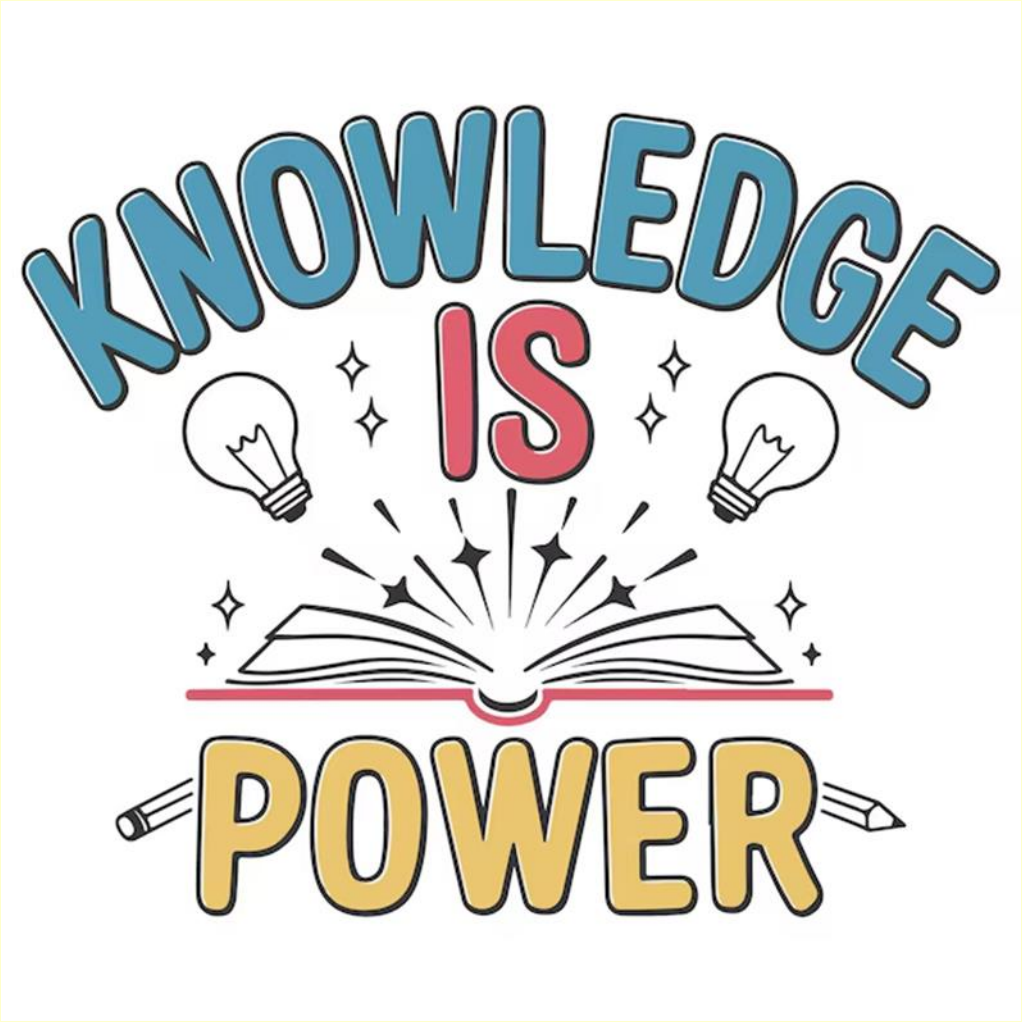
Open Academy Year 9 Knowledge Organiser

Summer Term 1



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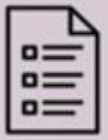
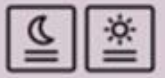
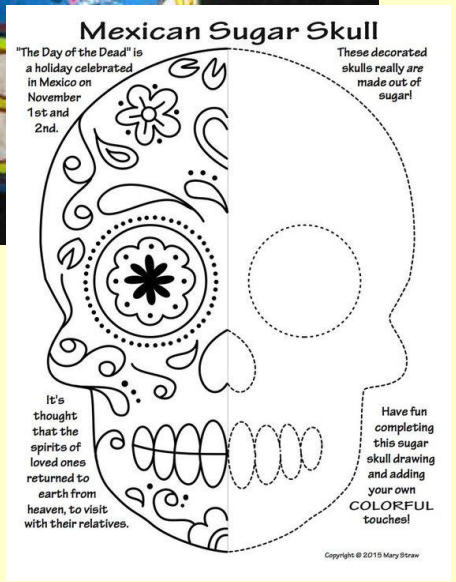
How to use you Knowledge Organiser: Step by step guide

	Look, Cover, Write, Check	Definitions of Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	Look at and study a specific area of your KO. 	Write down the key words and definitions. 	Use your KO to condense and write down key facts or information onto flash cards. 	Use your KO to create a mini quiz. Write down your questions using your KO. 	Create a mind map with all the information you can remember from your KO. 	Ask a friend or family member to have the KO or flash cards in their hands. 
Step 2	Cover or flip the KO over and write down everything you can remember. 	Try not to use your KO to help you. 	Add pictures to help support. Then self-quiz using the flash cards. You could write questions on one side, and answers on the other! 	Answer the questions and remember to use full sentences. 	Check your KO to see if there are any mistakes on your mind map. 	They can test you by asking you questions on different sections of your KO. 
Step 3	Check what you have written down. Correct any mistakes in green pen and add anything you have missed. Repeat. 	Use your green pen to check your work. 	Ask a friend or family member to quiz you on the knowledge. 	Ask a friend or family member to quiz you using the questions. 	Try to make connections, linking the information together. 	Write down your answers, 

Year 9 Art – Topic: Dia de los Muertos

The Day of the Dead



In the summer term year 9 study the Mexican Festival "The Day of the Dead". They learn about the traditions and culture of the festival and design their own decorative skulls in the same style.

They also design and make clay model skulls and carve patterns into them and then paint them.

Key Vocabulary:

Calavera – A skull; commonly seen as sugar skulls (*calaveras de azúcar*) or artistic representations in Day of the Dead artwork.

Symbolism – The use of symbols to represent ideas; in Día de los Muertos, objects like skulls and flowers carry deep meanings.

Pattern – A repeated decorative design, often found in sugar skulls and papel picado.

Contrast – The use of opposing elements (like dark and light) to create visual interest; useful in decorating skulls.

Summer 1

Year 9 Computer Science : Python

Python's Development Environment Called IDLE – Integrated Development Environment Two Modes: Interactive Mode lets you see your results as you type them. Script Mode lets you save your program and run it again later.

Syntax errors Syntax is the spelling and grammar of a programming language. In programming, a syntax error occurs when:

- there is a spelling mistake.
- there is a grammatical mistake.

```
print ("What is your name?")
firstname = input()
print ("Hello,",firstname)
```

Operator	Meaning	Example	Evaluates to
==	equal to	7==7	True
!=	not equal to	6!=7	True
>	Greater than	7>6	True
<	Less than	5<8	True
>=	Greater than or equal to	6>=8	False
<=	Less than or equal to	7<=7	True

Algorithms consist of steps that are carried out (performed) one after another. Sometimes an algorithm needs to repeat certain steps until told to stop or until a particular condition has been met.

Key Vocabulary:
Syntax
Variable
Function
Selection
Iteration
Typecasting
IF
ELIF
ELSE
Nesting

Key Questions

- What is a string?
- What is an iteration?
- Give an example of an IF selection
- When do we use ELIF?

Year 9 Drama: Topic 1 – Technical Theatre

A **set designer** is responsible for designing the set, working closely with the director and the design team to create the world of the show. They may begin by providing the director with a concept, before moving on to the technical drawing stage. Once the design is complete, the set is constructed and completed by various departments that specialise in materials such as metal, wood and paint.

A **costume designer** is responsible for designing the costume, hair and make-up for a production, working closely with the design team to ensure that the costumes match the style of the show. They will often create designs ahead of the production being cast and can then make changes once they have met the performers. The costume designer works closely with the costume department, who are responsible for making the outfits and wigs.

The **Performing Arts Industry** is made up of many different job roles who all have to work together **collaboratively** to make sure that each production is a success.

To be involved in any part of the performing arts industry you need to have transferrable skills such as good **communication, cooperation**, **commitment, time management, self motivation** and **self awareness.**

Task: Match the pictures to the job descriptions – which is the job not mentioned?

A **performer** might be an actor, singer or dancer, whose job is to perform within a production. They will usually audition in front of the director and a casting director to get their part. They begin their work in the rehearsal room with the director, before performing on stage in front of an audience. They must ensure to maintain a high-quality performance each night, during the run of the show.

The **director** is responsible for the overall creative vision of the show. They have to bring the different elements of the production together to produce the final production. They have meetings with the design team at various stages during a production. They will also direct the performers and help them develop their characters in rehearsals ahead of the final performance.

The sound team will design the sounds that are used within a production, sound is used to help set the mood and atmosphere as well as helping to show the location.

Year 9 English: Topic – Macbeth

Summary

Macbeth is a noble, Scottish lord, loyal to his king. But when an opportunity to gain greater power for himself is presented, Macbeth becomes a victim to his own greed and ambition. In this play, Shakespeare explores what happens when we are allowed a taste of power and success, themes that resonate with audiences to this day.

Why am I learning this?

Macbeth deals with a number of timeless themes and ideas, some of which we say play out in our lives today. Through our study of the text, we are also equipping you with the knowledge and approach to engage in your study of Shakespeare at KS4. This includes recognising themes, methods and becoming increasingly familiar with language.

Tasks:

1. Make a list of key themes. As you read a scene, select three key quotes for each theme.
2. After each scene, predict what you think will happen.
3. Create a list of questions you have following reading a scene.

Be ambitious:

Research critical context to Macbeth and always try to link events in Shakespeare time with what we are seeing in the play. Extend this further by making short connections to the 21st Century.

Technical Vocabulary

Meter – The rhythm or beat of a line or passage of text..

Foreshadowing – A hint or clue to what might happen later in a text – creates a sense of fate or destiny.

Hamartia – A character's fatal flaw that will inevitably lead to their downfall.

. Tragedy – A genre of drama in which characters often meet fatal ends.

Symbolism – Using symbols or icons to represent an idea.

Use these in analysis to show awareness of the author's methods. Remember to explain their effects.

Ambitious Vocabulary

Inevitable – Certain to happen.

Macabre – Disturbingly gruesome and causing a fear of death.

Machiavellian – Cunning, scheming and unscrupulous.

Remorse – A feeling of regret or guilt.

Manipulate – The idea of changing or altering something to suit a given purpose.

Malevolent – Completely and utterly evil. .

Totalitarian – A government that seeks control of every action.

Try to use the ambitious vocabulary in your writing and analysis.

Year 9 Food Technology – 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.

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)

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 fill 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

Key Vocabulary

Arteries
Diabetes
Cardio vascular system
Coronary Heart Disease
Energy
High blood pressure
Obesity
Saturated
Unsaturated
Weight gain

Tips on staying healthy

- Exercise plenty! 30 minutes per day.
- Drink plenty water – 6-8 cups a day
- Follow the eatwell guide
- Eat plenty fresh fruits and vegetables
- Cut down on saturated fat and sugar
- Eat less salt as this raises blood presure
- Eat less refined white carbohydrates

Example exam questions

Why is childhook obesity on the increase?

List some health issues linked to a high fat diet.

Why should we reduce the amount of salt we eat?

Name some healthy issues linked to obesity.

Which dietary related health problems can too much sugar cause?

Year 9 Geography – Topic: Global Challenges

What is a Global Challenge in Geography?

These are issues or problems that extend across several countries of the world. These could be directly or indirectly linked to people's daily activities.

Population and Resources

Global Population continues to rise over 8 billion. This places extra demands upon resources like food and water.

