible for your own safety and the safety of others.

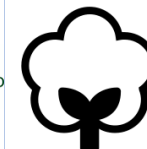
- 1) Wear an APRON at ALL times.
- 2) ENSURE bags and coats are stored in a locker not around the bench.
- 3) ALWAYS follow instructions and rules. Do not take short cuts. Ask for help if you need it.
- 4) If you do not know how to use a piece of equipment, then don't. Ask for help if you need it.
- 5) When using machinery ALWAYS wear EYE PROTECTION & MACHINE GUARDS.
- 6) Do not TOUCH machines or equipment unless you have permission.
- 7) NEVER blow dust or touch swarf.
- 8) NEVER run in the workshop.
- 9) When using machines, hearth or forge, hair MUST be tied up and loose clothes removed.
- 10) When finished with a machine make sure tools are returned to the correct place and the machine is cleaned down.



COSHH



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? What does COSHH stand for and why is it important in D&T?



What PPE did you wear in the Academy workshop and why? Can you name and explain the logos on the left?

## Micro-organisms

Micro-organisms are tiny forms of life. They can only be seen under a microscope and are sometimes called microbes.

They spoil food and make it unsafe to eat because they contaminate it with their waste products, their physical presence and the toxins they produce.

### What micro-organisms can spoil food and make it unsafe to eat?

There are three groups of micro-organisms that you need to know about that spoil food and cause food poisoning. These are..

- Bacteria
- Moulds
- Yeasts

### Micro organisms need 5 conditions to grow and multiply:

1. A warm temperature
2. Plenty of moisture (water)
3. Plenty of food
4. The right PH level (not too acidic or alkaline)
5. Enough time (bacteria split every 10-20 minutes)

## High risk foods

- High risk food have ideal conditions for bacteria
- High risk foods are ready to eat foods that could grow harmful bacteria
- They are moist and high in protein which is food for bacteria.
- High risk foods have a short shelf life - you can't keep them for long or the bacteria might multiply to dangerous levels.

### Examples of high risk foods:

Cooked meat, fish and poultry, dairy products (eggs, cheese etc.), gravies, stocks and sauces, shellfish, cooked rice

### Example exam questions:

What five conditions to bacteria need to grow and multiply? (5 marks)

What is a high risk food? (5 marks)

## Storing food safely

Cooking (75°C)	The danger zone (5°C-63°C)
<ul style="list-style-type: none"><li>• Cooking food above 75°C kills bacteria</li><li>• Re-heat food properly, only once. Reheat food so 75°C for at least 3 minutes</li><li>• Check the food is 75°C with a temperature probe</li></ul>	<ul style="list-style-type: none"><li>• Bacteria can grow and multiply quickly between 5°C to 63°C.</li><li>• This is called the danger zone</li><li>• The optimum temperature for bacterial growth is 37°C</li></ul>
Chilling (0°C - 5°C)	Freezing (-18°C)
<ul style="list-style-type: none"><li>• Keeping food between 0°C and 5°C slows down the growth of bacteria</li><li>• This extends the shelf life of food</li><li>• Chilling food doesn't change the properties much - food looks and tastes the same</li></ul>	<ul style="list-style-type: none"><li>• Freezing food below -18°C stops bacteria growing - they become dormant</li><li>• Freezing generally extends shelf life and the nutrients aren't lost</li><li>• It doesn't kill the bacteria though. They become active again once the food defrosts.</li></ul>

### Preparing self for cooking

- Tie hair back to prevent hair and dandruff falling in food
- Take off coats and blazers
- Wear an apron to prevent bacteria transferring from our clothes to our food
- Wash hands with hot soapy water to kill bacteria

### Preparing the room for cooking

- Sanitise all work surfaces
- Check equipment is clean and dry
- Tuck all stools in as they can be a trip hazard
- Put all high risk foods in the fridge to slow bacteria growth

### Wash your hands after:

- Coughing
- Sneezing
- Tying shoe laces
- Going to the toilet
- Touching hair or face



## 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.

Types: High biological Value (HBV) and Low biological Value (LBV)

### 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 meaning blood sugar levels gradually increase providing a slow, steady release of energy. (long term energy).

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

Types: Starchy, sugary and fibrous

#### Example exam questions:

What are the two types of fat? (2 marks)

Explain the difference between a HBV and LBV protein (6 marks)

What percentage of our daily energy should come from fats? (1 mark)

What are the main differences between saturated and unsaturated fats? (6 marks)

How can one make healthy choices when choosing complex carbohydrates? (2 marks)

### 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

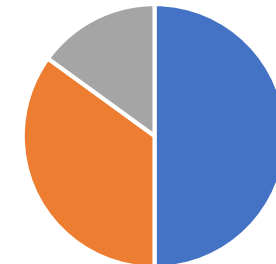
Animal -beef, chicken skin, processed meat (sausages, salami, pepperoni), bacon, butter, cheese, full fat milk

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

#### Function

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

Energy



■ Carbohydrates ■ Fat ■ Protein ■

#### Energy intake

50% - carbohydrates

35% - Fat

15% - Protein

# Dietary related health problems

## Diabetes

### What is it?

Diabetes lets your blood glucose levels run out of control. Insulin is a hormone that allows glucose to be absorbed by the body. If there is too much glucose in the blood, the pancreas produces insulin to reduce the blood glucose level. Type 2 diabetes is a disorder where blood glucose levels stay too high - the pancreas either can't produce enough insulin or the body resists it.

### Causes

- Being over weight or obese
- Excessive sugar in the diet can leave to obesity, increasing the risk of type 2 diabetes - this is affecting more young people.

### Health problems

- Poor eye sight, limb numbness, kidney failure and CHD.
- Tired and thirsty
- The body passes out glucose by passing urine more often

## Obesity

### What is it?

It is very common, it affects roughly 1 in 4 adults in the UK. Body Mass Index (BMI) is often used to check if someone is overweight or obese.

### Causes

- An incorrect balance of energy - a person consumes more calories than they burn off.
- Eating lots of foods high in fat and sugar
- Having a sedentary lifestyle (little or no physical activity)

### Health problems

- Increases your blood pressure and raises cholesterol levels - this puts you at higher risk of coronary heart disease
- Greater risk of developing type 2 diabetes
- Breathing difficulties, tiredness and low self-esteem are all common

## Anaemia - can be caused by an Iron Deficiency

### What is it?

Iron is needed to make red blood cells - these cells carry oxygen from the lungs and travel in your blood around your body. People with anaemia have a reduced amount of blood cells.

### Causes

- Not eating enough iron-rich foods
- Women lose iron during their periods
- Pregnant women lose iron to their baby during pregnancy

### Health problems

Tiredness, pale complexion, heart palpitations, headaches, abnormal fingernails

## Coronary Heart Disease (CHD)

### What is it?

Your cardiovascular system consists of your heart and blood vessels. CHD is when coronary arteries (which supply the heart with blood full of oxygen) are narrowed because they are filled with fatty deposits.

### Causes

- Eating lots of saturated fats
- Being physically inactive - exercise keeps the heart and cardiovascular system healthy
- Smoking - this damages the lining of arteries
- High blood pressure

### Health problems

- Chest pains (angina)
- Blood clots can form which suddenly block flow to the heart, the heart doesn't get enough oxygen which can cause a heart attack (which can be fatal)



# 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. Raise cholesterol (this narrows arteries making it harder for the blood to travel around, putting you at risk of heart disease).

## **Example exam questions:**

Explain three causes of obesity (6 marks)

What is the function of sugary and starchy carbohydrates (2 marks)

Why is protein especially important for children? (2 marks)

What are the functions of fat? (3 marks)

List 5 food sources of plant based protein (5 marks)

How does starch thicken a sauce (2 marks)

Give an example of fruit that turns brown due to enzyme browning (1 mark)

Which is the best type of flour to use when bread making and why. (3 marks)

## **Skeletal issues**

**Rickets** - Soft and weak bones, this occurs in children with a calcium or vitamin D deficiency. Can cause pain in the bones.

**Osteoporosis** - It is a bone disease that weakens bones and makes them brittle, increasing the chance of them breaking from simply falls.

**Tooth decay** - Plaque is a sticky substance that contains lots of bacteria. It builds up on your teeth over time. Bacteria feeds on sugars and create acids that can destroy tooth enamel and cause tooth decay.

# Food Science

## **Starch gelatinisation**

The starch particles absorb the liquid and swell when heated. The starch granules burst open and release their starch into the liquid. This causes the liquid to thicken. The more starch, the thicker the liquid.

## **Enzyme Browning**

Enzymes in fruit cause them to ripen. When you slice fruits, the oxygen in the air turns the fruit brown. Enzymes in the fruit speed up this process. E.g. apples and pears.

## **Shortening**

Shortening gives foods a crumbly texture. When you rub butter into flour you cover the flour particles with fat, this gives the flour a waterproof coating. This prevents the long gluten molecules from forming when the liquid is added to the flour. This means the dough cannot become stretchy and baked goods like shortbread keep a 'short' (firm and crumbly) hence the name shortening.

## **Bread making**

<u>Ingredient</u>	<u>Function</u>
Strong white bread flour	High in gluten to give the bread structure. Bulking ingredient of the dough.
Salt	Gives flavour.
Sugar	Food for the yeast so it can multiply quickly.
Yeast	When given food (sugar) and warmth and moisture (water) it ferments producing co2 and alcohol which helps the dough rise and become light and fluffy.
Warm water	This activates the yeast so it can start to ferment. 13

# The Eatwell guide



## The Eatwell guide

The Eatwell guide is a government guide designed to show you the proportions of different foods groups you should eat over a day or more.

Tips on making healthy choices from the eatwell guide:

Fruit and vegetables: eat 5 portions of fruit and vegetables a day, this should make up 1/3 of your plate a day, fresh, frozen, canned, dried and fruit juice/smoothies all count, don't exceed 150ml of fruit juice/smoothie a day as it can cause tooth decay, try snacking on fruit over high sugar and fat foods,

Potatoes, bread, rice, pasta and other starchy carbohydrates: choose non-sugary cereals, leave the skin on potatoes, choose wholemeal options of foods such as bread, rice and pasta.

Oils and spreads: choose unsaturated fats such as vegetable oils and margarine over butter, use in small amounts.

Dairy and alternatives: choose lower fat options such as skimmed milk and low fat and salt cheese, choose low sugar yogurts and add fruit as a natural sweetener.

Beans, pulses, fish, eggs, meat and other proteins: eat more beans and pulses as they are high in fibre and fill you up for longer, cut the visible fat off meat, choose lower fat meat options, eat 2 portions of fish a week.

Water: drink 2-3 litres of water a day, choose lower sugar option drinks.

## 8 Guidelines for Healthy Eating

1. Base your meals on starchy carbohydrates	<ul style="list-style-type: none"> <li>This should make up 1/3 of your diet</li> <li>Chose high fibre, whole grain options e.g. pasta, rice</li> <li>Try to include one starchy food with each meal</li> </ul>	5. Eat less salt - no more than 6g a day for adults	<ul style="list-style-type: none"> <li>Eating too much salt can raise blood pressure, this puts you at high risk of heart disease or a stroke</li> <li>Most of the salt you eat is already in food, check the labels to help you choose low salt options</li> </ul>
2. Eat lots of fruit and vegetables	<ul style="list-style-type: none"> <li>Try adding a banana to cereal or swap crisps for fruit</li> <li>Always serve main meals with two vegetables</li> <li>Beans and pulses can count as 1 of your 5 portions</li> </ul>	6. Get active and be a healthy weight	<ul style="list-style-type: none"> <li>Regular exercise can reduce your risk of getting serious health conditions</li> <li>Aim for 150 minutes of exercise a week</li> </ul>
3. Eat more fish - including one portion of oily fish	<ul style="list-style-type: none"> <li>Fish is a source of protein and vitamins and minerals</li> <li>It contains omega 3 (good for eyes, skin, brain heart)</li> <li>Oily fish includes: salmon, herring, mackerel, sardines</li> </ul>	7. Don't get thirsty	<ul style="list-style-type: none"> <li>6-8 cups a day, 2-3 litres</li> <li>Avoid sugary and fizzy drinks as they're bad for teeth</li> <li>Remember fruit juice and smoothies is also high in sugar</li> </ul>
4. Cut down on saturated fat and sugar	<ul style="list-style-type: none"> <li>All types of fat are high in energy and should be eaten in small amounts</li> <li>Excess sugar can cause weight gain and tooth decay</li> </ul>	8. Don't skip breakfast	<ul style="list-style-type: none"> <li>Kick starts you for the day</li> <li>choose healthy low fat, sugar and salt and high fibre</li> <li>Choose low sugar cereals and granola</li> </ul>



# Food Packaging

## Food packaging

Food is packaged to protect the product during transport and whilst sitting on shelves.

## Why is food labelling important?

Symbols on packaging show important information to customers.

## Example exam questions:

### Seasonal produce and air miles

What are the advantage of buying locally produced, seasonal produce? (6 marks)

Explain the disadvantages of buying imported foods. (10 marks)

Explain the term 'air miles' (3 marks)











Explain the term 'seasonal produce' (3 marks)

How might a restaurant use the fact they only use

## Food packaging

Compare the two dishes and explain which dish is a healthier choice. Use the traffic light system to help you with your answer (6 marks).

Why is it important to include a vegetarian symbol on food packaging of vegetarian products? (2 marks)

				
Giving farmers a fair price for their products.	Forest Stewardship Council - helping effectively manage forests.	Suitable for home freezing.	Eggs have been produced to the highest standards of food safety.	Vegetarian approved - free from animal products.
				
This product can be recycled.	A British organisation that promotes and regulates food quality.	Tidy man - do not litter.	Food which abides by the Islamic law. The Islamic way of slaughtering is cutting the throat and draining the blood.	An ethical food label - helping farm animals have a good life.

# Reference intake

You'll see reference intakes referred to on food labels. They show you the maximum amount of calories and nutrients you should eat in a day. Most packaging has a colour coded label on the front to help you make healthy choices.

Reference in take amounts:

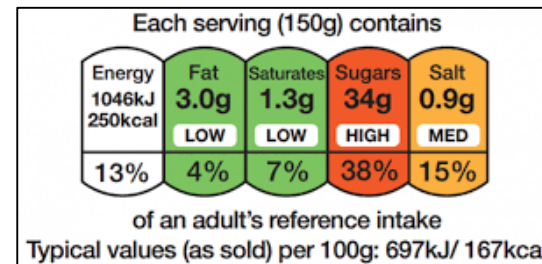
Kcal (calories) - 2000

Total Fat -70g

Saturated fat - 20g

Sugar - 90g

Salt - less that 6g



Red means HIGH in that nutrient  
Amber means MEDIUM in that nutrient  
Green means LOW in that nutrient

Reference intakes are not meant to be targets. They just give you a rough idea of how much energy you should be eating each day, and how much fat, sugar, salt and so on.

The percentages represent how much of your reference intake is in the product, e.g. the product has 3.0g of FAT in it, that is 4% of 70g of fat.

# Brownies

## Ingredients

100g butter

110g dark chocolate (and extra chocolate chunks to go into the mix)

2 eggs

75g Sugar

50g muscovado sugar

75g plain flour

## Equipment

Saucepan, metal bowl, spoon, jug, weighing scales, baking tin

## Skills

Melting, using a bain-marie, mixing, baking

## Method

1. Place margarine, muscovado sugar and chocolate in the bowl and place on top of sauce pan with water.
2. Leave until melted and stir well.
3. In a separate bowl, mix eggs and caster sugar well.
4. Stir in the chocolate mix.
5. Add the flour and mix until all the flour is combined.
6. Add mixture to a greased baking tray
7. Bake in the oven 30-35min.
8. Remove from oven and cut into 8 pieces.



# Pizzas

## Ingredients (makes 12)

- 200g strong white flour
- 50g ground semolina (or use 50g extra flour)
- 1tsp salt
- $\frac{1}{2}$  tps sugar
- 170ml warm water
  
- 4tbsp tomato passata
- Grated cheese
- Toppings of your choice: 2 meat and 3 veg

## Equipment

Knife, chopping board, wooden spoon, bowl, jug, grater, rolling pin, cookie cutter

**Skills:** Rich yeast dough, kneading, baking, grating, shaping,

1. Pre-heat the oven to 200°C Weigh flour and add to a bowl, add yeast and salt and sugar.
2. Create a well in the middle of the flour and add the oil, then gradually add the warm water and mix (**make sure not to add all at once or the dough will be too wet**)
3. When smooth, work the dough on the worktop until elastic and smooth, set aside to rise while preparing the filling.
4. Wash, peel, slice your vegetables, grate the cheese.
5. If using any meat - prepare that too.
6. When all is prepared, roll out the dough thinly on a baking tray.
7. Use a cookie cutter to cut out circle. Place in an oiled cup cake tray.
8. Add the tomato sauce, toppings and cheese.
9. Bake until crispy (20min)

## Ingredients

6 Lasagne sheets

Sprinkle of cheese for the top

1 tomato

### For the Filling

250-500g Mince Meat

1 onion

1 tin of tomatoes

Salt, pepper, herbs

### For the Sauce

30g butter

30g flour

300 ml Milk

60g Cheese

## Equipment

Chopping board

Knife

Jug

Grater

Whisk

Wooden spoon

Frying pan

Sauce pan

## Skills

Frying

Making a white sauce

# Lasagne

1. Chop onion and garlic
2. Start frying the onion and garlic add the meat.
3. When meat is cooked, add the tomatoes and simmer until thickened, add seasoning
4. Making the sauce: in the saucepan melt the butter and flour.
5. When melted switch off the heat and add the milk, little at a time then mixing in.
6. When ALL the milk is mixed in then switch the heat on and constantly whisk until its thickened (boiling point). Switch off and stir through the cheese.
7. **CONSTRUCTION** -  $\frac{1}{2}$  mince, pasta,  $\frac{1}{2}$  cheese sauce. Repeat:  $\frac{1}{2}$  mince, pasta,  $\frac{1}{2}$  cheese sauce.
8. Add your remaining grated cheese on top and a sliced tomato.
9. Bake for 40 minutes.



## Athletics

Athletics consists of three main skills. Running, jumping and throwing.

Skill	Description
Running	An action to move quickly with the correct technique using the major muscle groups in the arms and legs as effectively as possible.
Throwing	The ability to propel an object through the air as far as possible.
Jumping	The technique to propel your body into the air to either cover distance, height or both.



Task 1: Complete the sentences using the missing words.

The 2020 ..... and ..... Games, due to be held in ..... However, these were postponed until 2021. The Olympic flag consists of ..... which represent a colour from every nations flag and the five major .....

The first modern Olympics were held in 1896 in .....

**Paralympic, 5 rings, Olympics, Tokyo, Continents, Athens**



Task 2: This is Adam Gemili, a British sprinter. He is the 2014 European champion at 200 metres and 4 x 100 metres relay, as well as being part of the Great Britain team that won gold in the 2017 World Championships in the same event.

Using your understanding of the physical and skill related components of fitness, write a short paragraph on which components of fitness Adam will use when competing in the sprinting events? In addition, explain why you feel he would need these components to be successful.

GIRLS	100m	200m	800m	1500m	High Jump	Long Jump	Triple Jump	Shot	Javelin	Discus
GOLD	14.7s	31.0s	2m 55s	6m 10s	1.25m	3.90m		6.80m	17.00m	17.00m
SILVER	16.0s	35.0s	3m 20s	7m 26s	1.12m	3.50m		5.70m	14.00m	13.00m
BRONZE	18.0s	38.0s	4m 10s	9m 00s	0.90m	2.80m		4.60m	9.00m	9.00m
BOYS	100m	200m	800m	1500m	High Jump	Long Jump	Triple Jump	Shot	Javelin	Discus
GOLD	13.4s	28.0s	2m 38s	5m 25s	1.40m	4.40m	9.70m	8.60m	26.00m	22.00m
SILVER	15.0s	31.6s	3m 05s	6m 15s	1.24m	3.80m	8.50m	6.80m	19.00m	17.00m
BRONZE	17.5s	37.0s	3m 40s	7m 10s	1.00m	3.00m	6.40m	4.80m	12.00m	12.00m

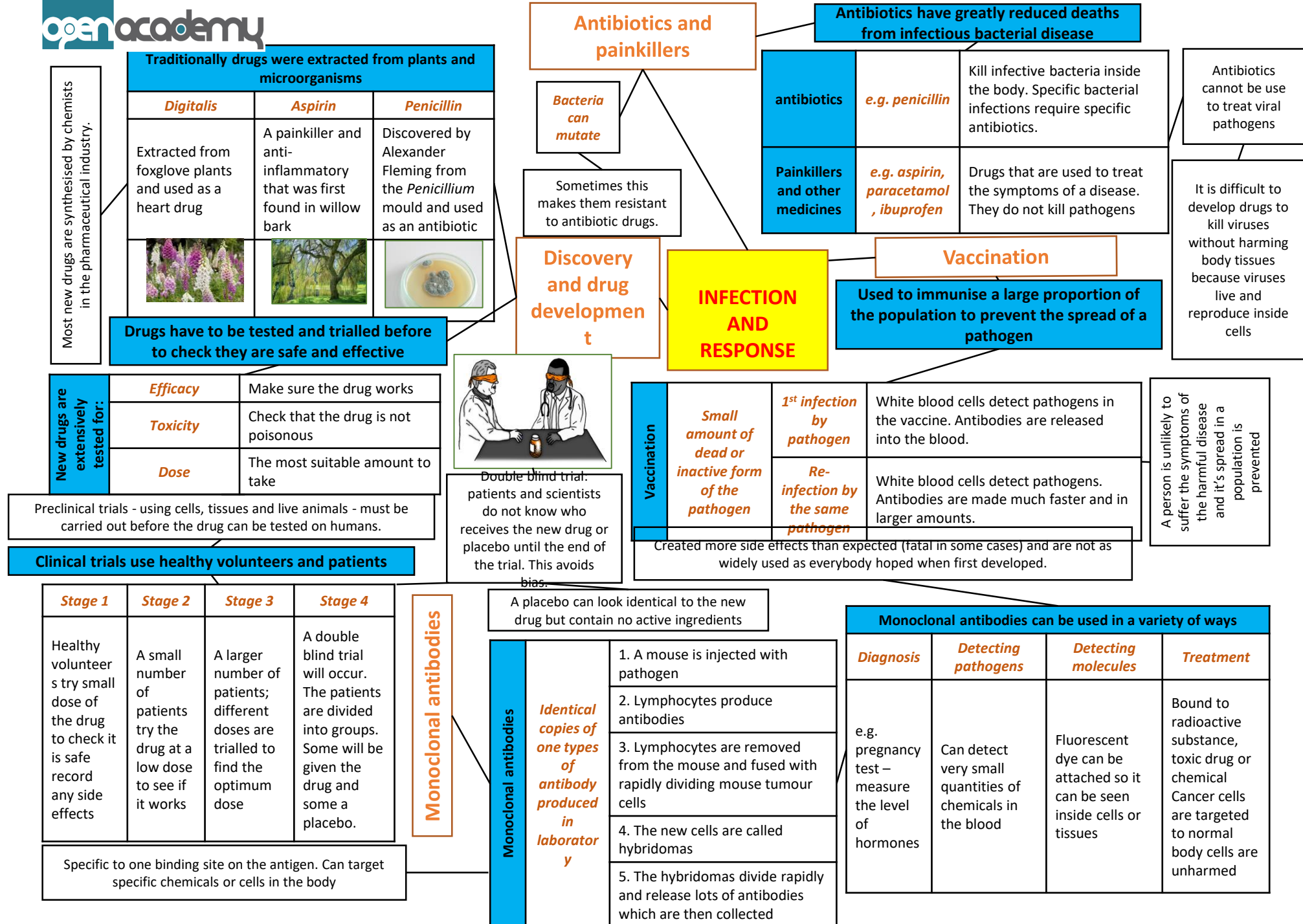


**Task 3:** When competing in **PE** lessons, you will be aiming to achieve the **Gold**, **Silver** or **Bronze** standards for each event. Use the grid to record your time, height and distance, then compare these with the standards for each medal.

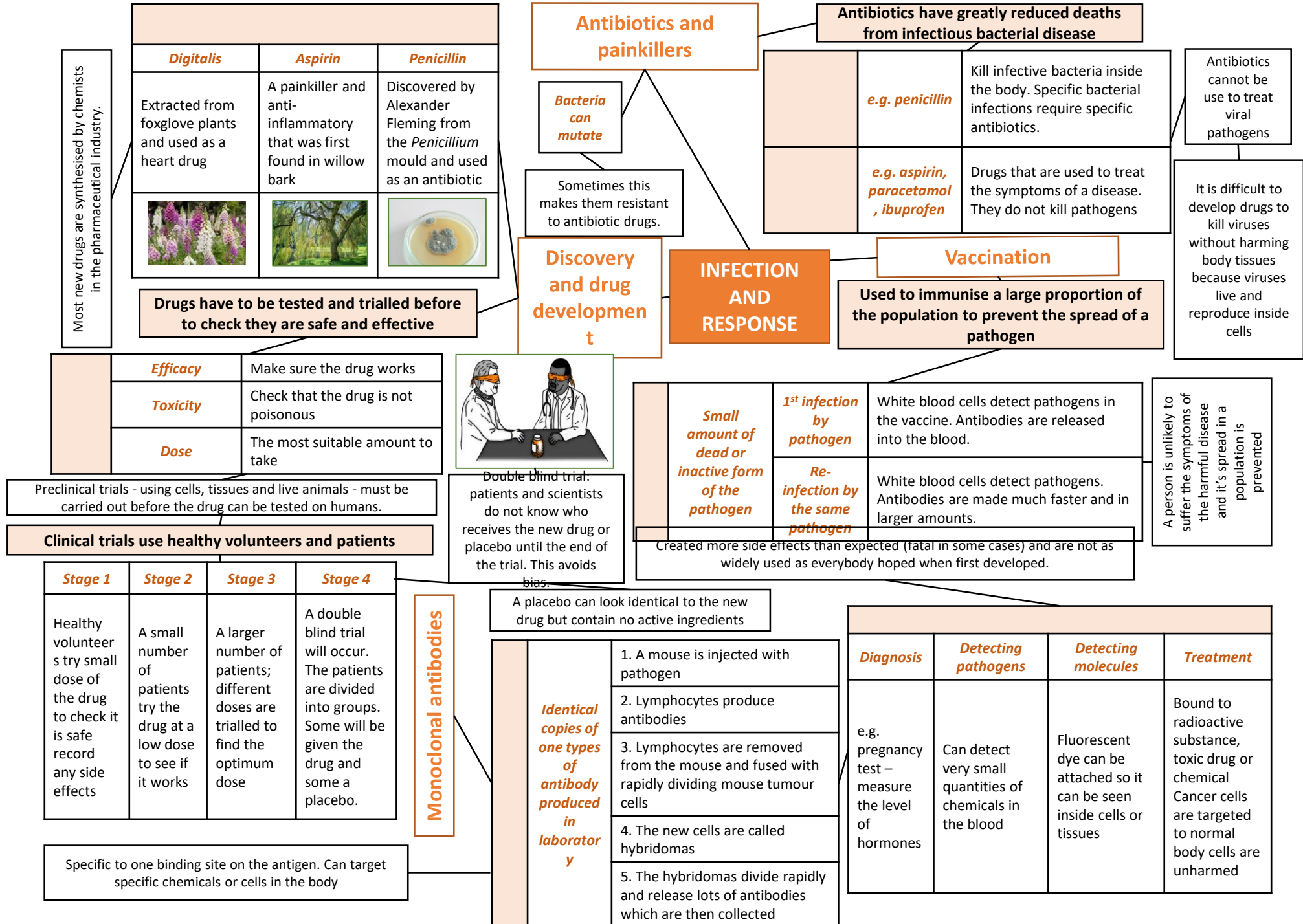
	100m	200m	800m	1500m	High Jump	Long Jump	Triple Jump	Shot	Javelin	Discus
MY SCORES										