Food

Resources of food are concentrated in specific areas of the world. This means that through global trade we are able to import and export foods we cannot grow or can only grow when in season. Food miles mean food travels long distances creating huge carbon emissions in the process.

Water

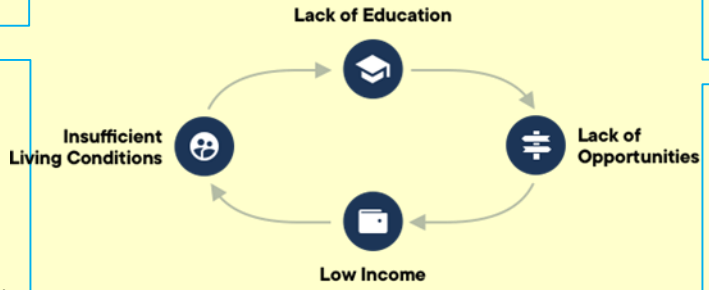
As populations increase the demands upon underground sources of water as well as overground reservoirs will increase. Mexico City has subsided over many years of drainage and extraction of underground water supplies.

Inequality

Some nations and some people within those nations will have an excess of resources like food while others have very little. The US has an obesity problem and many developing countries have 'malnutrition', calorie intakes vary hugely.

Global Poverty

Hundreds of millions of people are living below what the UN calls a state of severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education, and information.



Waste

Each day mainly in developed countries huge quantities of waste are thrown away. An example of this would be food.

Water Security

Issues of water quality and insufficient quantity continue to affect large areas of the world. Many areas lack adequate sanitation.

Rivers, seas and oceans

Resource depletion of fish stocks, chemical and sewage pollution, plastics and toxic metals have all been dumped in water sources. This impacts upon wildlife habitats.

Species loss

Plant and animal species continue to be destroyed in species rich habitats like rainforests or coral reefs. This can destroy food chains and reduce 'bio-diversity'.

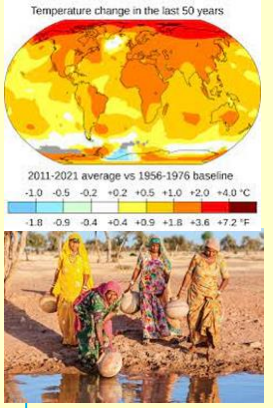
Energy sources

Fossil Fuels continue to be the cheapest and most easily accessed/stored sources of energy on Earth but release carbon when burned.

Renewable energies are developing but require high levels of investment and maintenance. Nuclear waste creates long-term storage problems.

Climate Change

There are concerns that the World's atmosphere will contain more Carbon Dioxide. This creates a 'greenhouse' effect holding heat rather than releasing it. Some biomes are more vulnerable to changes in temperature or rainfall. The polar and alpine regions could become warmer whereas rainforests could be become drier. Insects and pests increase.



Key Vocabulary

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

Year 9 German – Topic: Your Rights

Ich denke ... *I think ...*
Ich denke, das ist richtig. *I think that is right.*
Ich denke, das ist falsch. *I think that is wrong.*
Das finde ich toll. *I find that great.*
Das ist ganz in Ordnung. *That is acceptable/OK.*
Ich denke, mit (zwölf) Jahren ist *I think (at) the age of (12) is better. besser.*
Das ist zu alt. *That's too old.*
Das ist zu jung. *That's too young.*
Das ist nicht gut. *That's not good.*

Warum ist dir das wichtig? *Why is it important to you?*
(Musik) ist mir wichtig, weil ... *(Music) is important to me, because ...*
sie mich glücklich macht *it makes me happy*
es Spaß macht *it's fun*
ich in einer Band spiele *I play in a band*
ich oft traniere *I train often.*
er mein bester Freund ist *he's my best friend*
Ich suche oft Infos und mache *I often search for information and do my Hausaufgaben am Computer. homework on the computer.*
Ich möchte Arzt werden. *I would like to become a doctor.*
Ich möchte fit bleiben. *I would like to keep fit.*

Mit welchem Alter darf *At what age are you allowed to*
man das? *do that?* Man darf mit (16) Jahren … *At the age of (16) you are allowed to …*
einen Teilzeitjob haben *have a part-time job*
Blut spenden *give blood*
ein Piercing haben *have a piercing*
ein Nasenpiercing haben *have a nose piercing*
bis 24 Uhr in Discos oder *be out at a disco or club until* Clubs bleiben *midnight*
die Schule verlassen *leave school*
ein Mofa fahren *ride a moped*
heiraten *get married*
einen Lottoschein kaufen *buy a lottery ticket*
Paintball spielen *go paintballing*mit Einwilligung der Eltern *with parental consent*Es gibt keine Altersgrenze. *There is no age limit.*

Ein neues Leben *A new life*
Ich wohne jetzt in ... *I now live in ...*
Ich habe früher in ... gewohnt. *I used to live in ...*
Mein Haus hier ist … *My house here is …*
Mein Haus in … war … *My house in … was …*
Ich finde die Schule hier … *I find the school here …*
Die Schule in … war … *The school in … was …*
Jetzt fahre ich (mit dem Bus) *Now, I go to school (by bus).*
zur Schule.
Ich bin früher zu Fuß zur *I used to walk to school.*
Schule gegangen.
Hier ist es jeden Tag (sonnig *Here, every day is (sunny and hot).*
und heiß).
Ich vermisse (die Sonne). *I miss (the sun).*
Früher war es oft (kalt) ... *Before, it was often (cold) …*
Nächste Woche werde ich … *Next week, I will …*

Was ist dir wichtig? *What is important to you?*
meine Familie *my family*
mein Handy *my mobile phone*
mein Computer *my computer*
mein Hund *my dog*
Geld *money*
Mode *fashion*
Musik *music*
Freizeit *free time*
Sport *sport*
Ausschlafen *having a lie-in*
... ist mir das Wichtigste. *... is the most important thing to me.*
... ist mir wichtig. *... is important to me.*
... ist mir nicht wichtig. *... is not important to me.*
gute Noten *good grades*
meine Haustiere *my pets*
Meine Freunde *My friends*
... sind mir das Wichtigste. *... are the most important thing to me.*
... sind mir wichtig. *... are important to me.*

Oft benutzte Wörter *High-frequency words*
jetzt *now*
Früher*before/previously*
mit *with*
ohne *without*
jung *young*
alt *old*
wichtig *important*
nicht wichtig *not important*

Summer 1

Year 9 History – Topic: Terrorist or Freedom Fighter?

Terrorism (Old & New)

1. Terrorism is using terror (fear) to try and make a change.
2. The term '**terrorism**' was first used during the **French Revolution**. The new leaders of France started a '**Reign of Terror**' to stamp out **enemies.**
3. Before the 20th century terrorists usually targeted kings, leaders and others in control.
4. If there was a danger of hurting women/children the attack would usually be called off.
5. Today terrorists very rarely target the leaders but instead attack innocent civilians.
6. Terrorists have lots of different aims, such as changing who/how a country is ruled/controlled.
7. Some people call terrorists 'freedom fighters' as they are trying to gain 'freedom' from something, but they still use methods which create fear/terror.

- Both terrorists and freedom fighters want to bring about some sort of change, which people see as being positive or negative depending on whether they agree with their aims.
- They may both use similar ways to bring this change about.
- The methods used may vary but both will often lead to fear/terror.

Key Vocabulary

- Activism
- Bolsheviks
- Fear
- Freedom
- French Revolution
- Ghandi
- Hostage
- Independence
- IRA (Irish Republican Army)
- Israel
- Lenin
- Non-violent
- Palestine
- Suffrage
- Suffragette
- Suffragist
- Terror/terrorism/terrorist
- Twin Towers
- Unionism
- 9/11

Terrorism OR Freedom Fighting?	
Lenin and the Bolsheviks taking power in Russia in 1917 by armed uprising.	9/11, where planes were flown into the Twin Towers in America.
Suffragettes smashing windows and setting fire to buildings to get equal voting rights for women.	People lying in the roads causing disruption to transport, for example as protests against climate change.
The IRA planting bombs to try and kill the British Prime Minister as a way to help achieve Irish independence.	Young people going on strike from schools to raise the importance of the environment.
The Suffragists campaigning peacefully through non-violent resistance to gain the vote for women.	Palestinians taking Israeli athletes hostage at the 1972 Olympics as a way to help achieve Palestinian independence.
Ghandi taking part in non-violent resistance against the British control of India.	Using ships to get in the way of others who are attacking wildlife.

Year 9 Maths - Unit 12 – Enlargement and Similarity

What do I need to be able to do?

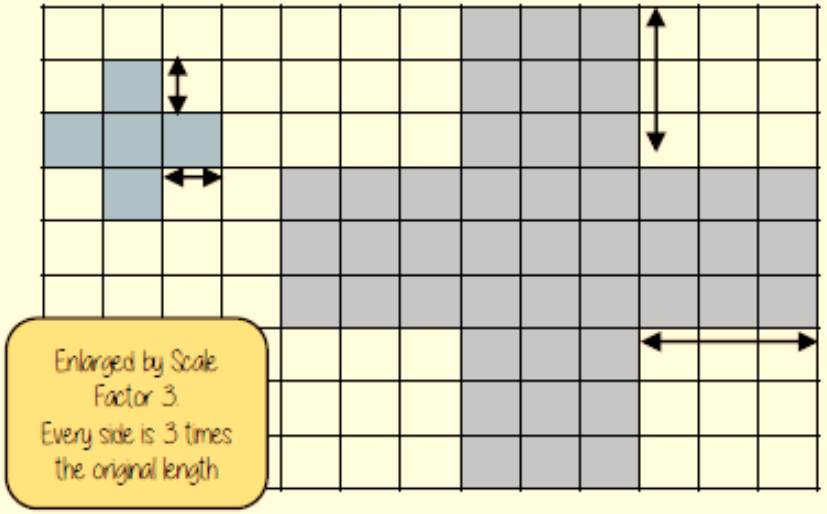
- Recognise englargement and similarity
- Enlarge a shape by a positive scale factor
- Enlarge a shape by a fractional scale factor
- Enlarge a shape from a point
- Work out missing lengths and angles in similar shapes

Vocabulary

Corresponding: objects or sides that appear in the same position in similar shapes
Decreased: got smaller
Enlarge: to change the size of a shape (enlargements can make the shape smaller)
Image: the picture or visual representation of the shape
Increased: grown bigger
Similar Shapes: shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles.
Scale Factor: the number that the lengths of the shape have been multiplied by to create a similar shape
Trapezium: a quadrilateral with exactly one pair of parallel sides

Enlarge by a positive scale factor

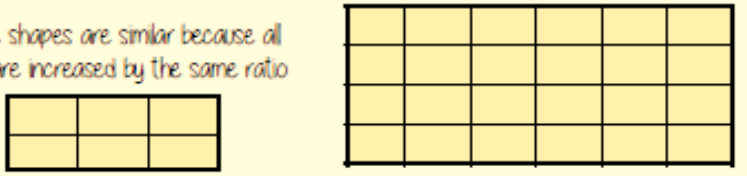
With a scale factor larger than 1 it makes the shape **bigger**



Recognise enlargement & similarity

Shapes are similar if all pairs of corresponding sides are in the same ratio

These shapes are similar because all sides are increased by the same ratio



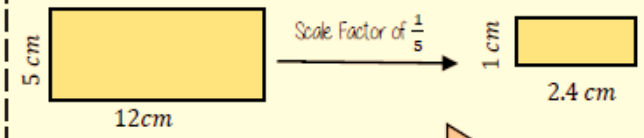
Enlargements are similar shapes with a ratio other than 1

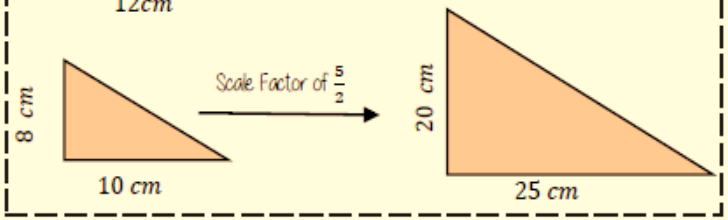
Similar Shapes

Enlargement (No Centre)

Positive fractional scale factor

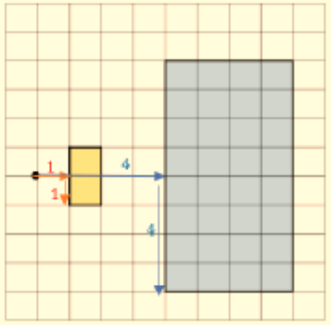
With a scale factor between 0 and 1 it makes the shape **smaller**





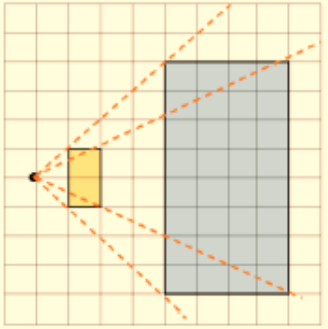
Enlarge a shape from a point

Scaled distances method



Scale the distance between the point of enlargement and each corresponding vertices

Rays method

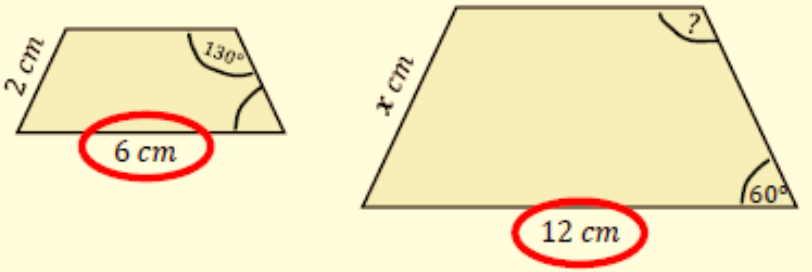


Multiply the distance from the centre of corresponding vertices by the scale factor along the ray

Calculations in similar shapes

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

The two trapezium are similar find the missing side and angle



Corresponding sides identify the scale factor $\frac{12}{6} = 2$ Scale Factor = **2**

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

$2cm \times 2$

$x = 4cm$

Enlargement does not change angle size

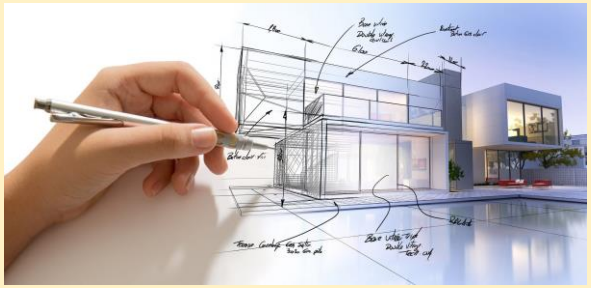
Calculate the missing angle Corresponding angles remain the same

$130°$

Fractional Scale Factor

Enlargement (with a centre)

Calculations in Similar Shapes



A job that relies on geometry:

An Architect

Architects design buildings and other structures. Buildings must be not only attractive, but also safe and functional. Architects may be involved in all phases of development, from the first discussion with the client through to construction. Architects sometimes specialize in the design of one type of building, such as hospitals or homes.

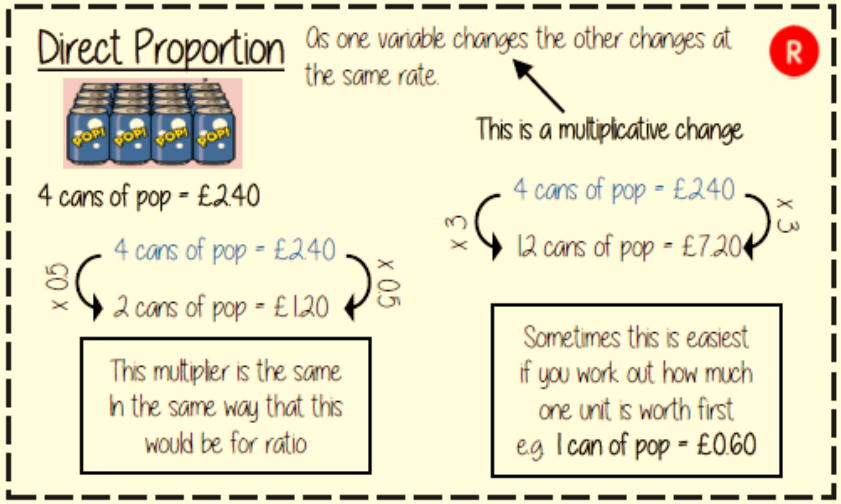
Year 9 Maths - Unit 13 – Ratio and Proportion

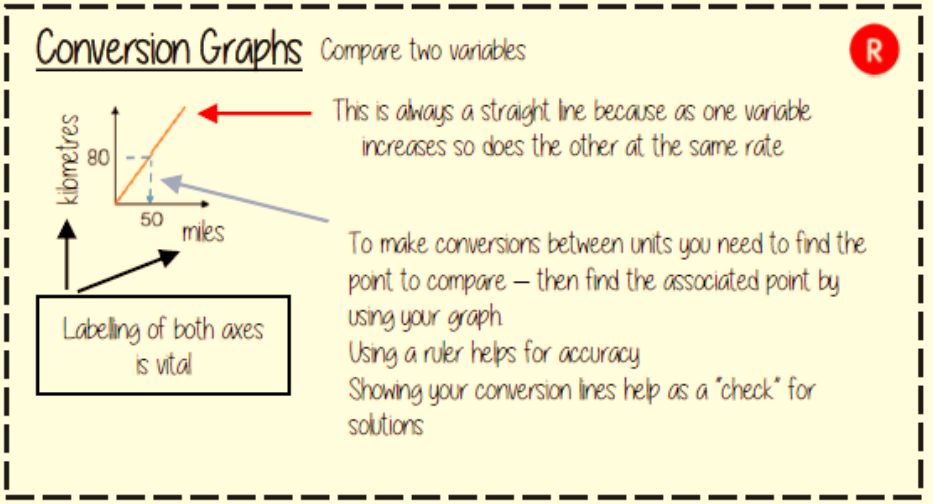
What do I need to be able to do?

- Solve problems with proportion using the unitary method
- Use conversion graphs
- Solve problems with inverse proportion
- Solve ratio problems
- Solve Best Buy Problems
- Use proportion for recipes
- Use proportion in money problems

Vocabulary

Conversion: to turn from one form to another. For example, pounds into Euros or Miles into kilometres.
Currency: the money used in a certain country.
Direct Proportion: as one variable is multiplied by a scale factor the other variable is multiplied by the same scale factor
Inverse Proportion: as one variable is multiplied by a scale factor the other is divided by the same scale factor.
Per: for one of the stated object. For example cost per gallon, is the price for one gallon.
Proportion: a comparison between two numbers usually given as a fraction or percentage.
Ratio: a ratio shows the size of two variables compared to one another





Recipes

Proportion Problems

Conversion Graphs

Currency Conversions

Inverse Proportion

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

Examples of inversely proportional relationships

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

Time taken to paint a room and the number of workers

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

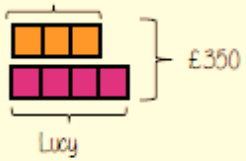
		÷ 2	× 4
T	1	2	8
G	40	20	5
		× 2	÷ 4

Sharing a whole into a given ratio (R)

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

Model the Question

James : Lucy
3 : 4



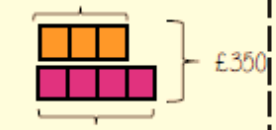
Find the value of one part

Whole: £350
7 parts to share between
(3 James, 4 Lucy)

£350 ÷ 7 = £50
□ = one part
= £50

Put back into the question

James : Lucy
3 : 4
(x 50) (x 50)
£150 : £200

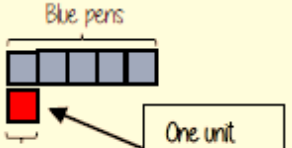


Finding a value given 1:n (or n:1) (R)

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

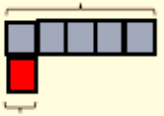
Model the Question

Blue : Red
5 : 1
□ = one part
= 10 pens



Put back into the question

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



There are 50 Blue Pens

Best Buys

Have a directly proportional relationship

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

	Shop A	Shop B
	4 cans for £1.20	3 cans for 93p
	£1.20 ÷ 4	£0.93 ÷ 3
Cost per item	1 can is £0.30 Or 30p	1 can is £0.31 Or 31p

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

	Shop A	
	4 cans for £1.20	3 cans for 93p
	4 ÷ £1.20	3 ÷ £0.93
Cost per pound	£1 buys 3.333 cans of pop	£1 buys 3.23 cans of pop

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

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

Inverse Proportion

Best Buys

Sharing in a ratio

Ratio in the form 1:n

A job that relies on geometry:

A Chef

Chef Responsibilities Include

- Ensuring that all food is of excellent quality and served in a timely manner.
- Planning the menu, keeping in mind budget, and availability of seasonal ingredients.
- Coordinating kitchen staff, and assisting them as required.
- Training staff to prepare and cook all the menu items.
- Taking stock of ingredients and equipment, and placing orders to replenish stock.

Year 9 Maths - Unit 14 – Rates of Change

What do I need to be able to do?

- Solve speed, distance, time questions
- Use distance time graphs
- Solve density, mass, volume problems
- Solve flow problems
- Use flow graphs
- Interpret rates of change and their units.

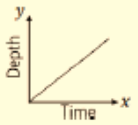
Vocabulary

Area: the amount of space inside a 2D shape**.**
Capacity: how much something can hold
Convert: Change to another form, for example turning miles into kilometres
Density: how closely packed together the molecules of something are
Mass: a measure of how much matter is in an object. Commonly measured by weight.
Origin: the coordinate (0,0) where the two axes cross.
Per: for one of the stated object. For example miles per hour, is the amount of miles travelled in 1 hour.
Speed: how quickly an object is travelling
Substitute: putting numbers where the letters are – replacing numbers into a formula
Volume: the amount of 3D space a shape takes up

Flow problems & graphs

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

The cylinder will fill at a constant speed



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

Rates of change & units

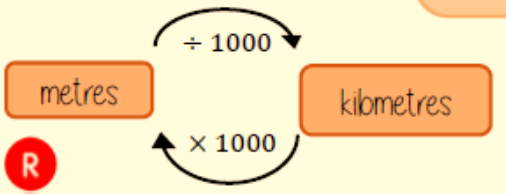
Common rates of change relationships

Revisit your conversions between units of length and capacity

Speed: miles per hour

Exchange rates: euros per pounds

Density: mass per volume



Converting Units

Converting Area

Converting Volume

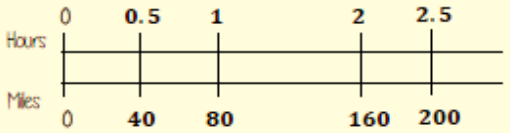
Rate of Change

Speed, Distance, Time

"per" for every
e.g. 80 miles per hour (mph)
Travel 80 miles every hour

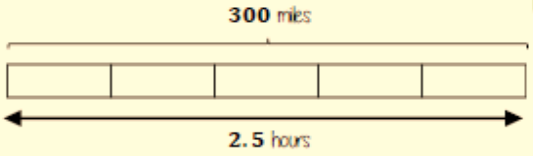
$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