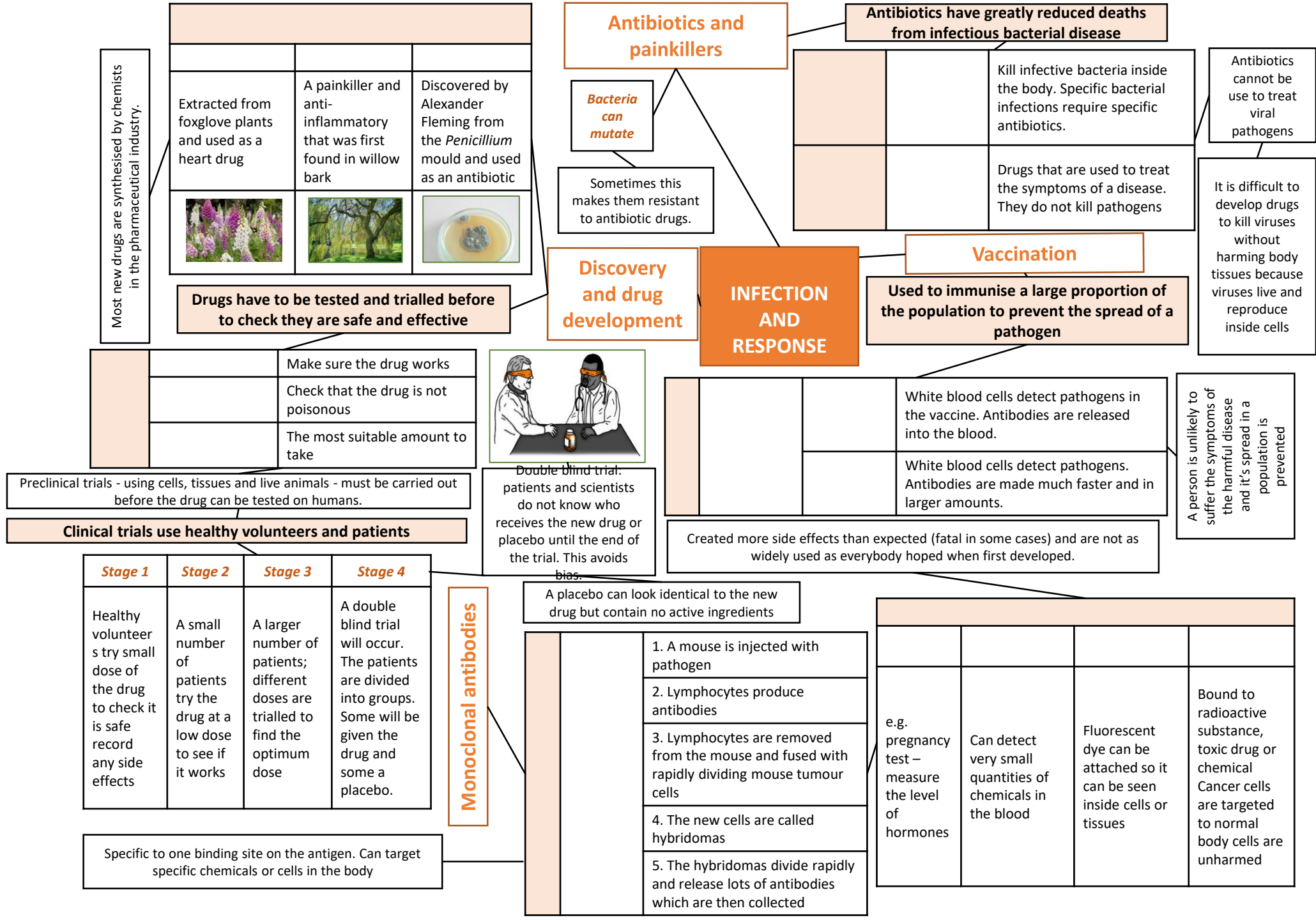
#### Olympic World records

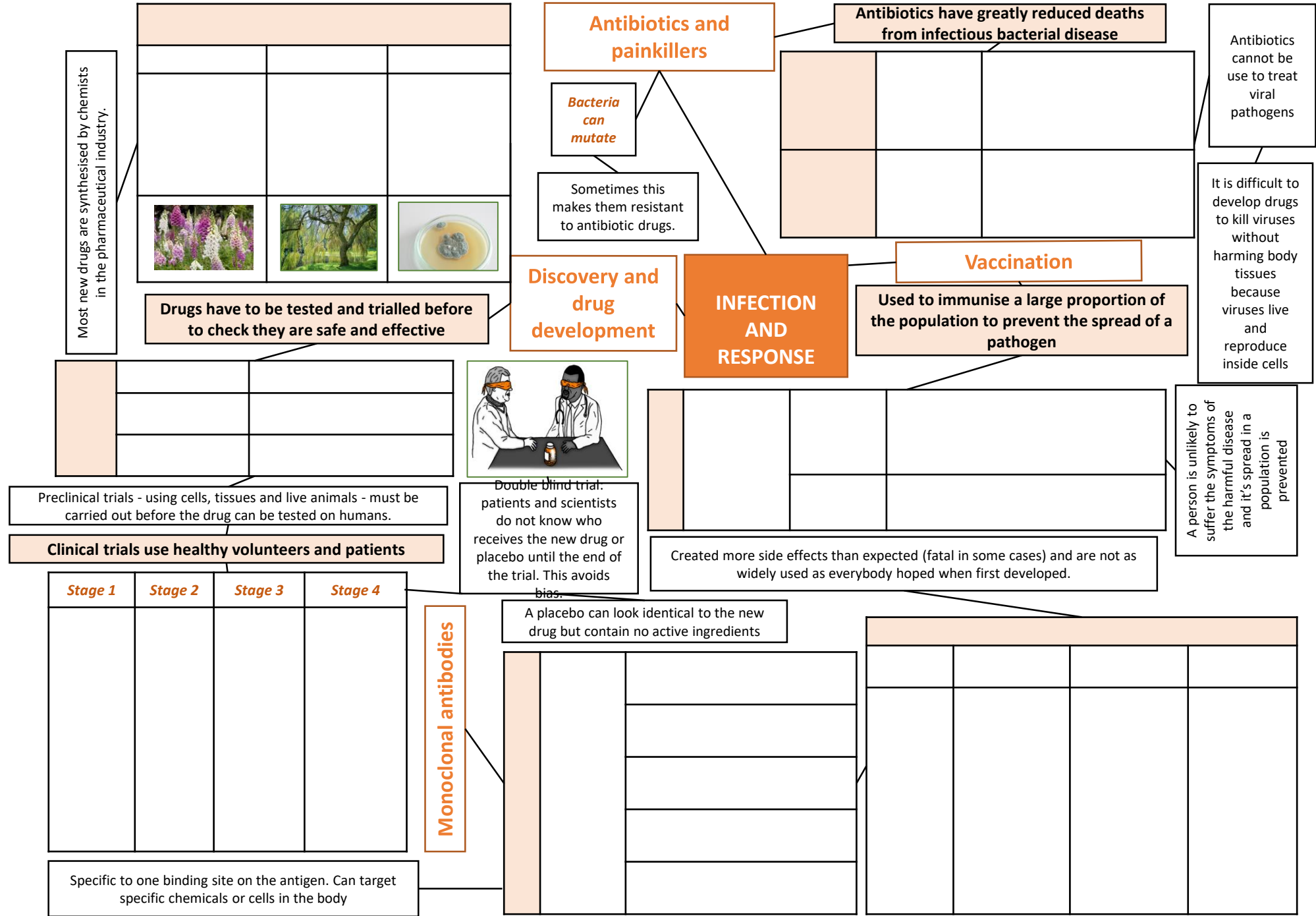
Men's events	Record	Athlete	Year	Women's events	Record	Athlete	Year
100m	9.63s	Usain Bolt	2012	100m	10.62s	Florence Griffith-Joyner	1988
200m	19.30s	Usain Bolt	2008	200m	21.34s	Florence Griffith-Joyner	1988
800m	1:40.91	David Rudisha	2012	800m	1:53.43	Nadezhda Olizarenko	1980
1500m	3:32.07	Noah Ngeny	2000	1500m	3:53.96	Paula Ivan	1988
Long Jump	8.90m	Bob Beamon	1968	Long Jump	7.40m	Jackie Joyner-Kersey	1988
Triple Jump	18.09m	Kenny Harrison	1996	Triple Jump	15.39m	Francoise Mbango Etone	2008
High Jump	2.39m	Charles Austin	1996	High Jump	2.06m	Yelena Slesarenko	2004
Shot	22.52m	Ryan Crouser	2016	Shot	22.41m	Ilona Slupianek	1980
Javelin	90.57m	Andreas Thorkildsen	2008	Javelin	71.53m	Olisdeilys Menendez	2004
Discus	69.89m	Virgilijus Alekna	2004	Discus	72.30m	Martina Hellmann	1988







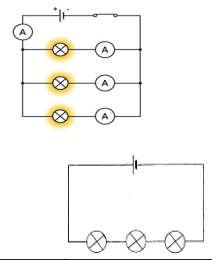






Electrons carry current. Electrons are free to move in metal.

Cell	Battery	Switch	Lamp	Ammeter	Volt meter	Diode	LED	LDR	Fuse	Resistor	Variable resistor	Thermistor
Store of chemical energy	Two or more cells in series	Breaks circuit, turning current off	Lights when current flows	Measures current	Measures potential difference	Current flows one way	Emits light when current flows	Resistance low in bright light	Melts when current is too high	Affects the size of current flowing	Allows current to be varied	Resistance low at high temp



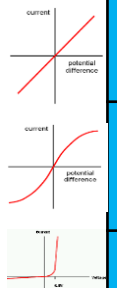
Current	Flow of electrical charge	Ampere (A)
Potential difference (p.d.)	How much electrical work is done by a cell	Volts (V)
Charge	Amount of electricity travelling in a circuit	Coulombs (C)

Charge = Current X time       $Q = I \times t$

Changing current	Change the p.d. of the cells
	Add more components

Ammeter	Set up in series with components
Voltmeter	Set up parallel to components

Resistance ( $\Omega$ )	A measurement of how much current flow is reduced
The higher the resistance, the more difficult it is for current to flow.	
Increasing resistance, reduces current.	
Increasing voltage, increases current.	



Ohmic conductor	At a constant temperature, current is directly proportional to the p.d. across the resistor.
Filament lamp	As current increases, the resistance increases. The temperature increases as current flows.
Diode	Current flows when p.d. flows forward. Very high resistance in reverse.

**Current, potential difference and resistance**

$R = V \div I$   
Resistance = Potential difference  $\div$  Current

Thermistor	LDR
Resistance varies with temperature	Resistance varies with light intensity
Resistance decreases as temperature increases.	Resistance decreases as light increases.

**Current - Potential difference graphs**

'Earthing' a safety device; Earth wire joins the metal case.

Live - Brown	Carries p.d from mains supply.	p.d between live and earth = 230V
Neutral - Blue	Completes the circuit.	p.d. = 0V
Earth - Green and Yellow	Only carries current if there is a fault.	p.d. = 0V

**Series and parallel circuits**

Series circuit	Current is the same in all components.	Total p.d. from battery is shared between all the components.	Total resistance is the sum of each component's resistance.
Parallel circuit	Total current is the sum of each component's current.	p.d. across all components is the same.	Total resistance is less than the resistance value of the smallest individual resistor.

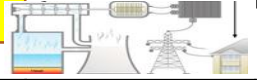
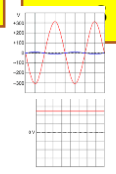
Series	Parallel
A circuit with one loop	A circuit with two or more loops

Total p.d. If cells are joined in series, add up individual cell values

**Next Level Electricity**

**Domestic uses and safety**

**Energy transfer**



National Grid

Work is done when charge flowing.

Power (W) = potential difference X current

Power = (current)<sup>2</sup> X resistance

Energy transferred = Power X time

$R = V \times I$

$P = I^2 \times R$

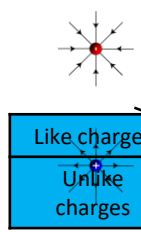
$E = P \times t$

Step-up transformers	Step-down transformers
Increase voltage, decrease current	Decrease voltage, increase current
Increases efficiency, reduces heat loss.	Makes safer for houses.

**Static electricity**

Static electricity	Electrical charge is stationary	When two insulating material are rubbed together, electrons move from one material to the other.
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Shocks Walking on carpet causes friction. Electrons move to the person and charge builds up. When the person touches a metal object, the electrons conduct away, making a spark.

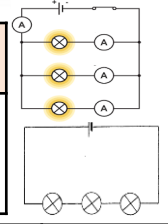


Like charges	Repel
Unlike charges	Attract

**Electric fields**

Charged objects create electric fields around them. Strongest closest to the object. The field direction is the direction of force on a positive charge. Add more charge increases field strength.

Mains supply
Frequency 50Hz, 230V



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Circuit symbols

Current and Charge

Current, potential difference and resistance

Series and parallel circuits

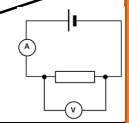
Electricity

Energy transfer

Domestic uses and safety

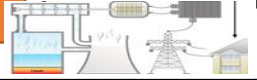
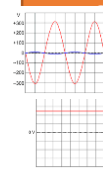
Static electricity


Controlling current











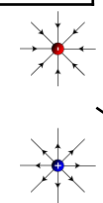


Current - Potential difference graphs


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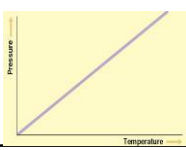
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Pressure of a fixed volume of gas increases as temperature increases (temperature increases, speed increases, collisions occur more frequently and with more force so pressure increases).

Temperature of gas is linked to the average kinetic energy of the particles.

If kinetic energy increases so does the temperature of gas.

No kinetic energy is lost when gas particles collide with each other or the container.

Gas particles are in a constant state of random motion.

$$P = m \div V$$

Density = mass  $\div$  volume.



**Density** *Mass of a substance in a given volume*

Freezing	Liquid turns to a solid. Internal energy decreases.
Melting	Solid turns to a liquid. Internal energy increases.
Boiling / Evaporating	Liquid turns to a gas. Internal energy increases.
Condensation	Gas turns to a liquid. Internal energy decreases.
Sublimation	Solid turns directly into a gas. Internal energy increases.
Conservation of mass	When substances change state, mass is conserved.
Physical change	No new substance is made, process can be reversed.

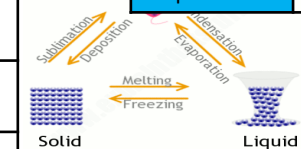
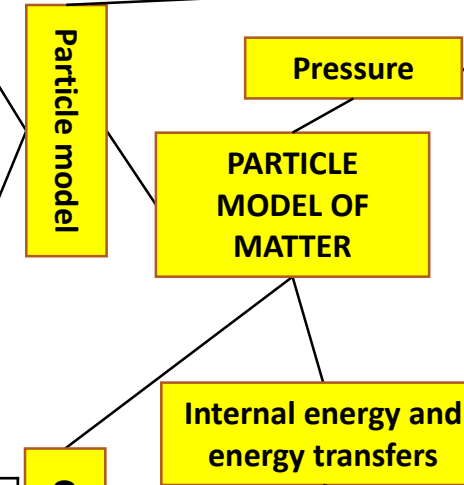


State	Particle arrangement	Properties
Solid	<i>Packed in a regular structure. Strong forces hold in place so cannot move.</i>	Difficult to change shape.
Liquid	<i>Close together, forces keep contact but can move about.</i>	Can change shape but difficult to compress.
Gas	<i>Separated by large distances. Weak forces so constantly randomly moving.</i>	Can expand to fill a space, easy to compress.

**Kinetic theory of gases**

**Particle model**

**Change of state**



**Pressure**

**PARTICLE MODEL OF MATTER**

**Internal energy and energy transfers**

Specific Latent Heat	<i>Energy needed to change 1kg of a substance's state</i>
Specific Latent Heat of Fusion	<i>Energy needed to change 1kg of solid into 1 kg of liquid at the same temperature</i>
Specific Latent Heat of Vaporisation	<i>Energy needed to change 1kg of liquid into 1 kg of gas at the same temperature</i>

Energy needed = mass  $\times$  specific latent heat.

$$\Delta E = m \times L$$

**PHYSICS ONLY:** when you do work the temperature increases e.g. pump air quickly into a ball, the air gets hot because as the piston in the pump moves the particles bounce off increasing kinetic energy, which causes a temperature rise.

Reducing the volume of a fixed mass of gas increases the pressure.

Halving the volume doubles the pressure.

$$PV = \text{constant.}$$

$$P_1V_1 = P_2V_2$$

Change in thermal energy = mass  $\times$  specific heat capacity  $\times$  temperature change.

$$\Delta E = m \times c \times \Delta \theta$$

**Specific Heat Capacity**

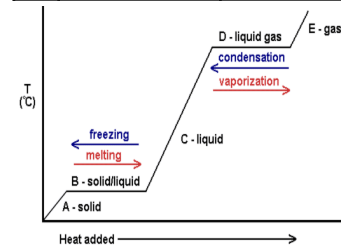
*Energy needed to raise 1kg of substance by 1°C*

Depends on:

- Mass of substance
- What the substance is
- Energy put into the system.

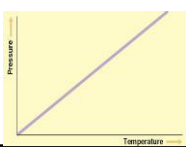
**Internal energy**

<i>Energy stored inside a system by particles</i>	Internal energy is the total kinetic and potential energy of all the particles (atoms and molecules) in a system.
<i>Heating changes the energy stored within a system</i>	Heating causes a change in state. As particles separate, potential energy stored increases. Heating increases the temperature of a system. Particles move faster so kinetic energy of particles increases.



	Units
Density	<i>Kilograms per metre cubed (kg/m³)</i>
Mass	<i>Kilograms (kg)</i>
Volume	<i>Metres cubed (m³)</i>
Energy needed	<i>Joules (J)</i>
Specific latent heat	<i>Joule per kilogram (J/kg)</i>
Change in thermal energy	<i>Joules (J)</i>
Specific heat capacity	<i>Joule per kilogram degrees Celsius (J/kg°C)</i>
Temperature change	<i>Degrees Celsius (°C)</i>
Pressure	<i>Pascals (Pa)</i>





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Density = mass  $\div$  volume.



**Mass of a substance in a given volume**

	Liquid turns to a solid. Internal energy decreases.
	Solid turns to a liquid. Internal energy increases.
	Liquid turns to a gas. Internal energy increases.
	Gas turns to a liquid. Internal energy decreases.
	Solid turns directly into a gas. Internal energy increases.
	When substances change state, mass is conserved.
	No new substance is made, process can be reversed.



**Kinetic theory of gases**

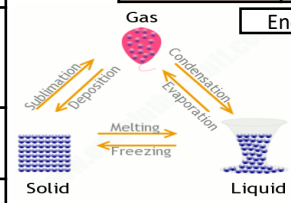
State	Particle arrangement	Properties
	<b>Packed in a regular structure. Strong forces hold in place so cannot move.</b>	Difficult to change shape.
	<b>Close together, forces keep contact but can move about.</b>	Can change shape but difficult to compress.
	<b>Separated by large distances. Weak forces so constantly randomly moving.</b>	Can expand to fill a space, easy to compress.

**Particle model**

**PARTICLE MODEL OF MATTER**

**Internal energy and energy transfers**

**Change of state**

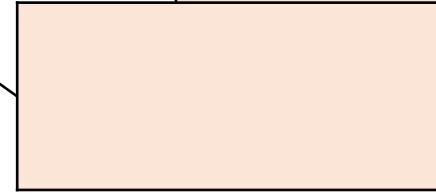


	<b>Energy needed to change 1kg of a substance's state</b>
	<b>Energy needed to change 1kg of solid into 1 kg of liquid at the same temperature</b>
	<b>Energy needed to change 1kg of liquid into 1 kg of gas at the same temperature</b>

Energy needed = mass  $\times$  specific latent heat.

$$\Delta E = m \times L$$

**Pressure**



Reducing the volume of a fixed mass of gas increases the pressure.  
Halving the volume doubles the pressure.