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



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

Bar models can help to calculate mph



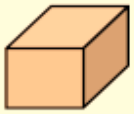
Each part is half an hour
Each part is 60 miles

Density, Mass, Volume

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

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

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



volume of prism = Area of cross section × Depth

R

Speed, Distance, Time

minutes ÷ 60 hours
hours × 60 minutes

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

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

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

Substitute in the variables given

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

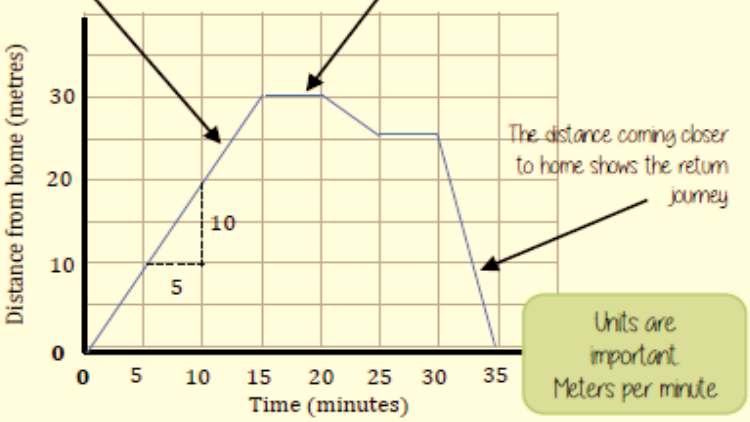
Distance – Time graphs

Gradient = speed

The steeper a gradient the faster the speed

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

Horizontal lines represent staying still



The distance coming closer to home shows the return journey

Units are important
Meters per minute

Speed Distance Time

Density Mass Volume

Distance Time Graphs

Gradient

A job that relies on this area of maths

Mechanical Engineer

Mechanical engineering is a branch of engineering that applies the principles of Mechanics and Materials science for analysis, design, manufacturing, and maintenance of mechanical systems. It involves the production and usage of heat and mechanical power for the design, production, and operation of machines and tools. They can vary from building a rocket ship all the way down to a modern car. It is one of the oldest and broadest engineering disciplines.

Year 9 Physical Education - Topic: Athletics

Track Events

Sprints	Middle	Long Distance
60m	800m	10, 000m
100m	1600m	20,000m
200m	2000m	30,000m
400m		Marathon

Hurdles consists of a series of jumps
Steeplechase is over 3000m and includes hurdles and often a water jump

Relay Event
4x 100m, 4x 200m, 4x 400m, 4x 800m

Field

Shot Put
In the shot put, you throw a heavy spherical object called the shot. The one that lands the furthest, wins.

Hammer Throw
The hammer throw involves a heavy ball attached to a strong wire. Whoever can throw the hammer the furthest, wins the event.

Discus Throw
The discus is a heavy disc (like a frisbee) whoever throws it the furthest, will win.

Javelin Throw
The javelin is a spear about 2.5 m in length. You need to run within a predetermined area to build up speed and throw it as far as possible.

Long Jump
In this event, you run down a strip and jump as far as possible from a wooden board. You leap into a pit filled with sand.

Triple Jump
Similar to the long you have to run down the track and perform a hop, a bound and then a jump into the sand pit.

Pole Vault
In the pole vault, you sprint down a track, plant one end of the pole in the metal box and catapult yourself over a horizontal bar release the pole and fall onto the landing mattress.

High Jump
To do the high jump, you do a short run-up, leap from one foot over a horizontal bar, and fall onto a cushioned landing area.

Key Vocabulary

Bell Lap – the final lap in a distance race is signalled by a bell
Decathlon- men's competition combining 10 filed and track events
Heat – A preliminary race during an event that involves multiple qualifying rounds before a final.
Heptathalon – a women's competition combining 7 track and field events
False start – Failed start of a race, usually caused by a runner moving before the starting gun is fired.
Foul – an unfair or illegal act, eg going over the line while throwing
Lap – one circuit of the track
Record – the best performance in a sporting event that is officially recorded

Year 9 Physical Education – Topic: Cricket

Batting Tactics

Shot Selection: Batters choose different types of shots based on the ball's speed, direction, and bounce. Defensive shots protect the wicket, while attacking shots aim to score runs quickly.

Reading the Field: Batters look at where the fielders are placed and try to hit the ball into gaps to score runs.

Pacing the Innings: Batters must balance scoring runs with staying at the crease. In longer formats, patience is key. In shorter formats like T20, quick scoring becomes more important.

Building Partnerships: Two batters work together to build a strong total by communicating well and rotating the strike (taking singles and twos).

Bowling Tactics

Variation: Bowlers mix up their deliveries using different speeds, lengths, and angles to confuse the batter.

Targeting Weaknesses: Bowlers and captains study batters to find their weak spots—for example, a batter who struggles with short balls or spin.

Bowling in Partnerships: Two bowlers working together can build pressure from both ends, increasing the chance of a mistake from the batter.

Setting Traps: Bowlers may lure batters into mistakes by repeatedly bowling in a pattern, then changing it suddenly—for example, bowling wide deliveries then suddenly a straight, fast ball to get them out.

Basic Formats

T20: Each team gets 20 overs. Fast and exciting.
One-Day (ODI): 50 overs per team.
Test Match: Played over five days, with two innings per team.

Key Positions

Bowler: Delivers the ball to the batter.
Wicketkeeper: Stands behind the stumps to catch the ball.
Slip: Positioned near the wicketkeeper to catch edged balls.
Mid-off / Mid-on: Close fielders straight ahead or behind the bowler.
Outfielders: Positioned near the boundary to stop long shots.

Rules of The Game

Year 9 Physical Education – Topic - Rounders

Batting Tactics:

1.Placement Over Power:

- Instead of always trying to hit the ball as hard as possible, focus on placing the ball in open areas of the field. For example, aim for the gaps between fielders, or hit the ball where you know the fielders aren't standing. This increases your chances of getting to the bases without being caught out.

1.Use the Corners:

- If you're batting, try to hit the ball toward the corners of the field (the far left and right sides). This makes it harder for the fielders to catch the ball, and you have a better chance of getting to a base.

1.Bunting:

- A bunt is when you lightly tap the ball instead of hitting it hard. This can be used to get on base when the fielders are too far back, giving you a chance to run. It's especially effective when there are fast runners or when you need a quick single.

1.Run Quickly:

- After you hit the ball, always run hard to the first base (and beyond if possible). Even if the ball isn't hit far, making quick runs can put pressure on the fielders and force mistakes.

1.Keep the Opposition Guessing:

- If you have a few different tactics in mind (like sometimes hitting hard, other times bunting), the fielders won't be able to predict what you'll do next. This can give you an advantage.

The Role of the Umpire:

The umpire is in charge of making decisions during the game. They ensure the rules are followed, help keep the game moving, and make calls on things like whether a batter is out or if a hit is legal.

1. Batting Decisions:

- **Fair or Foul Hit:** The umpire decides if the ball is hit inside the boundary (fair) or outside (foul).
- **Caught Out:** If a batter hits the ball and a fielder catches it before it touches the ground, the umpire calls the batter out.
- **Run Out:** If a fielder gets the ball to the base before the batter reaches it, the umpire will decide if the batter is out.
- **No Ball:** If the bowler delivers the ball incorrectly (for example, throwing overarm instead of underarm), the umpire will call it a "no ball," and the batter gets a free hit.

Key Vocabulary:

Tactics
Foul
No Ball
Fielding
Batting
Opposition

Fielding Tactics:

1.Covering the Bases:

- Make sure your fielders are always in position to cover the bases. For example, if the batter hits a ground ball towards the first base, the first baseman needs to be ready to catch the throw and get the batter out. The other bases should be covered by players who are quick to back each other up.

1.Quick Throws to the Bases:

- When fielding the ball, always aim to throw the ball quickly and accurately to the base. If you're playing in a position like shortstop, always look for the quickest route to get the ball to a base and try to catch the batter out.

1.Backing Up Each Other:

- It's important that players support each other on the field. For example, if a fielder throws the ball to a base but the throw misses or is dropped, another fielder should be in position to back them up. This ensures that no opportunities are missed.

1.Positioning and Communication:

- Make sure the team talks to each other. If you're a fielder, let your teammates know where you're going and what you're doing. For example, if you're in the outfield and see the ball coming towards you, call for the catch so everyone knows you have it.

1.Anticipate the Batting:

- Fielders can anticipate where the batter might hit the ball by watching how they set up. For example, if the batter is standing slightly open, they might be more likely to hit the ball to one side. If you notice this, position yourself accordingly to make the catch or stop the ball.

Summer 1

Year 9 Science: AQA GCSE C1.1 -5

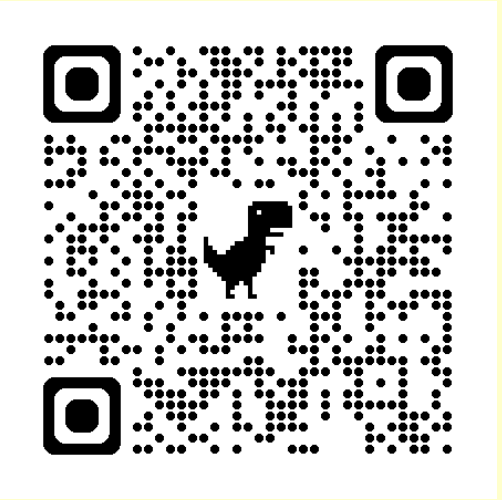
Key Vocabulary:
Atom
Element
Compound
Mixture
Bonding
Nucleus
Proton
Neutron
Electron
Valence
Shell

- Atoms are the most indivisible part of a material.
- Elements is a substance made out of 1 type of atom?
- If Atoms are distinguished by the amount of **proton**s they have.

- Mixtures are when different substances are together but not bonded
- Aqueous is used to describe a substance which is dissolved.
- A media which allows substances to dissolve is called a solvent

Key Vocabulary:
Formula
Oxide
Reactivity
Nomenclature
Displacement
Oxidation
Formulation
Word Equation
Distillate
Boiling point

Key Question:
What is an atom?
What is the difference between a compound and a mixture?



Key Question:
What is a balanced symbol equation?
What are the 4 state symbols?
How does distillation work?

Summer 1

Year 9 Science: AQA GCSE C1.6 TO 1.11

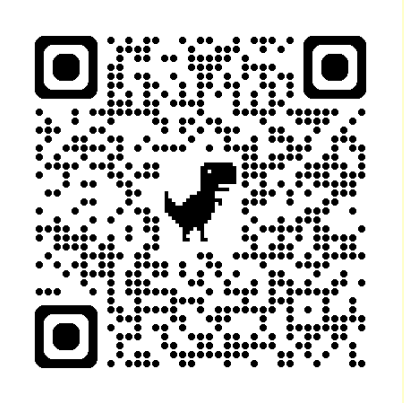
Key Vocabulary:
Stationary phase
Mobile phase
Solvent
Solvent front
Mendeleev
Period
Row
Trend
Alkali metals

- Chromatography is a way of separating dissolved substances by their ability to adsorb onto a surface.
- RF is the distance travelled / solvent front

- Ions are when an atom loses or gains an electron.
- If an atom loses an electron it becomes positive
- If it gains. An atom becomes negative.
- All ions have an outer shell which is full/empty.