PV = constant.

$$P_1 V_1 = P_2 V_2$$

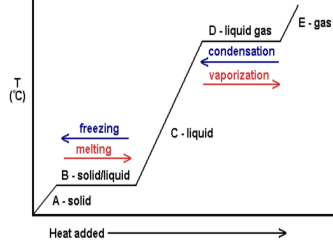
**Energy needed to raise 1kg of substance by 1°C**

Depends on:  
• Mass of substance  
• What the substance is  
• Energy put into the system.

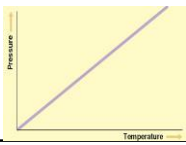
Change in thermal energy = mass  $\times$  specific heat capacity  $\times$  temperature change.

$$\Delta E = m \times c \times \Delta \theta$$

<b>Energy stored inside a system by particles</b>	Internal energy is the total kinetic and potential energy of all the particles (atoms and molecules) in a system.
<b>Heating changes the energy stored within a system</b>	Heating causes a change in state. As particles separate, potential energy stored increases. Heating increases the temperature of a system. Particles move faster so kinetic energy of particles increases.



	Units
	<b>Kilograms per metre cubed (kg/m³)</b>
	<b>Kilograms (kg)</b>
	<b>Metres cubed (m³)</b>
	<b>Joules (J)</b>
	<b>Joule per kilogram (J/kg)</b>
	<b>Joules (J)</b>
	<b>Joule per kilogram degrees Celsius (J/kg°C)</b>
	<b>Degrees Celsius (°C)</b>
	<b>Pascals (Pa)</b>



Pressure of a fixed volume of gas

Temperature of gas

If kinetic energy increases

No kinetic energy is lost

Gas particles

$$P = \frac{m}{V}$$

Density

Freezing	
Melting	
Boiling / Evaporating	
Condensation	
Sublimation	
Conservation of mass	
Physical change	



State	Particle arrangement	Properties
Solid		
Liquid		
Gas		

	Units
Density	
Mass	
Volume	
Energy needed	
Specific latent heat	
Change in thermal energy	
Specific heat capacity	
Temperature change	
Pressure	

Kinetic theory of gases

Particle model

Pressure

PARTICLE MODEL OF MATTER

**PHYSICS ONLY:** when you do work the temperature increases e.g. pump air quickly into a ball, the air gets hot because as the piston in the pump moves the particles bounce off increasing kinetic energy, which causes a temperature rise.

Specific Heat Capacity

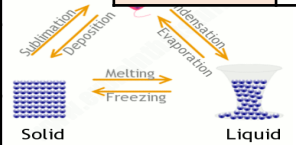
$$\Delta E = m \times c \times \Delta \theta$$

Internal energy and energy transfers

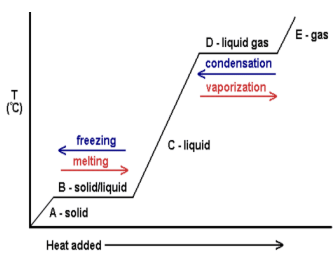
Change of state

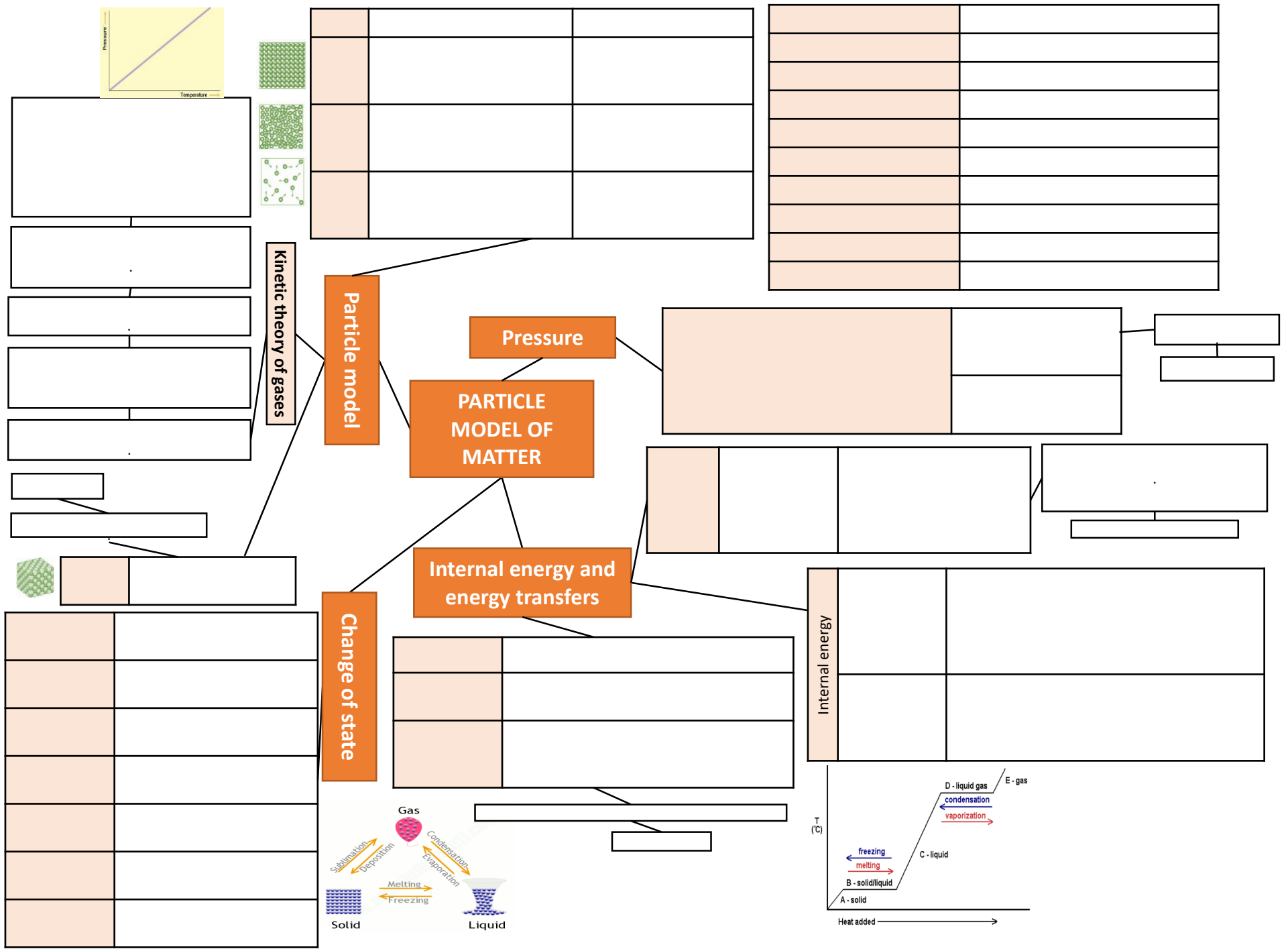
Specific Latent Heat	
Specific Latent Heat of Fusion	
Specific Latent Heat of Vaporisation	

$$\Delta E = m \times L$$



Internal energy	

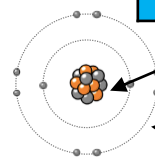






Atoms, elements and compounds

Atom	<i>The smallest part of an element that can exist</i>	Have a radius of around 0.1 nanometres and have no charge (0).
Element	<i>Contains only one type of atom</i>	Around 100 different elements each one is represented by a symbol e.g. O, Na, Br.
Compound	<i>Two or more elements chemically combined</i>	Compounds can only be separated into elements by chemical reactions.



Central nucleus	Contains protons and neutrons
Electron shells	Contains electrons

Name of Particle	Relative Charge	Relative Mass
Proton	+1	1
Neutron	0	1
Electron	-1	Very small

Electronic shell	Max number of electrons
1	2
2	8
3	8
4	2

Electronic structures

Relative electrical charges of subatomic particles

<div>7 Li 3</div>	Mass number	<i>The sum of the protons and neutrons in the nucleus</i>	
	Atomic number	<i>The number of protons in the atom</i>	Number of electrons = number of protons

Mixtures	<i>Two or more elements or compounds not chemically combined together</i>	Can be separated by physical processes.
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Method	Description	Example
Filtration	<i>Separating an insoluble solid from a liquid</i>	To get sand from a mixture of sand, salt and water.
Crystallisation	<i>To separate a solid from a solution</i>	To obtain pure crystals of sodium chloride from salt water.
Simple distillation	<i>To separate a solvent from a solution</i>	To get pure water from salt water.
Fractional distillation	<i>Separating a mixture of liquids each with different boiling points</i>	To separate the different compounds in crude oil.
Chromatography	<i>Separating substances that move at different rates through a medium</i>	To separate out the dyes in food colouring.

# Atomic structure and periodic table

Relative atomic mass

Pre 1900		<i>Tiny solid spheres that could not be divided</i>	Before the discovery of the electron, John Dalton said the solid sphere made up the different elements.
1897 'plum pudding'		<i>A ball of positive charge with negative electrons embedded in it</i>	JJ Thompson 's experiments showed that showed that an atom must contain small negative charges (discovery of electrons).
1909 nuclear model		<i>Positively charge nucleus at the centre surrounded negative electrons</i>	Ernest Rutherford's alpha particle scattering experiment showed that the mass was concentrated at the centre of the atom.
1913 Bohr model		<i>Electrons orbit the nucleus at specific distances</i>	Niels Bohr proposed that electrons orbited in fixed shells; this was supported by experimental observations.

The development of the model of the atom

James Chadwick	<i>Provided the evidence to show the existence of neutrons within the nucleus</i>
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Rutherford's scattering experiment

*A beam of alpha particles are directed at a very thin gold foil*

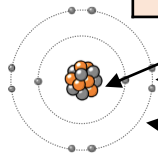
Most of the alpha particles passed right through.  
A few (+) alpha particles were deflected by the positive nucleus.  
A tiny number of particles reflected back from the nucleus.

Chemical equations	<i>Show chemical reactions - need reactant(s) and product(s) energy always involves and energy change</i>	Law of conservation of mass states the total mass of products = the total mass of reactants.
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Word equations	<i>Uses words to show reaction</i> <b>reactants → products</b> <b>magnesium + oxygen → magnesium oxide</b>	Does not show what is happening to the atoms or the number of atoms.
Symbol equations	<i>Uses symbols to show reaction</i> <b>reactants → products</b> <b>2Mg + O<sub>2</sub> → 2MgO</b> <i>Atoms of the same element with the same number of protons and different numbers of neutrons</i>	Shows the number of atoms and molecules in the reaction, these need to be balanced.

Isotopes	<i>Atoms of the same element with the same number of protons and different numbers of neutrons</i>	<b><sup>35</sup>Cl (75%) and <sup>37</sup>Cl (25%)</b> Relative abundance = (% isotope 1 x mass isotope 1) + (% isotope 2 x mass isotope 2) ÷ 100 e.g. (25 x 37) + (75x 35) ÷ 100 = 35.5
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Atoms, elements and compounds



	<i>The smallest part of an element that can exist</i>	Have a radius of around 0.1 nanometres and have no charge (0).
	<i>Contains only one type of atom</i>	Around 100 different elements each one is represented by a symbol e.g. O, Na, Br.
	<i>Two or more elements chemically combined</i>	Compounds can only be separated into elements by chemical reactions.

	Contains protons and neutrons
	Contains electrons

Name of Particle	Relative Charge	Relative Mass
	+1	1
	0	1
	-1	Very small

Relative electrical charges of subatomic particles

7		<i>The sum of the protons and neutrons in the nucleus</i>	
Li		<i>The number of protons in the atom</i>	Number of electrons = number of protons
3			

	<i>Two or more elements or compounds not chemically combined together</i>	Can be separated by physical processes.
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Method	Description	Example
	<i>Separating an insoluble solid from a liquid</i>	To get sand from a mixture of sand, salt and water.
	<i>To separate a solid from a solution</i>	To obtain pure crystals of sodium chloride from salt water.
	<i>To separate a solvent from a solution</i>	To get pure water from salt water.
	<i>Separating a mixture of liquids each with different boiling points</i>	To separate the different compounds in crude oil.
	<i>Separating substances that move at different rates through a medium</i>	To separate out the dyes in food colouring.

Electronic structures

Electronic shell	Max number of electrons
1	
2	
3	
4	

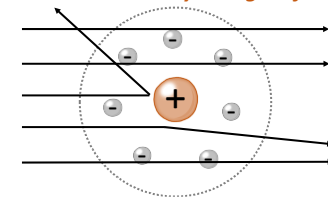
## AQA GCSE Atomic structure and periodic table

The development of the model of the atom

		<i>Tiny solid spheres that could not be divided</i>	Before the discovery of the electron, John Dalton said the solid sphere made up the different elements.
		<i>A ball of positive charge with negative electrons embedded in it</i>	JJ Thompson 's experiments showed that showed that an atom must contain small negative charges (discovery of electrons).
		<i>Positively charge nucleus at the centre surrounded negative electrons</i>	Ernest Rutherford's alpha particle scattering experiment showed that the mass was concentrated at the centre of the atom.
		<i>Electrons orbit the nucleus at specific distances</i>	Niels Bohr proposed that electrons orbited in fixed shells; this was supported by experimental observations.

Provided the evidence to show the existence of neutrons within the nucleus

A beam of alpha particles are directed at a very thin gold foil



Most of the alpha particles passed right through.  
A few (+) alpha particles were deflected by the positive nucleus.  
A tiny number of particles reflected back from the nucleus.

Show chemical reactions - need reactant(s) and product(s) energy always involves and energy change

Law of conservation of mass states the total mass of products = the total mass of reactants.

Uses words to show reaction  
reactants → products  
magnesium + oxygen → magnesium oxide

Does not show what is happening to the atoms or the number of atoms.