Key Vocabulary:
2,8,8
Isotope
Ion
Plum pudding
Rutherford model
Bohr Model
RF value

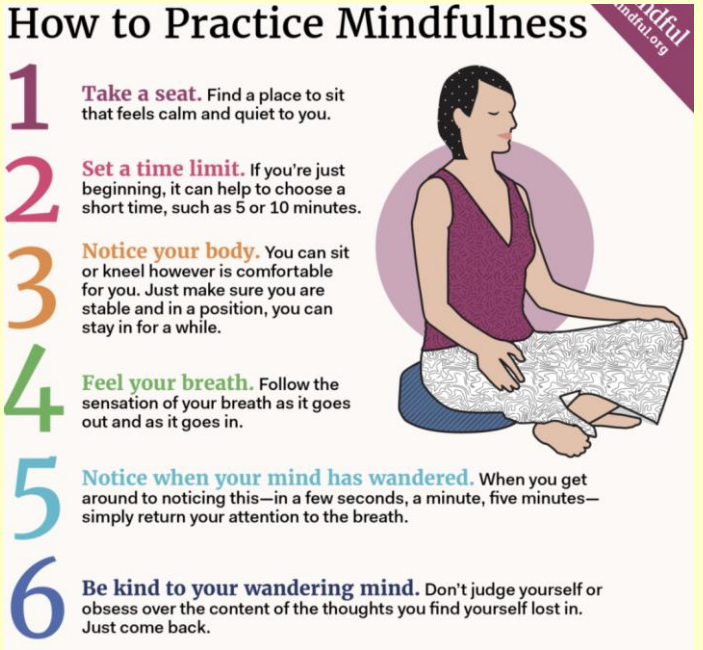
Key Question:
where is chromatography used?
What is the similarities of the alkali metals?
What is the test for hydrogen gas?



Key Question:
What type of ions do metals form?
What type of ions do non-metals form?
What happens to ions of opposite charge?

Year 9 Wellbeing – Topic: Meditation

Mindfulness and Meditation can help most people at times!
Our 'everyday mind' can end up full of worries about things which are no longer true or happening or fretting about what MIGHT happen in the future – even though we know it may not!
The idea is that we are more than these conscious thoughts.
Challenging things happen, we cannot avoid that, but what we think about those challenges is very much up to us
To worry and repeatedly think about difficult things can become suffering - a habit it is all too easy to fall in. The good news however is that we can avoid it! How?
When we notice that we are worrying about things - playing through possible futures like a film in our heads or imagining something going wrong, or even remembering difficult things, unpleasant experiences, **we can simply choose to bring ourselves back to the present moment, by thinking about our breathing**.
This practice comes with lots of benefits…

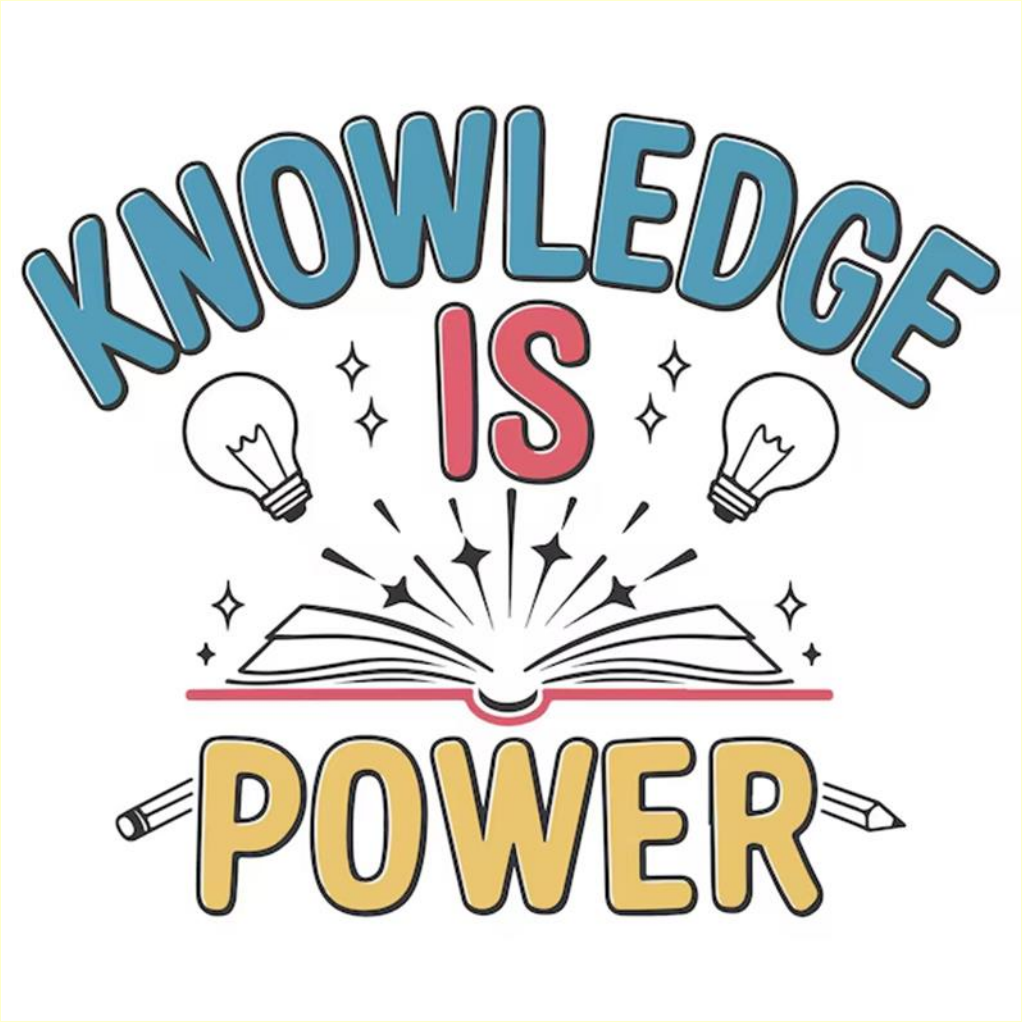


I know it seems way too simple! But this is an ancient practice with traditions in all major religions – including Islam and Christianity!
I know that it will seem odd at first. That is your worrying mind trying to stop you taking control over it!
But stick with it – it will help! Regularly practicing will really help!

If you are struggling with worries regularly you might want to get some support – you can start with Kooth – go to their website and sign up – it is easy, and they will help! If you need help on a specific aspect of Mental Health you can always start at the excellent FYI website here: https://www.fyinorfolk.nhs.uk/ - it costs nothing to sign up and get help!

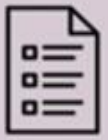
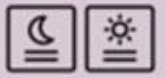
Open Academy Year 9 Knowledge Organiser

Summer Term 2



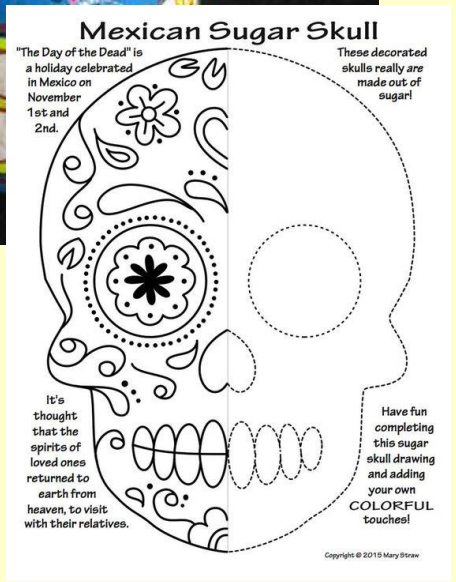
Contents Page

How to use you Knowledge Organiser: Step by step guide

	Look, Cover, Write, Check	Definitions of Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	Look at and study a specific area of your KO. 	Write down the key words and definitions. 	Use your KO to condense and write down key facts or information onto flash cards. 	Use your KO to create a mini quiz. Write down your questions using your KO. 	Create a mind map with all the information you can remember from your KO. 	Ask a friend or family member to have the KO or flash cards in their hands. 
Step 2	Cover or flip the KO over and write down everything you can remember. 	Try not to use your KO to help you. 	Add pictures to help support. Then self-quiz using the flash cards. You could write questions on one side, and answers on the other! 	Answer the questions and remember to use full sentences. 	Check your KO to see if there are any mistakes on your mind map. 	They can test you by asking you questions on different sections of your KO. 
Step 3	Check what you have written down. Correct any mistakes in green pen and add anything you have missed. Repeat. 	Use your green pen to check your work. 	Ask a friend or family member to quiz you on the knowledge. 	Ask a friend or family member to quiz you using the questions. 	Try to make connections, linking the information together. 	Write down your answers, 

Year 9 Art – Topic: Dia de los Muertos

The Day of the Dead



In the summer term year 9 study the Mexican Festival "The Day of the Dead". They learn about the traditions and culture of the festival and design their own decorative skulls in the same style.

They also design and make clay model skulls and carve patterns into them and then paint them.

Key Vocabulary:

Calavera – A skull; commonly seen as sugar skulls (*calaveras de azúcar*) or artistic representations in Day of the Dead artwork.

Symbolism – The use of symbols to represent ideas; in Día de los Muertos, objects like skulls and flowers carry deep meanings.

Pattern – A repeated decorative design, often found in sugar skulls and papel picado.

Contrast – The use of opposing elements (like dark and light) to create visual interest; useful in decorating skulls.

Summer 2 Year 9 Computer Science : Multimedia Project

Interactive multimedia is a method of communication in which the program's outputs depend on the user's inputs, and the user's inputs in turn affect the program's outputs. Interactive media engage the user and interact with him or her in a way that non-interactive media do not.

Using a multimedia product consistently is about demonstrating how well you have used the capabilities of the software that you have chosen to develop your multimedia product.

Media can consist of:
Images, Sounds, Videos, interactions, text. A multimedia product will incorporate a mixture of these

Key vocabulary:
Word processing
Media;
Image editing;
Canva;
Target Audience
Accessibility;
Suitability

Key Questions:
- Is this appropriate for our product?
- Who is our Target Audience?
- What programs can we use to edit images?

Year 9 Drama: Topic 2 – Blood Brothers

BLOOD BROTHERS – SET in LIVERPOOL from 1960 – 1980

PLOT - Deserted by her husband, Mrs Johnstone already has five children and is expecting twins. She cleans house for childless Mrs Lyons who offers to unofficially adopt one of the babies. Mrs Johnstone reluctantly agrees; she knows that the child will be well brought up in a rich household. But, there is a prophesy that twins parted at birth will die when they discover the truth, and both mothers do their best to keep the twins, Mickey and Edward, separated. The situation becomes harder for both women when Mickey and Edward meet while playing in the street and when an immediate bond is formed. They become "blood brothers". Distraught Mrs Lyons moves to the country. Soon after, Mrs Johnstone is rehoused nearby and the boys meet again and fall in love with the same girl, Linda. But as Edward goes on to higher education, Mickey must take a boring job as Linda is pregnant. After marrying Linda he loses his job. He turns to crime but gets caught and sent to jail. On his release he becomes dependent on tranquillisers. Linda turns to Edward, now a councillor, for help. Edward gets Mickey a job - and a house. Mickey thinks Edward is having an affair with Linda and goes after him with a gun. However, he cannot shoot him. Then Mrs Johnstone bursts in and tells them the truth, that she gave Edward, his twin, away. She is followed by Mrs Lyons also with a gun. Whilst trying to threaten Mickey, Mrs Lyons accidently shots Edward and then turns the gun on Mickey and kills him also. Thus, the prophesy comes true.

CHARACTERS

Mrs Johnston – Naïve, loving and maternal, caring, rash, strong, generous, good, selfless, uneducated, superstitious, lively, trapped, victim.
Mrs Lyons – Lonely, cold, wealthy, inconsiderate, pampered, self-centred, manipulative, over-protective, anxious, unreasonable, mentally ill.
Mickey – Friendly, excitable, adventurous, sneaky, cast off, wants to impress, shy, determined, bright, witty, hard working, ambitious, trapped, victim.
Eddie – Friendly, generous, naïve, restricted, impulsive, lacks compassion, condescending, sneaky.

Task: Match the character description to the pictures. What clues are there to show which character is which?

DRAMATIC IRONY – When the audience know something that the characters on stage don't.

MULTI ROLE - When one actor plays a range of roles in a performance.

NON-NATURALISTIC – A performance that does not look like real life. It may include a range of dramatic techniques such as narration, thought tracking or song + dance.

BRECHTIAN - A performance in the style of Bertolt Brecht – a drama practitioner who believed that the audience should be made to think as well as feel.

ENSEMBLE – A group of actors who perform together for a more theatrical impact.

NARRATOR - A character who directly addresses the audience with new information, tells us that time has passed, or gives opinions.

FORESHADOWING– The play begins with what happens at the end.

Year 9 English: Topic – Macbeth

Summary

Macbeth is a noble, Scottish lord, loyal to his king. But when an opportunity to gain greater power for himself is presented, Macbeth becomes a victim to his own greed and ambition. In this play, Shakespeare explores what happens when we are allowed a taste of power and success, themes that resonate with audiences to this day.

Why am I learning this?

Macbeth deals with a number of timeless themes and ideas, some of which we say play out in our lives today. Through our study of the text, we are also equipping you with the knowledge and approach to engage in your study of Shakespeare at KS4. This includes recognising themes, methods and becoming increasingly familiar with language.

Tasks:

1. Make a list of key themes. As you read a scene, select three key quotes for each theme.
2. After each scene, predict what you think will happen.
3. Create a list of questions you have following reading a scene.

Be ambitious:

Research critical context to Macbeth and always try to link events in Shakespeare time with what we are seeing in the play. Extend this further by making short connections to the 21st Century.

Technical Vocabulary

Meter – The rhythm or beat of a line or passage of text..

Foreshadowing – A hint or clue to what might happen later in a text – creates a sense of fate or destiny.

Hamartia – A character's fatal flaw that will inevitably lead to their downfall.

. Tragedy – A genre of drama in which characters often meet fatal ends.

Symbolism – Using symbols or icons to represent an idea.

Use these in analysis to show awareness of the author's methods. Remember to explain their effects.

Ambitious Vocabulary

Inevitable – Certain to happen.

Macabre – Disturbingly gruesome and causing a fear of death.

Machiavellian – Cunning, scheming and unscrupulous.

Remorse – A feeling of regret or guilt.

Manipulate – The idea of changing or altering something to suit a given purpose.

Malevolent – Completely and utterly evil. .

Totalitarian – A government that seeks control of every action.

Try to use the ambitious vocabulary in your writing and analysis.

Year 9 Food Technology – 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.

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)

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 fill 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

Key Vocabulary

Arteries
Diabetes
Cardio vascular system
Coronary Heart Disease
Energy
High blood pressure
Obesity
Saturated
Unsaturated
Weight gain

Tips on staying healthy

- Exercise plenty! 30 minutes per day.
- Drink plenty water – 6-8 cups a day
- Follow the eatwell guide
- Eat plenty fresh fruits and vegetables
- Cut down on saturated fat and sugar
- Eat less salt as this raises blood presure
- Eat less refined white carbohydrates

Example exam questions

Why is childhook obesity on the increase?

List some health issues linked to a high fat diet.

Why should we reduce the amount of salt we eat?

Name some healthy issues linked to obesity.

Which dietary related health problems can too much sugar cause?

Year 9 Geography - Topic: Local Area project

Local Fieldwork Investigation process

- **Enquiry question**
- **Methods of data collection**
- **Data presentation**
- **Data analysis and conclusions**
- **Evaluation**

Data Collection

Primary Data

Data collected by students themselves. This could be data that is easily graphed with numbers or data that gives information and is not so easily graphed e.g. opinions.

Secondary Data

Geographers can research and even collect information about areas of study before they carry out fieldwork. This means the data collected is from elsewhere or by others.

Data Presentation

Graphs

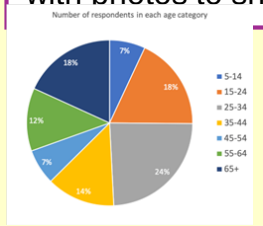
Bar graphs are the simplest way to show results that were collected in categories. Pie graphs are also great ways to compare big and small categories to each-other. Scatter graphs compare 2 sets of data.

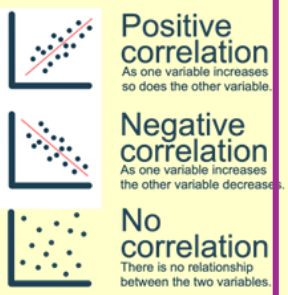
Tables

Data in tables can be useful to then calculate averages etc.

Field-sketch/photos

These can be useful to show how something appeared at a certain time and can be compared with photos to show changes.





Conclusions

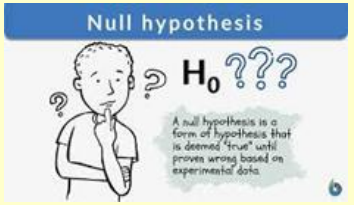
Once data has been analysed it is important to re-visit the original hypothesis. Ideally you will have different types of data as evidence. You must then make summary statements and observations about what this told you.

Evaluation

Finally students weigh up the successes and failures of the fieldwork project.

Key Vocabulary

Primary data
Secondary data
Hypothesis
Transect
Sampling
Bi-polar analysis
Fieldsketch
Pie chart
Scattergraph
Radar graph
Correlation
Proportional symbols
Averages (mean/mode/median)
Conclusion
Judgement
Reliability
Limitations
Evaluation



Year 9 German – Topic: Your Rights

Ich denke ... *I think ...*
Ich denke, das ist richtig. *I think that is right.*
Ich denke, das ist falsch. *I think that is wrong.*
Das finde ich toll. *I find that great.*
Das ist ganz in Ordnung. *That is acceptable/OK.*
Ich denke, mit (zwölf) Jahren ist *I think (at) the age of (12) is better.*
besser.
Das ist zu alt. *That's too old.*
Das ist zu jung. *That's too young.*
Das ist nicht gut. *That's not good.*

Warum ist dir das wichtig? *Why is it important to you?*
(Musik) ist mir wichtig, weil ... *(Music) is important to me, because ...*
sie mich glücklich macht *it makes me happy*
es Spaß macht *it's fun*
ich in einer Band spiele *I play in a band*
ich oft traniere *I train often.*
er mein bester Freund ist *he's my best friend*
Ich suche oft Infos und mache *I often search for information and do my*
Hausaufgaben am Computer. homework on the computer.
Ich möchte Arzt werden. *I would like to become a doctor.*
Ich möchte fit bleiben. *I would like to keep fit.*

Mit welchem Alter darf man das? *At what age are you allowed to do that?* Man darf mit (16) Jahren … *At the age of (16) you are allowed to …*
einen Teilzeitjob haben *have a part-time job*
Blut spenden *give blood*
ein Piercing haben *have a piercing*
ein Nasenpiercing haben *have a nose piercing*
bis 24 Uhr in Discos oder *be out at a disco or club until* Clubs bleiben *midnight*
die Schule verlassen *leave school*
ein Mofa fahren *ride a moped*
heiraten *get married*
einen Lottoschein kaufen *buy a lottery ticket*
Paintball spielen *go paintballing*mit Einwilligung der Eltern *with parental consent*Es gibt keine Altersgrenze. *There is no age limit.*

Ein neues Leben *A new life*
Ich wohne jetzt in ... *I now live in ...*
Ich habe früher in ... gewohnt. *I used to live in ...*
Mein Haus hier ist … *My house here is …*
Mein Haus in … war … *My house in … was …*
Ich finde die Schule hier … *I find the school here …*
Die Schule in … war … *The school in … was …*
Jetzt fahre ich (mit dem Bus) *Now, I go to school (by bus).* *zur Schule.*
Ich bin früher zu Fuß zur *I used to walk to school.* *Schule gegangen.*
Hier ist es jeden Tag (sonnig *Here, every day is (sunny and hot).*
und heiß).
Ich vermisse (die Sonne). *I miss (the sun).*
Früher war es oft (kalt) ... *Before, it was often (cold) …*
Nächste Woche werde ich … *Next week, I will …*

Was ist dir wichtig? *What is important to you?*
meine Familie *my family*
mein Handy *my mobile phone*
mein Computer *my computer*
mein Hund *my dog*
Geld *money*
Mode *fashion*
Musik *music*
Freizeit *free time*
Sport *sport*
Ausschlafen *having a lie-in*
... ist mir das Wichtigste. *... is the most important thing to me.*
... ist mir wichtig. *... is important to me.*
... ist mir nicht wichtig. *... is not important to me.*
gute Noten *good grades*
meine Haustiere *my pets*
Meine Freunde *My friends*
... sind mir das Wichtigste. *... are the most important thing to me.*
... sind mir wichtig. *... are important to me.*

Oft benutzte Wörter *High-frequency words*
jetzt *now*
Früher*before/previously*
mit *with*
ohne *without*
jung *young*
alt *old*
wichtig *important*
nicht wichtig *not important*

Summer 2

Year 9 History – Topic: Jack the Ripper

Key Vocabulary

- Alcohol/alcoholism
- Crime rate
- Crime scene
- Mutilate
- Poverty
- Prostitute
- Serial killer
- Victim
- Violent/violence
- Whitechapel
- Witness

'Jack the Ripper'

1. In Whitechapel in 1888 the murders of five women were strongly suspected to be the work of a single person.
2. Although the murderer was never caught, he was given the name 'Jack the Ripper'.
3. The murders took place in the area of Whitechapel, east London. It was possible for the killer to escape partly because the crime rate in Whitechapel was so high.
4. It is likely that all the women worked at some point as prostitutes. Many women were forced into prostitution due to poverty, family break-ups, or alcoholism. There was little help or support for women in Victorian Britain, so they often had no choice but to resort to prostitution in order to pay for rent, food, or to support their families.
5. Prostitutes were often victims of violent crime because they were vulnerable: they were alone with men, spent a lot of time out at night, worked in hidden/dark places, were often drunk, 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 at the time suggests the killer was very quick and efficient.

3. Elizabeth Stride– 30th September 1888
Elizabeth Stride was found dead in the back yard of a house. 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 horrific murder by far.

Why wasn't the killer caught?

It is likely that, were he around today, Jack the Ripper would be caught. However, there were several reasons why he was able to get away with the murders in 1888:

Failures of the Police at the time:

- The police ignored and sometimes destroyed potential evidence, such as writing on the wall near Catherine Eddowes' murder (a crime scene)
- The two different 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
- They did not have scientific techniques or forensics to analyse evidence

Factors outside of Police control:

- Whitechapel was like a maze which made it easy for criminals to hide and escape
- Crime rates were high, so people did not bother to investigate shouts or calls for help
- 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
- Many people in Whitechapel did not trust the police. For example, Jewish immigrants from Russia had experienced government organised police brutality in their home country, and had a natural suspicion of the police
- There were tensions between different communities in Whitechapel, such as the English, Irish, Eastern European, and Jewish inhabitants. This meant that different groups were suspicious of each other, and the police had to be careful not to inflame the situation

Year 9 Maths - Unit 15 – Probability

What do I need to be able to do?