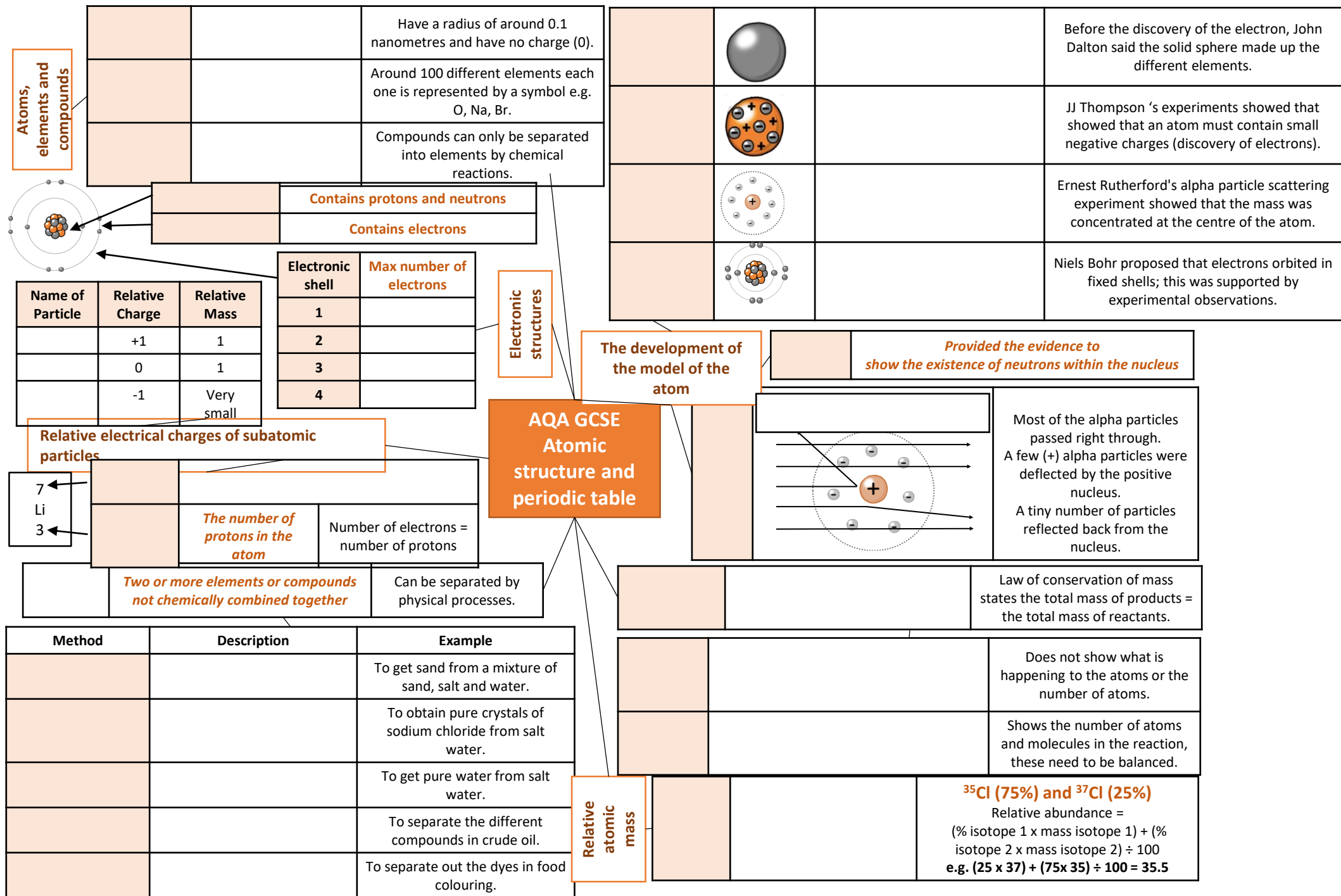
Uses symbols to show reaction  
reactants → products

Shows the number of atoms and molecules in the reaction, these need to be balanced.

$2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$   
Atoms of the same element with the same number of protons and different numbers of neutrons

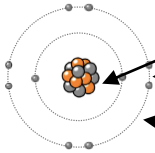
$^{35}\text{Cl}$  (75%) and  $^{37}\text{Cl}$  (25%)  
Relative abundance =  
(% isotope 1 x mass isotope 1) + (% isotope 2 x mass isotope 2) ÷ 100  
e.g.  $(25 \times 37) + (75 \times 35) \div 100 = 35.5$

Relative atomic mass





Atoms, elements and compounds


Name of Particle	Relative Charge	Relative Mass

Electronic shell	Max number of electrons
1	
2	
3	
4	

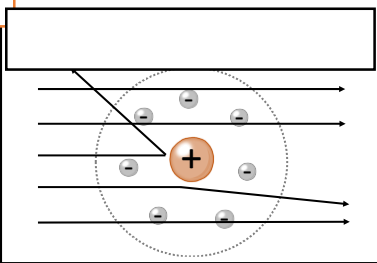
Electronic structures

The development of the model of the atom


Relative electrical charges of subatomic particles

7  
Li  
3


AQA GCSE Atomic structure and periodic table

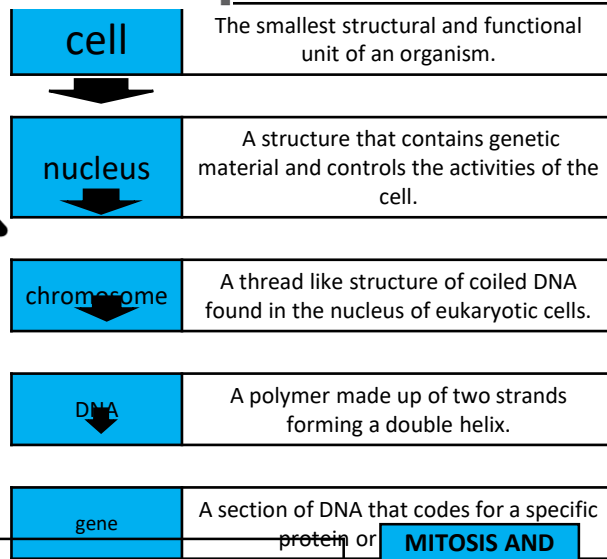


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Method	Description	Example

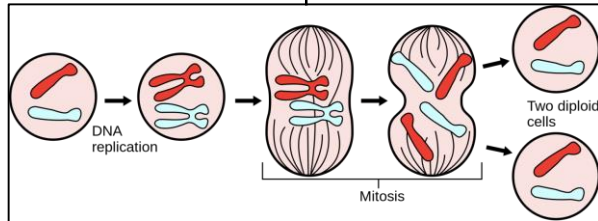
Relative atomic mass


largest  
↑  
smallest



Cells divide in a series of stages. The genetic material is doubled and then divided into two identical cells.

Stage 1	Growth	Increase the number of sub-cellular structures e.g. ribosomes and mitochondria.
Stage 2	DNA Synthesis	DNA replicates to form two copies of each chromosome.
Stage 3	Mitosis	One set of chromosomes is pulled to each end of the cell and the nucleus divides. Then the cytoplasm and cell membranes divide to form two cells that are identical to the parent cell.



Mitosis occurs during growth, repair, replacement of cells. Asexual reproduction occurs by mitosis in both plants & simple animals.

### MITOSIS AND THE CELL CYCLE

## Cell Biology

### Cell division

#### STEM CELLS

Undifferentiated cell of an organism

Divides to form more cells of the same type, and can differentiate to form many other cell types.

Human Embryonic stem cells	Can be cloned and made to differentiate into most cell types	Therapeutic cloning uses same genes so the body does not reject the tissue. Can be a risk of infection
Adult bone marrow stem cells	Can form many types of human cells e.g. blood cells	Tissue is matched to avoid rejection, risk of infection. Only a few types of cells can be formed.
Meristems (plants)	Can differentiate into any plant cell type throughout the life of the plant.	Used to produce clones quickly and economically, e.g. rare species, crop plants with pest /disease resistance

Treatment with stem cells may be able to help conditions such as diabetes and paralysis. Some people object to the use of stem cells on ethical or religious grounds

Small intestines	Villi – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.
Lungs	Alveoli– increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.
Gills in fish	Gill filaments and lamella – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.
Roots	Root hair cells - increase surface area.
Leaves	Large surface area, thin leaves for short diffusion path, stomata on the lower surface to let O <sub>2</sub> and CO <sub>2</sub> in and out

### ADAPTATIONS FOR DIFFUSION

The greater the difference in concentrations the faster the rate of diffusion.

### Transport in cells

Diffusion <u>No</u> energy required	Movement of particles in a solution or gas from a higher to a lower concentration	E.g. O <sub>2</sub> and CO <sub>2</sub> in gas exchange, urea in kidneys. Factors that affect the rate are concentration, temperature and surface area.
Osmosis <u>No</u> energy required	Movement of water from a dilute solution to a more concentrated solution	E.g. Plants absorb water from the soil by osmosis through their root hair cells. Plants use water for several vital processes including photosynthesis and transporting minerals.
Active transport <u>ENERGY</u> required	Movement of particles from a dilute solution to a more concentrated solution	E.g. movement of mineral ions into roots of plants and the movement of glucose into the small intestines.

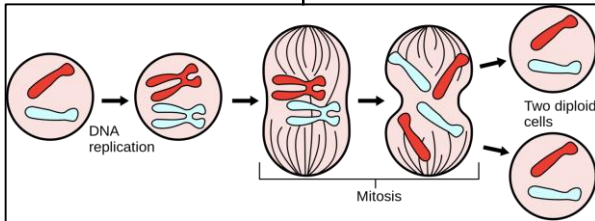
largest  
↑  
smallest

	The smallest structural and functional unit of an organism.
↓	
	A structure that contains genetic material and controls the activities of the cell.
↓	
	A thread like structure of coiled DNA found in the nucleus of eukaryotic cells.
↓	
	A polymer made up of two strands forming a double helix.
↓	
	A section of DNA that codes for a specific protein or characteristic.

*Cells divide in a series of stages. The genetic material is doubled and then divided into two identical cells.*

### MITOSIS AND THE CELL CYCLE

Stage 1		Increase the number of sub-cellular structures e.g. ribosomes and mitochondria.
Stage 2		DNA replicates to form two copies of each chromosome.
Stage 3		One set of chromosomes is pulled to each end of the cell and the nucleus divides. Then the cytoplasm and cell membranes divide to form two cells that are identical to the parent cell.



*Mitosis occurs during growth, repair, replacement of cells. Asexual reproduction occurs by mitosis in both plants & simple animals.*

	<i>Villi – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
	<i>Alveoli– increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
	<i>Gill filaments and lamella – increase surface area, Good blood supply – to maintain concentration gradient, Thin membranes – short diffusion distance.</i>
	<i>Root hair cells - increase surface area.</i>
	<i>Large surface area, thin leaves for short diffusion path, stomata on the lower surface to let O<sub>2</sub> and CO<sub>2</sub> in and out</i>

### ADAPTATIONS FOR DIFFUSION

The greater the difference in concentrations the faster the rate of diffusion.

## AQA Cell Biology

### Cell division

#### STEM CELLS

Divides to form more cells of the same type, and can differentiate to form many other cell types.

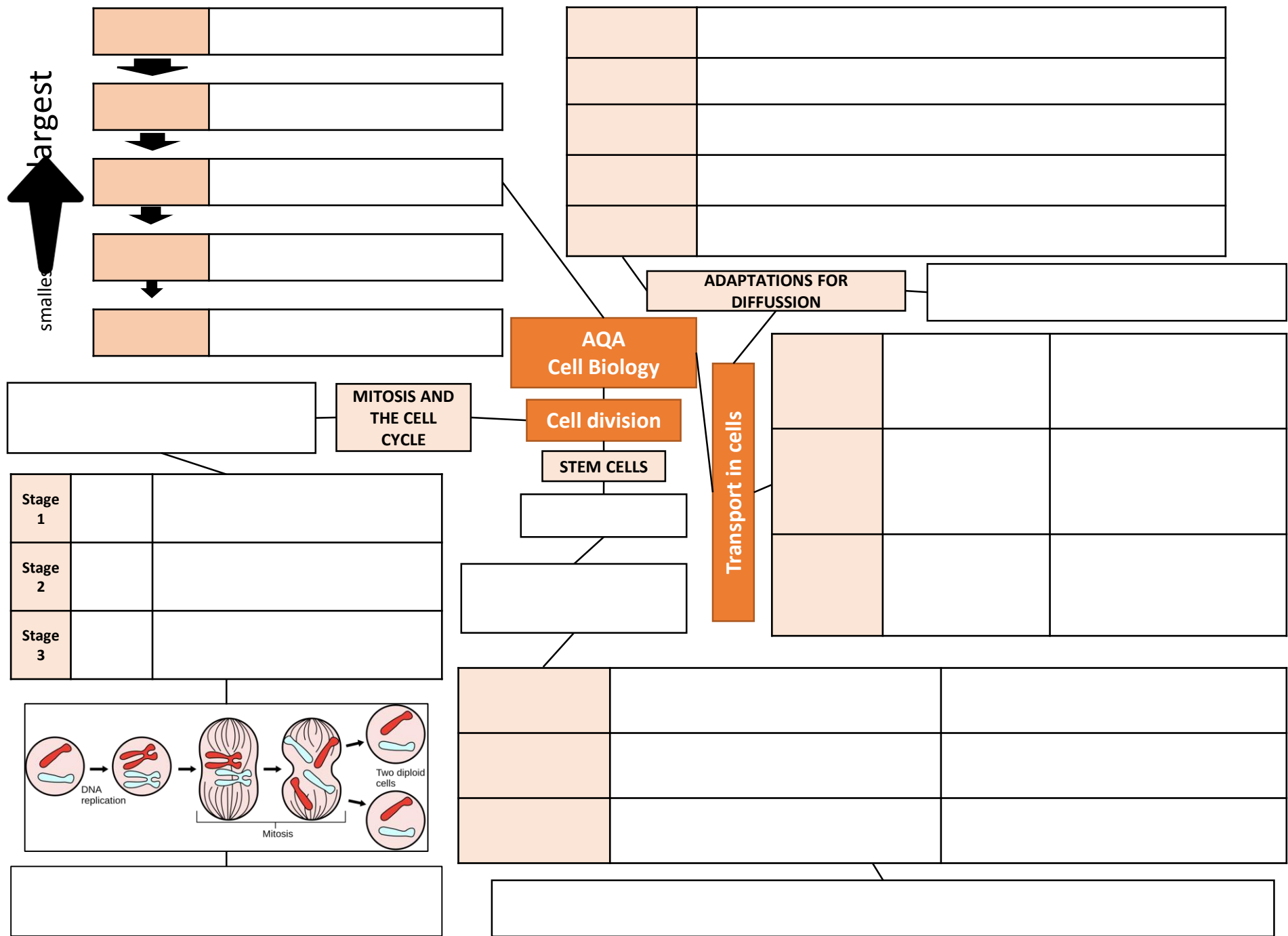
### Transport in cells

	<i>Movement of particles in a solution or gas from a higher to a lower concentration</i>	E.g. O <sub>2</sub> and CO <sub>2</sub> in gas exchange, urea in kidneys. Factors that affect the rate are concentration, temperature and surface area.
	<i>Movement of water from a dilute solution to a more concentrated solution</i>	E.g. Plants absorb water from the soil by osmosis through their root hair cells. Plants use water for several vital processes including photosynthesis and transporting minerals.
	<i>Movement of particles from a dilute solution to a more concentrated solution</i>	E.g. movement of mineral ions into roots of plants and the movement of glucose into the small intestines.

	<i>Can be cloned and made to differentiate into most cell types</i>	Therapeutic cloning uses same genes so the body does not reject the tissue. Can be a risk of infection
	<i>Can form many types of human cells e.g. blood cells</i>	Tissue is matched to avoid rejection, risk of infection. Only a few types of cells can be formed.
	<i>Can differentiate into any plant cell type throughout the life of the plant.</i>	Used to produce clones quickly and economically, e.g. rare species, crop plants with pest /disease resistance

*Treatment with stem cells may be able to help conditions such as diabetes and paralysis. Some people object to the use of stem cells on ethical or religious grounds.*





## Summary

A **network** is created when more than one device is connected together.

A network can be a small collection of computers connected within a building (e.g. a school, business or home) or it can be a wide collection of computers connected around the world.

**The main purpose of networking is to share data between computers.**

A file has to be broken up into small chunks of data known as **data packets** in order to be transmitted over a network. The data is then re-built once it reaches the destination computer.

**Protocols** are used to control how data is transmitted across networks. They are a set of rules for how messages are turned into data packets and sent across networks.

**Bandwidth** measures the amount of data that can transfer through a communications channel over a given period of time.

## Key Vocabulary

<b>File server</b>	A networked <b>computer</b> that provides shared storage, it can be accessed by workstations on the same network.
<b>Input device</b>	Input devices, like a keyboard, allow us to put raw data in a computer which it processes to produce outputs.
<b>LAN</b>	<b>Local Area Network</b> covers a small area such as one site or building, e.g. a school or a college.
<b>Licence</b>	A legal agreement between the company who published the software and the end user covering areas such as copyright.
<b>Network</b>	A network is a number of computers linked together to allow the sharing of resources.
<b>Output device</b>	A device used to output data or information from a computer, e.g. a monitor or printer.
<b>Server</b>	A computer that holds data to be shared with other computers. A web server stores and shares websites.
<b>WAN</b>	<b>Wide Area Network</b> covers a large geographical area. Most WANs are made from several LANs connected together.
<b>Workstation</b>	A computer connected to a network.

## LANs and WANs

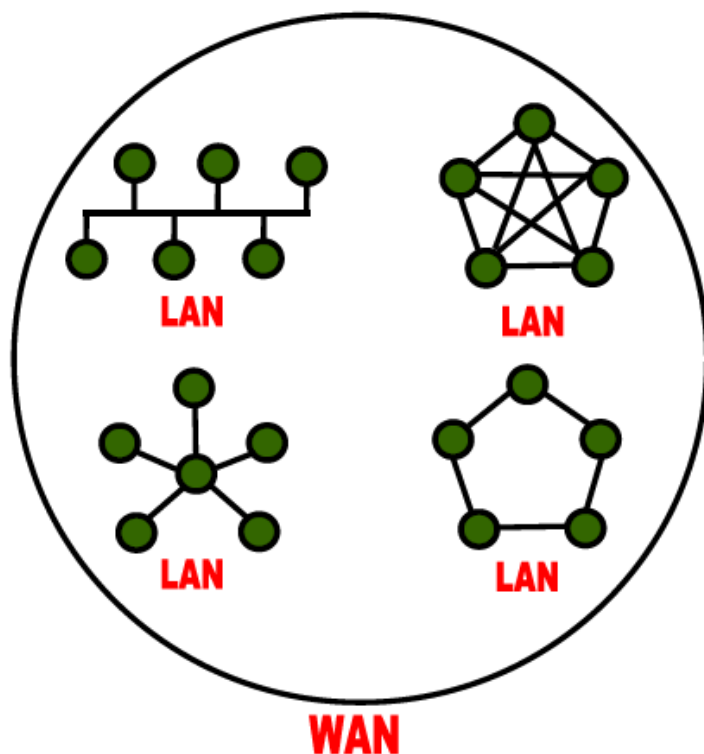
A school network is usually a **LAN**. LANs are often connected to WANs, for example a school network could be connected to the internet. WANs can be connected together using the internet, leased lines or satellite links.

## Advantages of networks

- ◆ Sharing devices such as printers saves money.
- ◆ Site (software) licences are likely to be cheaper than buying several standalone licences.
- ◆ Files can easily be shared between users.
- ◆ Network users can communicate by email and instant messenger.
- ◆ Security is good - users cannot see other users' files unlike on stand-alone machines.
- ◆ Data is easy to backup as all the data is stored on the file server.

## Disadvantages of networks

- ◆ Purchasing the network cabling and file servers can be expensive.
- ◆ Managing a large network is complicated, requires training and a network manager usually needs to be employed.
- ◆ If the file server breaks down the files on the file server become inaccessible. Email might still work if it is on a separate server. The computers can still be used but are isolated.
- ◆ Viruses can spread to other computers throughout a computer network.
- ◆ There is a danger of hacking, particularly with wide area networks. Security procedures are needed to prevent such abuse, e.g. a firewall.



The internet is a global **network** of computers. All computer devices (including PCs, laptops, games consoles and smartphones) that are connected to the internet form part of this network. Added together, there are billions of computers connected to the internet, all able to communicate with each other.

<https://bbc.in/37yYD3x>





# Year 9 Knowledge organiser: Explore India



## Topics covered

- ✓ India facts/what we know
- ✓ India physical geography
- ✓ India human geography
- ✓ Climate and Monsoon
- ✓ Tourism in India
- ✓ India's changing population
- ✓ Development within India
- ✓ Welcome to Dharavi
- ✓ India and its environment
- ✓ Future India
- ✓ India Report

## Key Ideas:

1. I can describe the location of India and its unique character.
2. I can describe the physical landscape variety of India
3. I describe how cities of India have grown and their impacts
4. I can explain how development is changing India and its environment

## Skills

- ❑ To research amazing facts using ICT
- ❑ To use mapping to investigate features
- ❑ To understand different cultures and ways of living
- ❑ To draw/label line graphs
- ❑ To write an extended written account
- ❑ To use ICT to research information

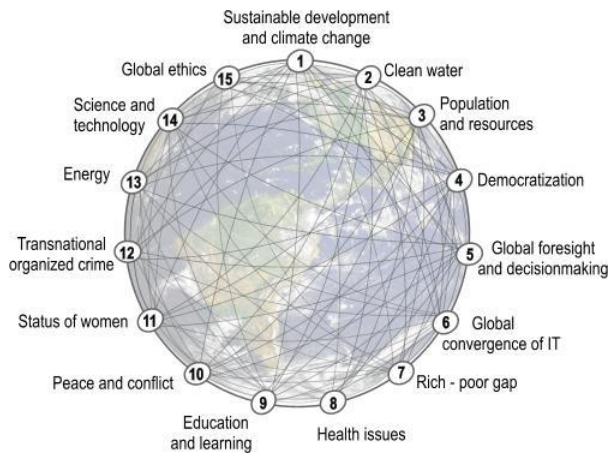
## Places and Environments

- ❖ Ganges River
- ❖ Kashmir
- ❖ New Delhi
- ❖ Mumbai
- ❖ Goa
- ❖ Ghats
- ❖ Brahmaputra
- ❖ Kerala
- ❖ Thar Desert

## Key Terms Used in this Unit

- States
- Colonialism
- Monsoon
- Hinduism
- Independence
- Bollywood
- Population
- Investment
- Aid
- Slums
- Disputes
- Resources
- Poverty
- Pollution
- Economic growth
- Standard of Living
- Exports
- Technology
- Space Race





# Year 9 Knowledge organiser: Global challenges



## Topics covered

- ✓ Types of challenges
- ✓ Population and resources
- ✓ Poverty and Wealth inequality
- ✓ Settlements and environmental quality
- ✓ Resource exploitation and environment
- ✓ Ecosystems and biodiversity
- ✓ Global Warming and Climate Change

## Key Ideas:

1. I can describe global scale challenges
2. I can describe how human populations are un-equal
3. I can describe how human activities are damaging the environment
4. I can explain why opinions vary on solving global challenges
5. I can discuss ideas for a sustainable future

## Skills

- ❑ To research using ICT
- ❑ To interpret a variety of graphs/infographics
- ❑ To use mapping to investigate deforestation and urbanisation
- ❑ To understand different opinions and viewpoints
- ❑ To write a detailed piece of extended writing
- ❑ To use ICT/MS Office to present to my class

## Places and Environments

- ❖ Amazon rainforest
- ❖ Antarctica and Arctic
- ❖ India
- ❖ China
- ❖ Germany
- ❖ Tuvalu
- ❖ Maldives

## Key Terms Used in this Unit

- Over-population
- Resource Consumption
- Water access
- Electrification
- Literacy
- Environmental Hazards
- Freedom
- Standard of Living
- Greenhouse gases
- Disease
- Global warming
- Climate Change
- Biodegradable plastics
- Pollution
- Deforestation
- Biodiversity
- Sustainability
- Transport
- Conservation

# Spanish

## Module 6: La ciudad (The city)



### En la ciudad

¿Qué hay en  
Barcelona?  
En Barcelona hay  
muchas cosas: el  
acuario, el cine  
IMAX ...

¿Adónde vas?

Voy ...  
al acuario  
al Camp Nou

al cine IMAX  
al monumento a  
Colón

al museo Picasso  
al Tibidabo  
a la playa de la  
Barceloneta y el mar  
a la plaza de Cataluña  
a la Sagrada Familia

a la torre Agbar  
a la Villa Olímpica  
a las Ramblas

### In the city

What is there in  
Barcelona?  
In Barcelona there  
are many things:  
the aquarium, the  
IMAX cinema...

Where are you going  
(to)?

I'm going ...  
to the aquarium  
to the Camp Nou  
(football) stadium  
to the IMAX cinema  
to the Columbus  
Monument  
to the Picasso Museum  
to the Tibidabo funfair  
to Barceloneta beach  
and the sea  
to the Plaza Cataluña  
to the Sagrada Familia  
church  
to the Agbar Tower  
to the Olympic Village  
to the Ramblas

Me gusta Barcelona  
porque ...  
me encanta ...  
me gusta mucho ...  
ir de compras  
mirar pinturas  
montar en las  
atracciones del  
parque  
sacar fotos  
tomar el sol  
ver partidos de fútbol  
  
ver películas  
ver tiburones

Le gusta (mucho) ...  
Le encanta ...

I like Barcelona  
because ...  
I love ...  
I really like ...  
going shopping  
looking at paintings  
going on the rides at  
the funfair  
  
taking photos  
sunbathing  
watching football  
matches  
watching films  
watching sharks

He/She (really) likes ...  
He/She loves ...

In this Module you will learn about:

- what there is to see and do in Barcelona
- different types of shop
- giving directions
- describing a holiday in Barcelona
- a story set in Barcelona

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

Use [www.textivate.com](http://www.textivate.com) to practice longer  
texts





## Estrategia



### The gender of nouns

You can often work out whether a noun is masculine or feminine by looking at the ending of the word:

- Most nouns ending in **-o**, **-or** and **-ón** are masculine.
- Most nouns ending in **-a**, **-dad** and **-ción** are feminine.

But be careful! There are exceptions, for example:

**el** problema    **la** foto

To check, use a dictionary: look for the abbreviations *nm* (masculine noun) and *nf* (feminine noun).

Can you work out the gender of these nouns from Module 6 without using a dictionary?

- ciudad    supermercado    pastelería
- pintor    tiburón    canción

Read the Strategy Box to help understand whether nouns are masculine or feminine.

## Spanish

### De compras

¿Dónde se puede comprar ...?

carne  
comida  
pan  
ropa  
un café  
un regalo

¿Dónde se pueden comprar ...?

pasteles  
joyas  
zapatos  
libros  
CDs

### Shopping

Where can you buy ...?

meat  
food  
bread  
clothes  
a coffee  
a present

Where can you buy ...?

cakes  
jewellery  
shoes  
books  
CDs



Se puede(n) comprar ...

en ...

un supermercado  
una cafetería  
una carnicería  
una joyería  
una librería  
una panadería  
una pastelería  
una tienda de música  
una tienda de ropa  
una zapatería

You can buy ...

in ...

a supermarket  
a café  
a butcher's  
a jeweller's  
a bookshop  
a baker's/bread shop  
a cake shop  
a music shop  
a clothes shop  
a shoe shop





### Las direcciones

Perdón ...  
¿Dónde está el museo  
Picasso?  
¿Dónde están las  
Ramblas?

A ver ...  
Bueno ...  
Pues ...  
luego

Sigue todo recto.  
Dobla a la derecha.  
Dobla a la izquierda.  
Cruza la plaza.  
Toma la segunda calle  
a la derecha.  
Toma la segunda calle  
a la izquierda.  
(Está) al final de la  
calle.  
Está a la derecha.  
Está a la izquierda.  
Está aquí.

### Directions

Excuse me ...  
*Where is the Picasso  
Museum?*  
*Where are the  
Ramblas?*

*Let's see ...*  
*Well ...*  
*Well ...*  
*then*

*Go straight on.*  
*Turn right.*  
*Turn left.*  
*Cross the square.*  
*Take the second  
(street) on the right.*  
*Take the second  
(street) on the left.*  
*(It's) at the end of the  
street.*  
*It's on the right.*  
*It's on the left.*  
*It's here.*

### Soy turista ...

Hoy ...  
Estoy en Barcelona.  
Es genial.

Anteayer ...

Ayer por la tarde ...  
fui a la playa  
comí paella y bebí  
limonada  
descansé un poco  
Lo pasé fenomenal.  
Me gustó.  
No me gustó.

Mañana ...  
Pasado mañana ...

voy a ir al Tibidabo

voy a ir de compras

voy a comprar unas  
camisetas

### I'm a tourist ...

Today ...  
*I'm in Barcelona.*  
*It's great.*

*The day before  
yesterday ...*

*Yesterday evening ...*  
*I went to the beach*  
*I ate paella and drank*  
*lemonade*  
*I had a little rest*  
*I had a wonderful time.*  
*I liked it.*  
*I didn't like it.*

*Tomorrow ...*  
*The day after  
tomorrow ...*

*I'm going to go to the  
Tibidabo*

*I'm going to go  
shopping*

*I'm going to buy some  
T-shirts*



### Palabras muy útiles

a (al)  
hay  
¿dónde?  
¿adónde?  
en  
hoy  
ayer  
anteayer  
  
mañana

### Very useful words

to (to the)  
there is/there are  
where?  
(to) where?  
in, at  
today  
yesterday  
the day before  
yesterday  
tomorrow



Key words	
<b>Tsar</b>	Monarch or emperor of Russia
<b>Autocracy</b>	A political system where the country is ruled by one monarch who holds all political power
<b>Revolution</b>	A sudden and significant change to the political system in a country, usually involving the overthrow of the previous government or ruler
<b>Bolshevik</b>	Name of the Russian Communist Party who take control of Russia in 1917
<b>Lenin</b>	Leader of the Bolsheviks until his death in 1924
<b>1905 Revolution</b>	Russia's first Revolution in which the Tsar's power is threatened but survives with some minor changes
<b>February Revolution</b>	Takes place in 1917 and sees the overthrow of the Tsar and his replacement with the 'Provisional Government'
<b>October Revolution</b>	Takes place in 1917, led by the Bolsheviks, and sees the overthrow of the Provisional Government
<b>Jack the Ripper</b>	Nickname given to a serial killer who killed at least five prostitutes in Whitechapel in 1888
<b>Whitechapel</b>	The very poor area of London in which 'Jack the Ripper' carried out his murders.

## Russia in 1905

By 1905, the vast majority of Russia was still a backward country mostly based on farming. Peasants worked hard and were often vulnerable to famine and disease. However, they were very religious and very loyal to the Tsar of Russia.

In 1905 Russia had its first Revolution. Although the protesters mostly did not wish to overthrow the Tsar they did demand some changes. This had 3 main causes:

- Ongoing poverty and inequality in Russia, and as inflation, hunger and taxation increased the peasants began to protest
- The Russian army/navy were humiliated by the Japanese in the Russo-Japanese war, so people were angry and some blamed the Tsar
- Bloody Sunday was a protest in the capital city of St. Petersburg where the Tsar ordered his troops to shoot the protesters

Despite a large amount of opposition in 1905, Tsar Nicholas II was able to survive and introduce only very limited changes.

However, in 1917 there were two revolutions in Russia that changed the country forever. On the right are some of the key features of both.

February 1917 Revolution	October 1917 Revolution
Caused by the Tsar's failure to end the war despite its effects on the Russian people.	Caused by the Provisional Government's failure to end the war, despite promising they would.
Caused by increasing demands for democracy in Russia by many different political groups.	Caused by the actions of the Communists who wanted Russia to become a Communist country.
Caused by ongoing poverty and suffering in Russia.	Caused by ongoing poverty and suffering in Russia.
Led to the creation of a Provisional Government who planned to bring in free elections	Led to the replacement of the Provisional Government with a Communist government
Although they imprisoned much of their opposition, the Government eventually lost control and the Bolsheviks took power	Once in power, the Bolsheviks fought the Russian Civil War against those who wanted the Tsar to return. They won and remained in power.

### 'Jack the Ripper'

In Whitechapel in 1888 the murders of five prostitutes were strongly suspected to be the work of a single person. Although the murderer was never caught, he was given the name 'Jack the Ripper'.

The murders took place in the area of Whitechapel, London. It was possible for the killer to escape partly because the crime rate in Whitechapel was so high.

Prostitutes were often victims of violent crime; they were alone with men, spent a lot of time out at night and many had no family able to protect them.

#### The victims

##### 1. Mary Ann Nichols— 31st August 1888

Mary was found dead in the middle of the street. She had had her throat cut and her belly sliced open.

##### 2. Annie Chapman— 8th September 1888

Annie Chapman was found in a yard, again with her throat cut and her belly sliced open. The fact that many people were close by suggests the killer was silent. Elizabeth Long reported seeing Annie talking to a foreign gentleman with a shabby genteel appearance.

##### 3. Elizabeth Stride— 30th September 1888

Elizabeth Stride was found dead in a pub back yard. Her throat had been cut however the killer had been disturbed before he could mutilate her body. This seemed to anger him and he went in search of another victim.

##### 4. Catherine Eddowes— 30th September 1888

Later that same night Catherine Eddowes was murdered in Mitre Square. The killer was clearly frustrated by his earlier failure as the cuts were deeper and more frantic than the others.