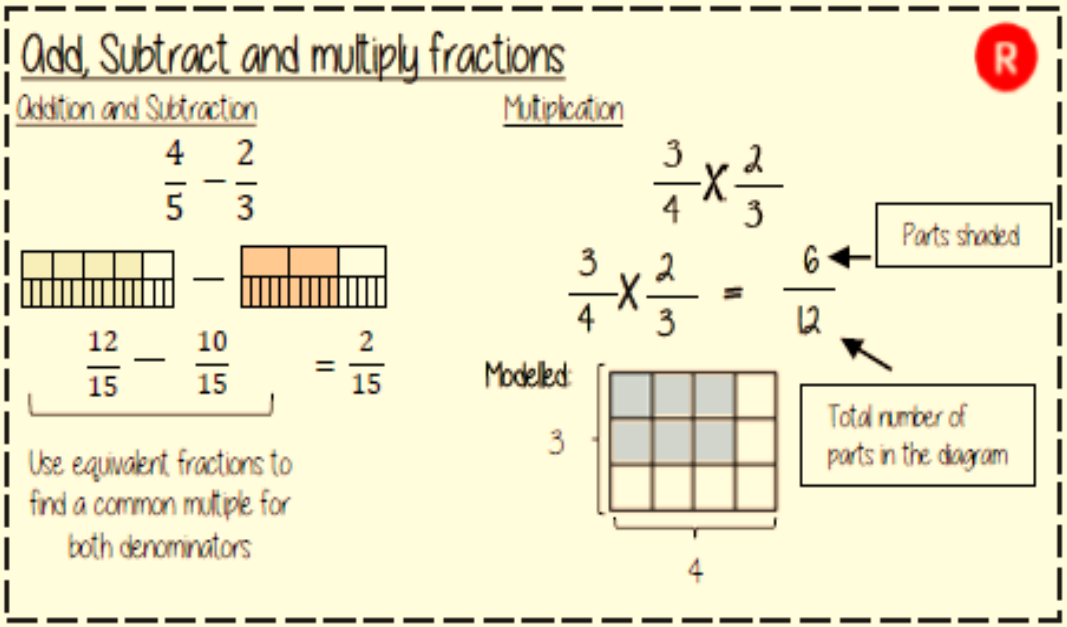
- Add, Subtract and Multiply Fractions
- Find probabilities using likely outcomes
- Use the fact probabilities sum to 1.
- Estimate probabilities
- Use Venn Diagrams and frequency trees.
- Use sample space diagrams
- Use probability tree diagrams

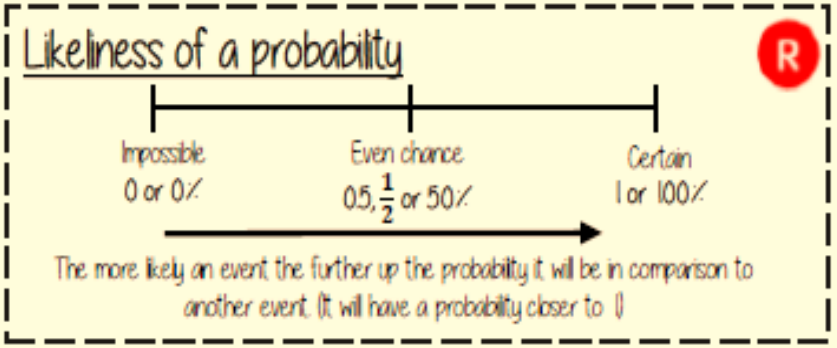
Vocabulary

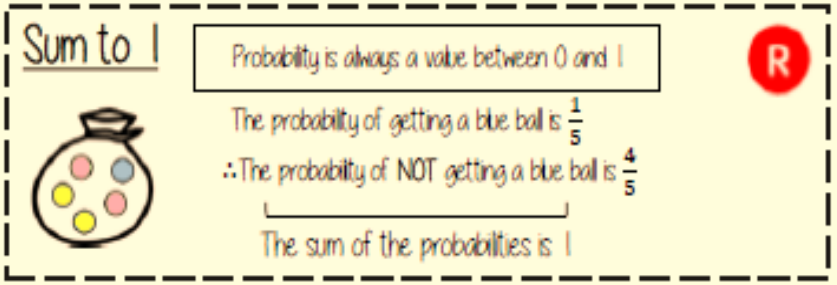
Event: one or more outcomes from an experiment
Expected value: the outcome that probabilities suggest you will get
Intersection: elements that are common to both sets
Outcome: the result of an experiment
Product: the answer when two or more values are multiplied together
Systematic: ordering values or outcome with a strategy and sequence
Union: when the elements from two sets are combined into one larger set
Universal Set: the set that has all elements.

Add Fractions

Multiply Fractions







Experimental data

Theoretical probability — What we expect to happen

Experimental probability — What actually happens when we try it out

The more trials that are completed the closer experimental probability and theoretical probability become

The probability becomes more accurate with more trials.
Theoretical probability is proportional

Sample space

The possible outcomes from rolling a dice

The possible outcomes from tossing a coin

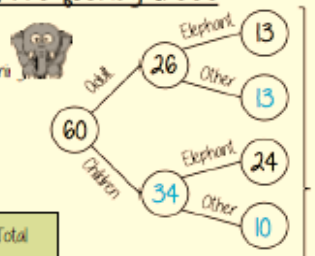
	1	2	3	4	5	6
H	1,H	2,H	3,H	4,H	5,H	6,H
T	1,T	2,T	3,T	4,T	5,T	6,T

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

Tables, Venn diagrams, Frequency trees

Frequency trees

60 people visited the zoo one Saturday morning. 26 of them were adults. 13 of the adult's favourite animal was an elephant. 24 of the children's favourite animal was an elephant.



Frequency trees and two-way tables can show the same information

The total columns on two-way tables show the possible denominators

P(adult) = $\frac{26}{60}$

P(Child with favourite animal as elephant) = $\frac{13}{37}$

Two-way table

	Adult	Child	Total
Elephant	13	24	37
Other	13	10	23
Total	26	34	60

Venn diagram

in set *A* AND set B — $P(A \cap B)$

in set *A* OR set B — $P(A \cup B)$

in set *A* — $P(A)$

NOT in set *A* — $P(A')$

Independent events

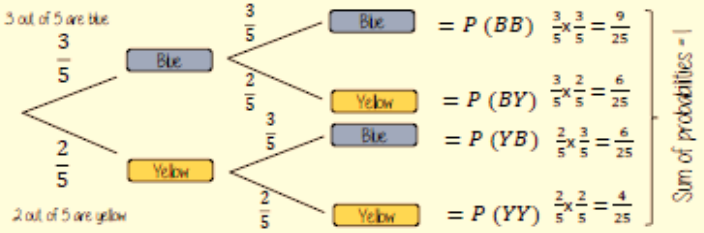
The outcome of two events happening. The outcome of the first event has no bearing on the outcome of the other

$P(A \text{ and } B) = P(A) \times P(B)$

Tree diagram for independent event

Isobel has a bag with 3 blue counters and 2 yellow. She picks a counter and replaces it before the second pick.

Because they are replaced the second pick has the same probability

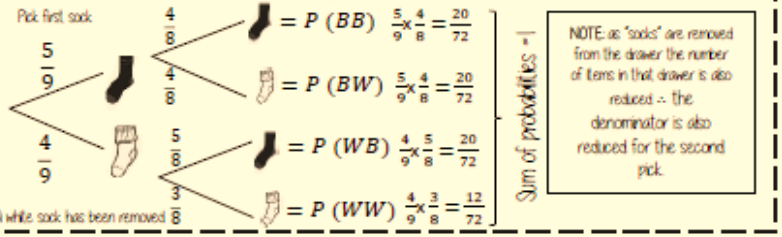


Dependent events

The outcome of the first event has an impact on the second event

Tree diagram for dependent event

A sock drawer has 5 black and 4 white socks. Jamie picks 2 socks from the drawer.



NOTE: as "socks" are removed from the drawer the number of items in that drawer is also reduced ∴ the denominator is also reduced for the second pick.

Experimental Probability

Sample Spaces

Probability Trees

A job that relies on probability:

An Actuary

An actuary is a business professional who analyses the financial consequences of risk. Actuaries use mathematics, statistics, and financial theory to study uncertain future events, especially those of concern to money and business. Actuaries may work for insurance companies, consulting firms, government, employee benefits departments of large corporations, hospitals, banks and investment firms, or, more generally, in businesses that need to manage financial risk. A career as an Actuary is better described as a "business" career with a mathematical basis than as a "technical" mathematical career.

Actuaries are in high demand, with starting salaries ranging from £35,000 to £50,000.

Year 9 Maths - Unit 16 – Algebraic Representation

What do I need to be able to do?

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

- Draw Quadratic Graphs
- Interpret Quadratic Graphs
- Interpret other graphs including reciprocals
- Represent inequalities

Vocabulary

Cubic: a curved graph with the highest power of 3.
Inequality: Makes a non equal comparison between two numbers. E.g. more than >
Origin: the coordinate (0,0), where the two axes meet.
Parabola: a U shaped curved that has mirror symmetry
Quadratic: a curved graph with the highest power being 2, usually a u shaped graph
Reciprocal: a reciprocal is 1 divided by the number
Substitute: To replace an algebraic variable with a number
XY table: a table used to plot graphs by substituting different values of x in to a formula

Quadratic Graphs

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

If x^2 is the highest power in your equation then you have a quadratic graph

It will have a parabola shape

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

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

Intersection with the y axis

Coordinate pairs for plotting $(-3, 0)$

Plot all of the coordinate pairs and join the points with a curve (freehand)

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

Reciprocals

Plotting Straight Lines

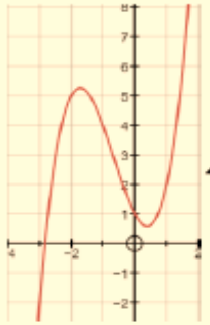
Plotting Quadratics

Quadratic Graphs

Interpret other graphs

Cubic Graphs

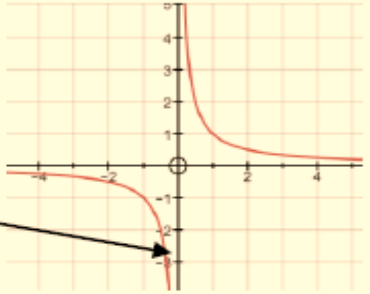
$y = x^3 + 2x^2 - 2x + 1$



If x^3 is the highest power in your equation then you have a cubic graph

Reciprocal Graphs

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

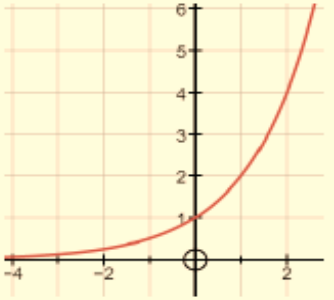


Reciprocal graphs never touch the y axis.
This is because x cannot be 0
This is an asymptote

Exponential Graphs

$y = 2^x$

Exponential graphs have a power of x

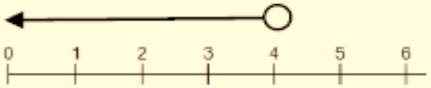


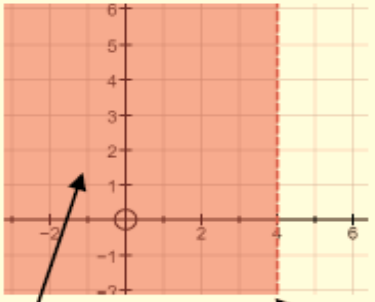
Represent Inequalities

Multiple methods of representing inequalities

$x < 4$

All values are less than 4



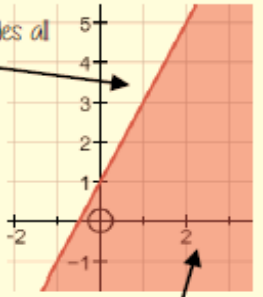


The shaded area indicates all possible values of x

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

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

$y \geq 2x + 1$



The shaded area indicates all possible solutions to this inequality

Reciprocal Graphs

Exponential Graphs

Inequalities on a number line

Inequality Regions

A job that relies on algebra:

Computer Programmer

Computer programmers write the instructions that list the steps a computer must do to perform a task. These instructions are called programs or software. Programmers use a special computer language to write the software. Computer programmers often work in a specific area, such as engineering or science.