##### 5. Mary Jane Kelly— 9th November 1888

This was the most gruesome of the murders. Mary Kelly invited the murderer back to her home where the murder took place. Jack the Ripper spent hours mutilating her body. This was the most gruesome murder by far.

#### Why wasn't the killer caught?

It is likely that, had he been around today, Jack the Ripper would have been caught. However there were several reasons why he was able to get away with it.

Some of these have to do with the failures of the Police at the time:

- The police ignored and sometimes destroyed key evidence, such as writing on Catherine Eddowes' wall (a crime scene)
- The two police forces involved did not communicate well with each other
- The police offered no reward for information
- Much of the evidence the police used came from unreliable witnesses

However, there were also factors outside of Police control:

- Whitechapel was like a maze which made it easy for criminals to hide and escape
- The press were very critical of the police and mocked even some of their sensible tactics
- Many fake letters were sent to the police, claiming to be from the killer.



**Vocabulary to learn**

Identify  
Explain  
Evaluate  
Extent  
Statement  
Perspective  
Writer's craft  
Descriptive  
Discursive  
Non-fiction  
Fiction  
Article  
Report  
Speech  
Letter  
Formal  
Informal  
Protest  
Rebellion  
Segregation  
Prejudice

Links to news sights for vocab and form revision

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

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

**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*

**Checklist:**

1. Capitals
2. Full stop .
3. Exclamation !
4. Question ?
5. Comma ,
6. Apostrophe '
7. Ellipsis ...
8. Semi colon ;
9. Colon :

**Descriptor from GCSE assessment criteria**

Level 4: simple vocabulary  
Bad Good Light Happy

Level 5: effective vocabulary  
Negative Positive Bright Jolly

Level 6: sophisticated vocabulary  
Awful Fantastic Brilliant Ecstatic

Levels 7-9: ambitious vocabulary  
Immoral Virtuous Dazzling Elated

**Persuasive techniques**

- Rhetorical questions – poses a question that begs to be agreed with
- Lists – a number of things broken up with commas or semi-colons
- Using 3 – using 3 reasons makes it sound like there could be even more
- Hyperbole - exaggeration
- Alliteration – same sounds close together (catchy/memorable)
- Repetition – makes it memorable
- Personal pronouns – you, I, we (speaks to the person reading/listening)
- Direct address – as above
- Imperatives – commanding words e.g. must, will.
- Emotive language – tugs on the readers'/audiences' heartstrings
- Incentives – reasons why that benefit the reader/audience
- Anecdote – personal stories
- Metaphor – comparison to create an image for the reader/audience

## Tasks

- **What, who, why and when:** What do you think the article on the next page (source A) is describing? Who are the subjects of the article? Why has it been written? When do you think it was written?
- Using Source A, write to explain how the article links to the theme of protest? Look at language and structure as well as the content of the article.
- Imagine you are living at the time the article was written. Write a response to Source A, explaining your views on the institution and the treatment of its patients.
- **What, who, why and when:** What do you think the speech on the subsequent (next) page (Source B) is describing? Who are the subjects of the speech? Why has it been written? When do you think it was written?
- How does Source B compare to Source A? Does the writer/speaker have a different purpose for their writing? Consider the structure. Is their intended audience the same as Source A? Are there similarities in the content? Write to explain. Aim higher by using quotes to support your impressions and comparisons.
- Write your own speech in protest of something that you feel is unjust. This could be the representation of people of colour in film or the inclusion of the LGBTQ+ community in modern literature. You can choose whatever topic you feel strongly about, but you must include your feelings of injustice in relation to it. Use the persuasive techniques box on the first page to create a strong impact and affect your audience.

## Source A:

Female hysteria was once a common medical diagnosis for women. It is no longer recognized by medical authorities as a medical disorder. Salpetriere was a hospital which in the 19th held female hysteric patients. This is an account of a visit to that hospital.

The Parisian asylums are old buildings, constructed at a period when very different ideas were entertained of the architectural necessities of such establishments: secondly, that they possess a very insufficient acreage. These disadvantages, it is only fair to bear in mind, in judging their condition; their influence is felt beyond their direct effects, for they act indirectly by discouraging the attempts of the medical officers to carry out an effective system of treatment. No one regrets more, I am sure, than do many of these physicians, that they are thus cramped by the character of the buildings and grounds devoted to their patients... Making every allowance, however, I candidly confess that I was disappointed in the Paris asylums; and I think any reader of the works of Esquirol, Georget, Scipio, Pinel, &c., would be led to form a much higher estimate of the system of treatment pursued by the French than is actually the case...

Only one opinion prevailed among the Parisian doctors on the Non-Restraint System; they all regarded "Restraint" as necessary and beneficial. The well-known and excellent Dr. Falret, in conducting me over his division of the Salpêtrière, spoke in decided terms...

I found a very considerable number restrained by the camisole at Salpêtrière, Bicêtre, and Charenton. Some of these were also confined by straps, to a chair...

In Dr. Falret's division at the Salpêtrière I was much interested in the day room for the tranquil, in which were seated a large number of women engaged in sewing, and looking very clean, well dressed, and comfortable. On one occasion they sung, and recited many poetical pieces committed to memory for the purpose – Dr. Falret present and encouraging them by signs of approbation. Several tunes were also played on the piano. This was a highly interesting exhibition, and reflected credit on Dr. Falret who introduced these exercises.

Source B:

**Ed Milliband Speaking to the Royal College of Psychiatrists**

It is excellent to be here with you today at the Royal College of Psychiatrists.

I spoke a few weeks ago in Manchester about the future of our country.

About the huge challenges Britain faces, as we attempt to rebuild our economy and create a stronger society.

A country where everybody has a stake, where prosperity is fairly shared and where we protect and improve the institutions that bind us together.

I called this approach “One Nation”.

One Nation means nobody is left out, or written off.

Because it is wrong.

And we can't succeed as a country if that's what we do.

And today I want to talk about one of the most serious challenges our country faces.

One that writes people off in just that way.

Affecting:

North and south.

Rich and poor.

Old and young.

Those who work and those who can't.

Disabled and non-disabled people.

A problem that can strike anyone.

It blights millions of lives.

And undermines the welfare of our nation.

And it is also a challenge that affects our competitiveness as a country.

That places a huge strain on our public services.

And that costs our economy tens of billions of pounds a year.

From the people living with schizophrenia and bipolar disorder to those fighting bouts of depression and panic attacks.

Now, you would think a widespread and important challenge like this would be something we that it would be top of the political agenda.



That every leading politician would be obliged to address to it.

That we would be falling over each other, as we do, to prove that we had a solution.

But that doesn't tend to happen.

For far too long leading politicians from all parties, including my own, have maintained an almost complete silence about mental health.

Only in emergencies and at the extreme end of conditions do we tend to talk about the issue.

Now there will be some people who say that mental health is the kind of subject we can talk about in the good times, but not when the economy is such a priority.

In my view, that is the opposite of the truth.

Because mental health is an economic challenge holding back prosperity.

Because however hard the economic challenges, we cannot forget about people's quality of life.

And, finally, if we want a politics that talks directly to the challenges that British people face in their everyday lives, we cannot allow the silence to continue.

Taboo

And it's not just politics that is too silent.

It is a taboo running across our society which infects both our culture and our politics.

It is a taboo which not only blights the lives of millions but also puts severe strain on the funding of our NHS and threatens Britain's ability to pay our way in the world.

It is a taboo which must be broken if we are to rebuild Britain as One Nation.

Mental health is subject we all, whoever we are, still instinctively avoid.

At home, in the workplace and in our communities, it tends to be brushed under the carpet.

Teachers and our parents are unlikely to talk to us about mental illness when we are young.

And we all fear the unknown.




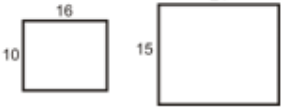
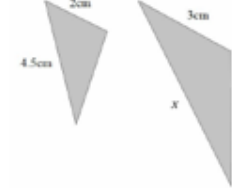
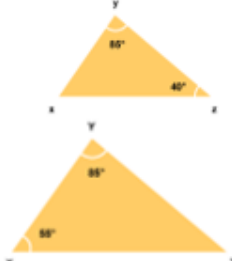
Today in 2012, far too many people in this country still feel as if they have to pretend they have something else wrong with them when they are struggling with depression.

People can be scared to tell their boss.



Intimidated by the culture that still surrounds mental illness.

Scared into silence.

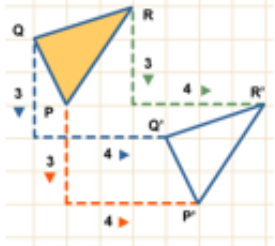
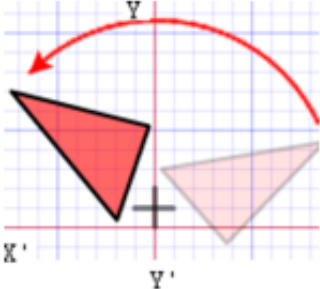
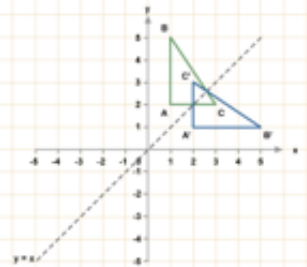
# Topic: Congruence and Similarity

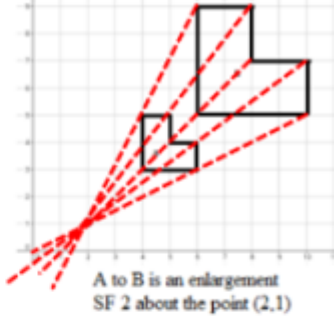
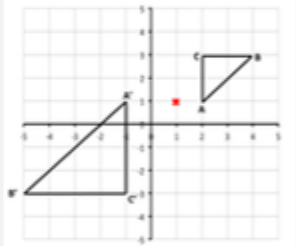
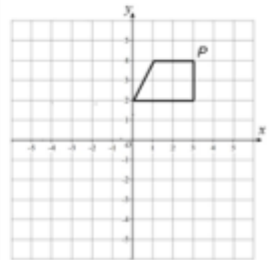
Topic/Skill	Definition/Tips	Example
1. Congruent Shapes	Shapes are congruent if they are <b>identical - same shape and same size</b> .  Shapes can be rotated or reflected but still be congruent.	
2. Congruent Triangles	4 ways of proving that two triangles are congruent:  1. SSS (Side, Side, Side) 2. RHS (Right angle, Hypotenuse, Side) 3. SAS (Side, Angle, Side) 4. ASA (Angle, Side, Angle) or AAS  <u>ASS does not prove congruency.</u>	 <p> <math>BC = DF</math>  <math>\angle ABC = \angle EDF</math>  <math>\angle ACB = \angle EFD</math>  <math>\therefore</math> The two triangles are congruent by AAS.         </p>
3. Similar Shapes	Shapes are similar if they are the <b>same shape but different sizes</b> .  The proportion of the matching sides must be the same, meaning the ratios of corresponding sides are all equal.	
4. Scale Factor	The <b>ratio of corresponding sides</b> of two similar shapes.  To find a scale factor, <b>divide a length on one shape by the corresponding length on a similar shape</b> .	 <p>Scale Factor = <math>15 \div 10 = 1.5</math></p>
5. Finding missing lengths in similar shapes	1. Find the <b>scale factor</b> . 2. <b>Multiply or divide</b> the corresponding side to find a missing length.  If you are finding a missing length on the larger shape you will need to multiply by the scale factor.  If you are finding a missing length on the smaller shape you will need to divide by the scale factor.	 <p>Scale Factor = <math>3 \div 2 = 1.5</math>  <math>x = 4.5 \times 1.5 = 6.75\text{cm}</math></p>
6. Similar Triangles	To show that two triangles are similar, show that:  1. The three sides are in the same proportion 2. Two sides are in the same proportion, and their included angle is the same 3. The three angles are equal	

# Topic: Ratio

Topic/Skill	Definition/Tips	Example
1. Ratio	Ratio compares the size of <b>one part to another part</b> .  Written using the ':' symbol.	$3 : 1$ 
2. Proportion	Proportion compares the size of <b>one part to the size of the whole</b> .  Usually written as a fraction.	In a class with 13 boys and 9 girls, the proportion of boys is $\frac{13}{22}$ and the proportion of girls is $\frac{9}{22}$
3. Simplifying Ratios	<b>Divide</b> all parts of the ratio by a <b>common factor</b> .	$5 : 10 = 1 : 2$ (divide both by 5) $14 : 21 = 2 : 3$ (divide both by 7)
4. Ratios in the form 1 : n or n : 1	<b>Divide</b> both parts of the ratio by one of the numbers to make <b>one part equal 1</b> .	$5 : 7 = 1 : \frac{7}{5}$ in the form 1 : n $5 : 7 = \frac{5}{7} : 1$ in the form n : 1
5. Sharing in a Ratio	1. <b>Add</b> the total parts of the ratio. 2. <b>Divide</b> the amount to be shared by this value to find the value of one part. 3. <b>Multiply</b> this value by each part of the ratio.  Use only if you <b>know the total</b> .	Share £60 in the ratio 3 : 2 : 1.  $3 + 2 + 1 = 6$ $60 \div 6 = 10$ $3 \times 10 = 30, 2 \times 10 = 20, 1 \times 10 = 10$ £30 : £20 : £10
6. Proportional Reasoning	Comparing two things using <b>multiplicative reasoning</b> and applying this to a new situation.  Identify one multiplicative link and use this to find missing quantities.	
7. Unitary Method	Finding the <b>value of a single unit</b> and then finding the necessary value by <b>multiplying</b> the single unit value.	3 cakes require 450g of sugar to make. Find how much sugar is needed to make 5 cakes.  $3 \text{ cakes} = 450\text{g}$ So 1 cake = $150\text{g}$ ( $\div$ by 3) So 5 cakes = $750\text{g}$ ( $\times$ by 5)
8. Ratio already shared	Find what <b>one part</b> of the ratio is worth using the <b>unitary method</b> .	Money was shared in the ratio 3:2:5 between Ann, Bob and Cat. Given that Bob had £16, found out the total amount of money shared.  $\pounds 16 = 2 \text{ parts}$ So $\pounds 8 = 1 \text{ part}$ $3 + 2 + 5 = 10 \text{ parts}$ , so $8 \times 10 = \pounds 80$
9. Best Buys	Find the <b>unit cost</b> by <b>dividing the price by the quantity</b> . The <b>lowest number</b> is the best value.	8 cakes for £1.28 $\rightarrow$ 16p each ( $\div$ by 8) 13 cakes for £2.05 $\rightarrow$ 15.8p each ( $\div$ by 13) Pack of 13 cakes is best value.