Skills such as patience, persistence, logical thinking, and the ability to work under pressure are looked for by employers. School subjects that can be helpful range from computer science, mathematics, physics, English, electronics, chemistry and biology.

Year 9 Physical Education - Topic: Athletics

Track Events

Sprints	Middle	Long Distance
60m	800m	10, 000m
100m	1600m	20,000m
200m	2000m	30,000m
400m		Marathon

Hurdles consists of a series of jumps
Steeplechase is over 3000m and includes hurdles and often a water jump

Relay Event
4x 100m, 4x 200m, 4x 400m, 4x 800m

Field

Shot Put
In the shot put, you throw a heavy spherical object called the shot. The one that lands the furthest, wins.

Hammer Throw
The hammer throw involves a heavy ball attached to a strong wire. Whoever can throw the hammer the furthest, wins the event.

Discus Throw
The discus is a heavy disc (like a frisbee) whoever throws it the furthest, will win.

Javelin Throw
The javelin is a spear about 2.5 m in length. You need to run within a predetermined area to build up speed and throw it as far as possible.

Long Jump
In this event, you run down a strip and jump as far as possible from a wooden board. You leap into a pit filled with sand.

Triple Jump
Similar to the long you have to run down the track and perform a hop, a bound and then a jump into the sand pit.

Pole Vault
In the pole vault, you sprint down a track, plant one end of the pole in the metal box and catapult yourself over a horizontal bar release the pole and fall onto the landing mattress.

High Jump
To do the high jump, you do a short run-up, leap from one foot over a horizontal bar, and fall onto a cushioned landing area.

Key Vocabulary

Bell Lap – the final lap in a distance race is signalled by a bell
Decathlon- men's competition combining 10 filed and track events
Heat – A preliminary race during an event that involves multiple qualifying rounds before a final.
Heptathalon – a women's competition combining 7 track and field events
False start – Failed start of a race, usually caused by a runner moving before the starting gun is fired.
Foul – an unfair or illegal act, eg going over the line while throwing
Lap – one circuit of the track
Record – the best performance in a sporting event that is officially recorded

Year 9 Physical Education – Topic: Cricket

Batting Tactics

Shot Selection: Batters choose different types of shots based on the ball's speed, direction, and bounce. Defensive shots protect the wicket, while attacking shots aim to score runs quickly.

Reading the Field: Batters look at where the fielders are placed and try to hit the ball into gaps to score runs.

Pacing the Innings: Batters must balance scoring runs with staying at the crease. In longer formats, patience is key. In shorter formats like T20, quick scoring becomes more important.

Building Partnerships: Two batters work together to build a strong total by communicating well and rotating the strike (taking singles and twos).

Bowling Tactics

Variation: Bowlers mix up their deliveries using different speeds, lengths, and angles to confuse the batter.

Targeting Weaknesses: Bowlers and captains study batters to find their weak spots—for example, a batter who struggles with short balls or spin.

Bowling in Partnerships: Two bowlers working together can build pressure from both ends, increasing the chance of a mistake from the batter.

Setting Traps: Bowlers may lure batters into mistakes by repeatedly bowling in a pattern, then changing it suddenly—for example, bowling wide deliveries then suddenly a straight, fast ball to get them out.

Basic Formats

T20: Each team gets 20 overs. Fast and exciting.
One-Day (ODI): 50 overs per team.
Test Match: Played over five days, with two innings per team.

Key Positions

Bowler: Delivers the ball to the batter.
Wicketkeeper: Stands behind the stumps to catch the ball.
Slip: Positioned near the wicketkeeper to catch edged balls.
Mid-off / Mid-on: Close fielders straight ahead or behind the bowler.
Outfielders: Positioned near the boundary to stop long shots.

Rules of The Game

Year 9 Physical Education – Topic - Rounders

Batting Tactics:

1.Placement Over Power:

- Instead of always trying to hit the ball as hard as possible, focus on placing the ball in open areas of the field. For example, aim for the gaps between fielders, or hit the ball where you know the fielders aren't standing. This increases your chances of getting to the bases without being caught out.

1.Use the Corners:

- If you're batting, try to hit the ball toward the corners of the field (the far left and right sides). This makes it harder for the fielders to catch the ball, and you have a better chance of getting to a base.

1.Bunting:

- A bunt is when you lightly tap the ball instead of hitting it hard. This can be used to get on base when the fielders are too far back, giving you a chance to run. It's especially effective when there are fast runners or when you need a quick single.

1.Run Quickly:

- After you hit the ball, always run hard to the first base (and beyond if possible). Even if the ball isn't hit far, making quick runs can put pressure on the fielders and force mistakes.

1.Keep the Opposition Guessing:

- If you have a few different tactics in mind (like sometimes hitting hard, other times bunting), the fielders won't be able to predict what you'll do next. This can give you an advantage.

The Role of the Umpire:

The umpire is in charge of making decisions during the game. They ensure the rules are followed, help keep the game moving and make calls on things like whether a batter is out or if a hit is legal.

1. Batting Decisions:

- **Fair or Foul Hit:** The umpire decides if the ball is hit inside the boundary (fair) or outside (foul).
- **Caught Out:** If a batter hits the ball and a fielder catches it before it touches the ground, the umpire calls the batter out.
- **Run Out:** If a fielder gets the ball to the base before the batter reaches it, the umpire will decide if the batter is out.
- **No Ball:** If the bowler delivers the ball incorrectly (for example, throwing overarm instead of underarm), the umpire will call it a "no ball," and the batter gets a free hit.

Key Vocabulary:

Tactics
Foul
No Ball
Fielding
Batting
Opposition

Fielding Tactics:

1.Covering the Bases:

- Make sure your fielders are always in position to cover the bases. For example, if the batter hits a ground ball towards the first base, the first baseman needs to be ready to catch the throw and get the batter out. The other bases should be covered by players who are quick to back each other up.

1.Quick Throws to the Bases:

- When fielding the ball, always aim to throw the ball quickly and accurately to the base. If you're playing in a position like shortstop, always look for the quickest route to get the ball to a base and try to catch the batter out.

1.Backing Up Each Other:

- It's important that players support each other on the field. For example, if a fielder throws the ball to a base but the throw misses or is dropped, another fielder should be in position to back them up. This ensures that no opportunities are missed.

1.Positioning and Communication:

- Make sure the team talks to each other. If you're a fielder, let your teammates know where you're going and what you're doing. For example, if you're in the outfield and see the ball coming towards you, call for the catch so everyone knows you have it.

1.Anticipate the Batting:

- Fielders can anticipate where the batter might hit the ball by watching how they set up. For example, if the batter is standing slightly open, they might be more likely to hit the ball to one side. If you notice this, position yourself accordingly to make the catch or stop the ball.

Summer 2

Year 9 Science: AQA GCSE C1.12 TO 1.17

Key Vocabulary:
- Halogens
- Halide
- Transition metals
- Ionic
- Cation
- Anion
- Covalent bond
- Co-valence

Key Question:
What type of bonds do Halogens form with each other?
What type of bond would exist between a metal and non-metal

- Halogens all have 7 outer electrons
- Most are gasses in standard conditions
- Halogens are generally coloured
- Cations are positive charged ions
- Anions are negative charged ions
- Covalent bonds are bonds between non-metals where electrons are shared

- Property of metals is mostly because of the delocalised electrons.
- The regular layers allow the layers to slide over each other meaning they can form wires (ductile) and can bend (malleable).
- Delocalised electrons allow a movement of charge (Current).

Key Vocabulary:
- Metallic
- Delocalised electron
- Current
- Giant Ionic
- Malleable
- Ductile
- Ionic Lattice
- Macro

Key Question:
Give an example of a giant ionic lattice?
What are the properties of metals?
Why do metals conduct metals well?

Summer 2

Year 9 Science: AQA GCSE C1.17 TO 1.23

Key Vocabulary:
Giant ionic structure
Fullerene
Graphene
Graphite
Delocalised electrons
Giant metallic
Alloys
Nanoparticles
Macromolecules
Reinforcement

- Simple molecules are similar to Methane CH_4
- Macromolecular are when they are large molecules
- Nanoparticles are when between 1nm to 100nm
- Carbon usually has 4 bonds
- Graphene has carbons with 3 bonds, and the carbon can occasionally have delocalised electrons

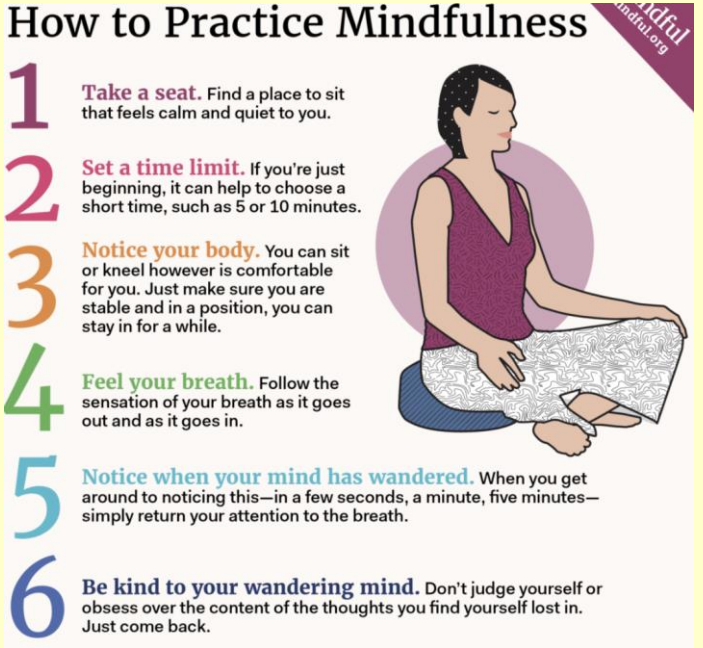
- Diamond and graphite are allotropes of carbon
- Both substances contain only carbon atoms but due to the differences in bonding arrangements they are physically completely different
- Diamond has a very high melting point
- Diamond does not conduct electricity
- It is extremely hard and dense
- Graphite conducts electricity Each carbon atom is bonded to three others leaving one free electron per carbon atom
- These free (delocalised) electrons exist in between the layers
- They are free to move through the structure and carry charge

Key Question:
What are the properties of Graphene?
What is difference between graphite and graphene?

Key Question:
What are the uses of allotropes of carbon?
What is the use of nanoparticles?

Year 9 Wellbeing – Topic: Meditation

Mindfulness and Meditation can help most people at times!
Our 'everyday mind' can end up full of worries about things which are no longer true or happening or fretting about what MIGHT happen in the future – even though we know it may not!
The idea is that we are more than these conscious thoughts.
Challenging things happen, we cannot avoid that, but what we think about those challenges is very much up to us
To worry and repeatedly think about difficult things can become suffering - a habit it is all too easy to fall in. The good news however is that we can avoid it! How?
When we notice that we are worrying about things - playing through possible futures like a film in our heads or imagining something going wrong, or even remembering difficult things, unpleasant experiences, **we can simply choose to bring ourselves back to the present moment, by thinking about our breathing**.
This practice comes with lots of benefits…



I know it seems way too simple! But this is an ancient practice with traditions in all major religions – including Islam and Christianity!
I know that it will seem odd at first. That is your worrying mind trying to stop you taking control over it!
But stick with it – it will help! Regularly practicing will really help!

If you are struggling with worries regularly you might want to get some support – you can start with Kooth – go to their website and sign up – it is easy, and they will help! If you need help on a specific aspect of Mental Health you can always start at the excellent FYI website here: https://www.fyinorfolk.nhs.uk/ - it costs nothing to sign up and get help!