## Topic: Shape Transformations

Topic/Skill	Definition/Tips	Example
1. Translation	<b>Translate</b> means to <b>move a shape</b> . The shape does not change <b>size</b> or <b>orientation</b> .	
2. Column Vector	In a column vector, the <b>top</b> number moves <b>left (-) or right (+)</b> and the <b>bottom</b> number moves <b>up (+) or down (-)</b>	$\begin{pmatrix} 2 \\ 3 \end{pmatrix}$ means '2 right, 3 up' $\begin{pmatrix} -1 \\ -5 \end{pmatrix}$ means '1 left, 5 down'
3. Rotation	The size does not change, but the <b>shape is turned around a point</b> .  Use tracing paper.	Rotate Shape A 90° anti-clockwise about (0,1) 
4. Reflection	The size does not change, but the shape is ' <b>flipped</b> ' like in a <b>mirror</b> .  Line $x = ?$ is a <b>vertical line</b> . Line $y = ?$ is a <b>horizontal line</b> . Line $y = x$ is a <b>diagonal line</b> .	Reflect shape C in the line $y = x$ 
5. Enlargement	The shape will get <b>bigger or smaller</b> . Multiply each side by the <b>scale factor</b> .	Scale Factor = 3 means '3 times larger = multiply by 3'  Scale Factor = $\frac{1}{2}$ means 'half the size = divide by 2'

6. Finding the Centre of Enlargement	Draw <b>straight lines</b> through <b>corresponding corners</b> of the two shapes. The centre of enlargement is the point <b>where all the lines cross over</b> .  Be careful with negative enlargements as the corresponding corners will be the other way around.	
7. Describing Transformations	Give the following information when describing each transformation:  Look at the number of marks in the question for a hint of how many pieces of information are needed.  If you are asked to describe a 'transformation', you need to say the <b>name of the type of transformation</b> as well as the other details.	<ul style="list-style-type: none"> <li>- Translation, Vector</li> <li>- Rotation, Direction, Angle, Centre</li> <li>- Reflection, Equation of mirror line</li> <li>- Enlargement, Scale factor, Centre of enlargement</li> </ul>
8. Negative Scale Factor Enlargements	Negative enlargements will <b>look like they have been rotated</b> .  $SF = -2$ will be rotated, and also twice as big.	Enlarge ABC by scale factor -2, centre (1,1) 
9. Invariance	A point, line or shape is invariant if it <b>does not change/move</b> when a transformation is performed.  An invariant point 'does not vary'.	If shape P is reflected in the $y$ -axis, then exactly one vertex is invariant. 

## Year 9 RS: Is it ever right to fight?

Key words	
Peace	A state of mutual harmony between people and countries.
Ahimsa	The principle of non-injury to all living things.
Just War Theory	This is a war that is fought in a fair and noble way.
Jihad	A struggle or fight against the enemies of Islam.
Greater Jihad	A struggle with oneself to be a good Muslim
Lesser Jihad	A struggle with oneself and the rest of the world.
War	A state of conflict and tension between countries.
Pacifism	Not believing in violence.

‘A kind word with forgiveness is better than charity followed by injury’ *Surah, Qur’an 2:263*

‘If anyone does evil or wrongs his own soul, but afterwards seeks God’s forgiveness, he will find God often forgiving, Most Merciful.’

*Surah , Qur’an 4:110*

‘Be forgiving and control yourself in the face of provocation; give justice to the person who was unfair and unjust to you; give to the one who did not help you when you were in need, and keep fellowship with the one who did not care about you.’ *Hadith*

### Christian Teachings on War and Peace.

In the Old Testament in the Bible God commanded the Israelites to fight against nations that had sinned against Him. These were called ‘holy wars’ because they were against nations who had blasphemed about the Israelite God ‘Yahweh’.

In the Bible a shepherd boy David killed a giant called Goliath with a small slingshot. Goliath had publicly provoked the Israelites and defied God’s name, and David stepped forward to challenge him. This ended the battle and showed God’s power, might and glory to the rest of the nation. Sometimes, fighting can be the lesser of two evils, to defeat evil and encourage peace. In the New Testament Jesus believed in peace and love, he did not encourage people to fight or wage war on each other. War encourages people to be selfish and inflict physical and mental suffering on each other. War leads to a breakdown of trust and love between humans and it brings nothing but misery for everyone involved. Jesus was a pacifist (he believed in peace) and said whoever uses violence to get what they want will have violence done against them. He told Christians they must: “Love your neighbour as yourself.” This means loving and showing forgiveness when someone does something wrong rather than seeking revenge. The Bible seems to give two messages about war. In the Old Testament God was instructing his people to attack and kill their enemies and quote, “An eye for an eye and a tooth for a tooth.”



Muslim Teachings on War and Peace.

The Arabic word for struggle is jihad. All Muslims have a daily struggle or Jihad to make society perfectly Muslim. This includes struggling with yourself and your desires and not fighting. This is the greater jihad.

The lesser jihad is the struggle with forces outside yourself by means of war.

Muslims call wars fought in the name of Allah a Jihad or Holy War.

What are the rules/limits for Muslims?

It must be a last resort – all non-violent methods to solve the problem must have been tried. It must be authorised and led by a Muslim authority. It must be fought in such a way as to cause the minimum amount of suffering.

Innocent civilians (especially the old, the young, and women) must not be attacked.

It must be ended as soon as the enemy lays down their arms.

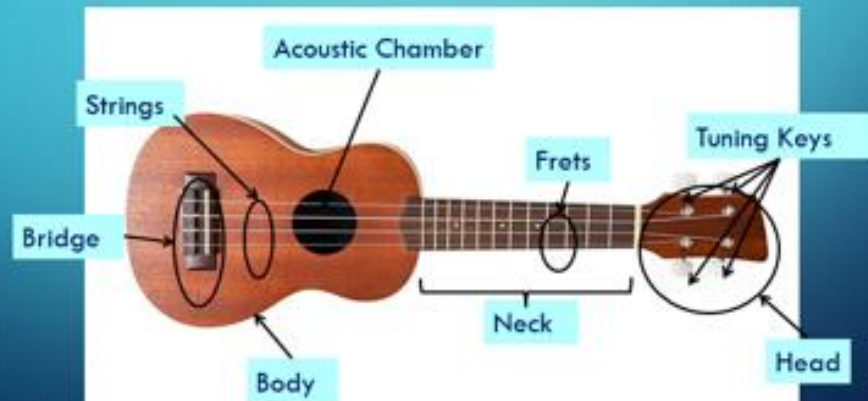
This shows that God encouraged revenge for things that were done against someone's wishes. However, in the New Testament Jesus said he had come to bring peace and no good could ever come from violence. Jesus also said, "Those who live by the sword shall die by the sword." Patience, forgiveness and love were the only ways to deal with violence and war. This is the point of view most Christians try to follow.

Some Christians, however, feel there are certain conditions that can lead to war being acceptable. Violence can be used to uphold peace and freedom and resist attack. Violence must promote good or avoid evil and those who are to be attacked must deserve it. This is called a "Just War". Peace and justice must always be restored once a war has happened. Many Christians serve in the armed forces, and believe that Jesus' teachings on peace apply to society, and not world conflict. They are called combatants – they believe it is better to fight against evil and make the world a better place. Some Christians believe war is right, although they are not willing to fight in combat. These people (non-combatants) would rather help out in practical ways e.g. working as a medic or driving trucks. There are some Christians called, "Quakers", who believe all violence is against God's wishes. They are also called Pacifists, or conscientious objectors. They refuse to fight in the army and say the Spirit of Jesus could never move people to fighting a war because the teachings of Christ are about love.

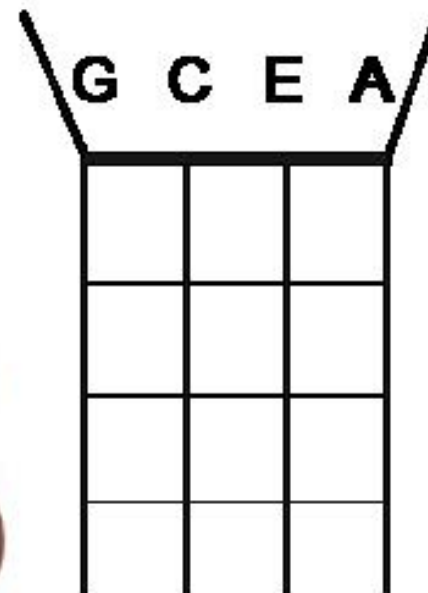


# Year 9 Music Knowledge Organiser

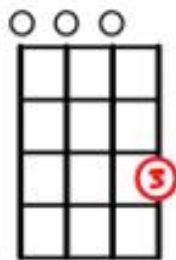
## THE UKULELE



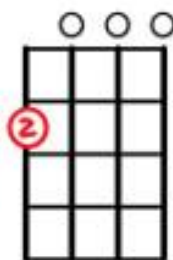
## Ukulele Tuning



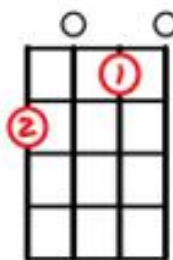
**C**



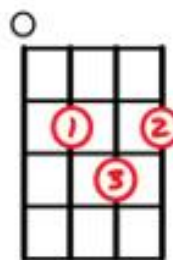
**Am**



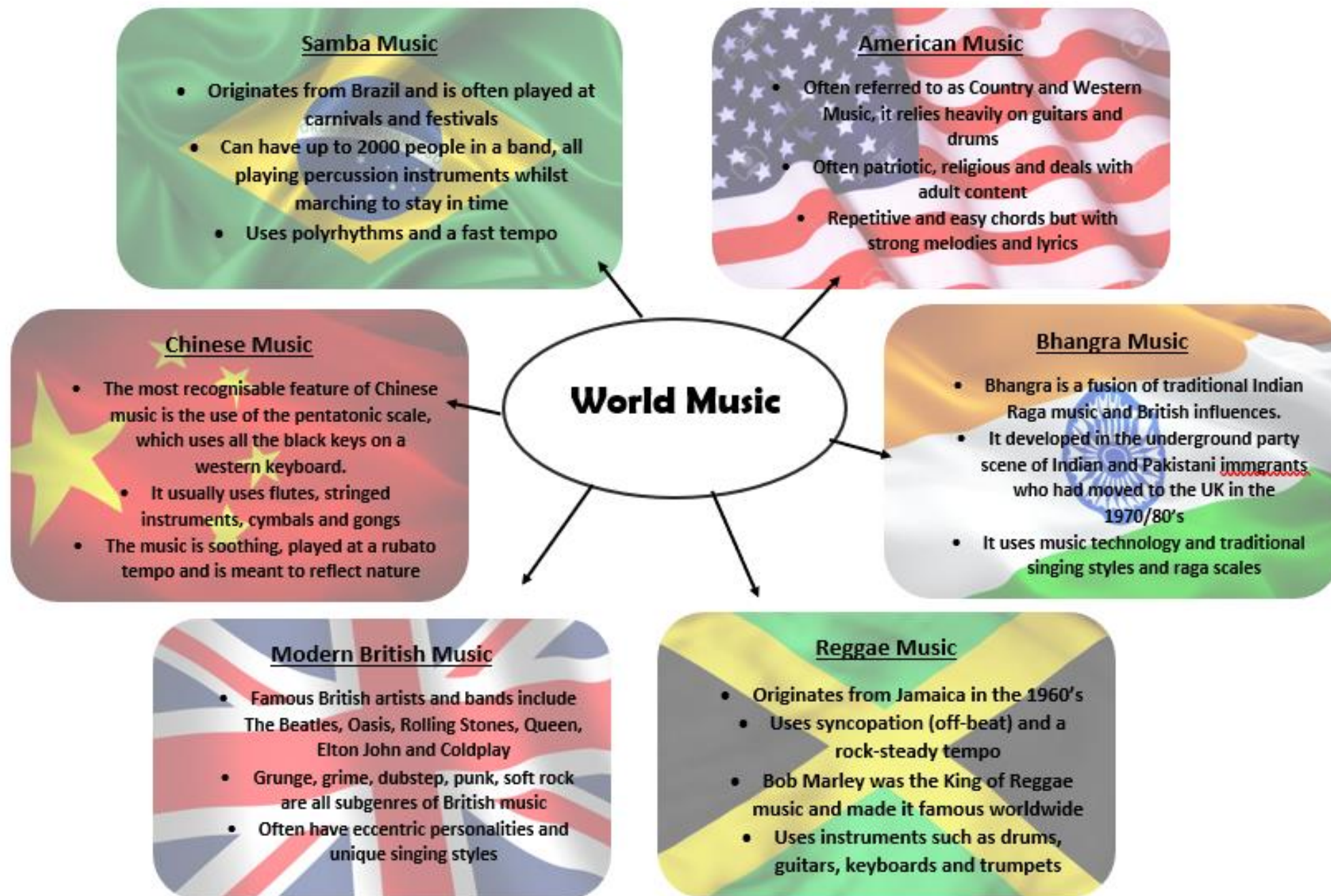
**F**



**G**







# 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	Ama7

### 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

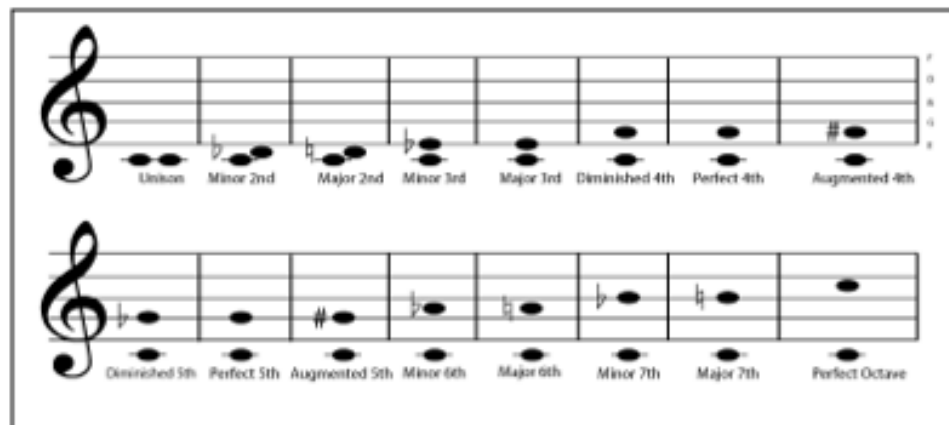
### I IV I V

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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**Going the extra mile activities.**  
**Here are some great ideas to do with family to avoid boredom that go above and beyond during the next half term.**

The Arts	IT	DT	English and Drama	Humanities	PE	Maths	Science
Create a Christmas play for you and your friends to work on over the internet. Make it hilarious.	Write a pseudocode/Python program that prints the times table for any number entered by the user. You will need two variables 1 will be typed in by the user.	Research what different kinds of materials roofers use. Why do we often have slate tiles on our roof? What is the point of gutters?	Watch one of the briefings by the government. What makes a good information giving speech? How is it being delivered? Make your own.	Create a detailed plan to make the world more economically equal when we are all back to normal. Share it with anyone you can get to listen.	Invent a new sport.	Explain what a square root is to someone really not mathematical.	Use equipment in your home to get salt out of salty water. How could we get water from salt water?
Develop an observational humour stand up show. Watch how comedians tell a story. Think about their delivery and how they make it look like they have just had that thought. Try it.	How can the school improve the student and staff use of Office 365? Create a 1 page summary of the improvements you made.	Design a meme about increasing social interactions during social isolation. Make it funny and informative.	Devise a political protest speech outlining your objection to something political e.g. children's suffrage or the tyranny of schooling.	In 1917 Russia had a great revolution. What would a great revolution look like in 2027? What would be the similarities and differences if Year 9 were in charge?	Create a set of rules.	Where can we find the Fibonacci sequence in nature? Do some research!	Find out how the brain remembers things.
Watch a performance by an artist you love – many are on Instagram or YouTube. Evaluate the difference between a live performance and a studio edit.	Design a new computer game. What would be the features? How would it work?	Create a village. Any media. Make sure the village has a wide range of housing.	Think about the points that agree and disagree with the following statement:  There should be no democracy. We should have an overlord who makes all the decisions.	Why are we fascinated by crime? What makes Jack the Ripper such an interesting topic? Find out why if you can!	Get family members to play.	Pick any number. If that number is even, divide it by 2. If it is odd multiply it by 3 and add 1. Repeat the process. Every time you end up with 1. Why?	Over the past 20 years there has been tremendous research done on the origin of homo sapiens and other human species. Find out about it because your parents never learned it at school!
Make a playlist that means something to you. Share it with friends and explain why it matters to you.	Think about how we can avoid mental health problems and remain connected online. Explain it to your family and make a plan.	Invent a new sauce for chips or burgers. Test it. How could you bring it to market?	Think about a film you have watched recently. Imagine you had control of the story from half way through. How would you develop it?	How can we be greener as a society using technology? Create an infomercial advertising a product.	Send it to the organisers of the Quarantine Olympics to include it in the next games!	What is the shortest journey that goes to all these places in any order. York, Ipswich, London, Bristol, Leeds, Norwich, Oxford?	Sir Isaac Newton and Paul Dirac are two eminent British scientists. What did they do?