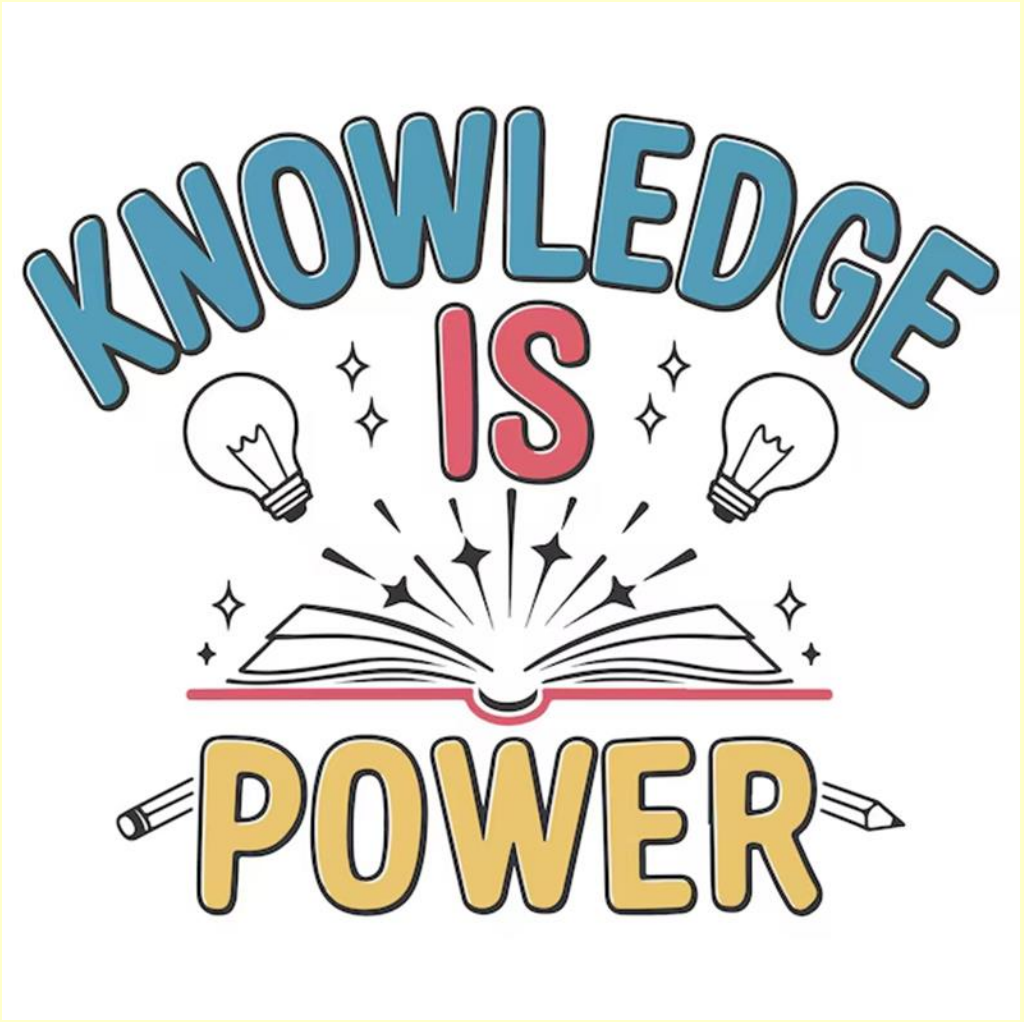
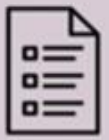
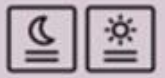
Open Academy Year 9 Knowledge Organiser

Autumn Term 1



Contents Page Autumn Term 1 Page 3 - 25

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: Pop Art

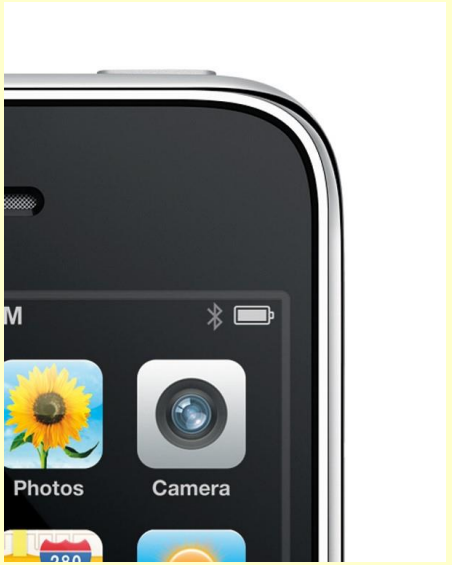
What is POP ART?

These are two famous Pop Artists

“Marilyn” Andy Warhol

“Whaam!!!” Roy Lichtenstein

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



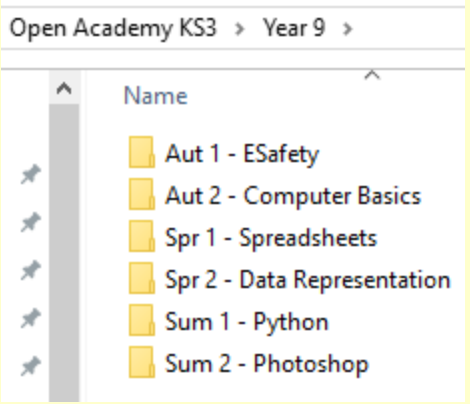
We will be making enlarged drawings of these objects and Using different techniques on them. Please make sketches of these items and use pop art style colours.

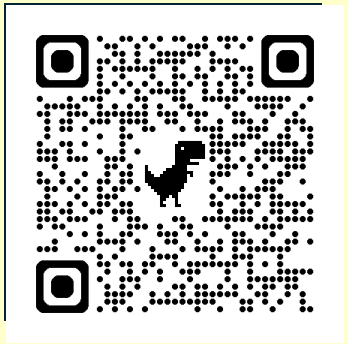
Year 9 Computer Science: Topic - E-Safety

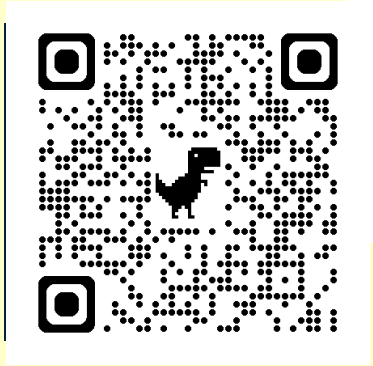
Trolling and Bullying – Don't reply to bullies, try and be aware of posts which are designed to *flame* the readers. Report and screenshot where possible.

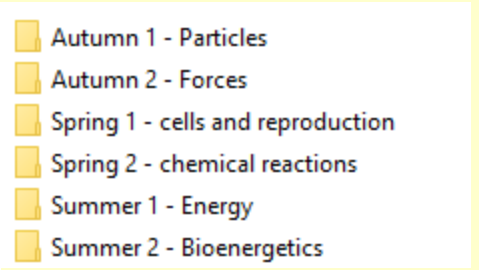
E-safety and digital footprint. Be aware of what content you are posting online and how this can affect you in the future. All digital content is saved!

File management – Save files in correct places called folders and give them appropriate names so you can find them in the future









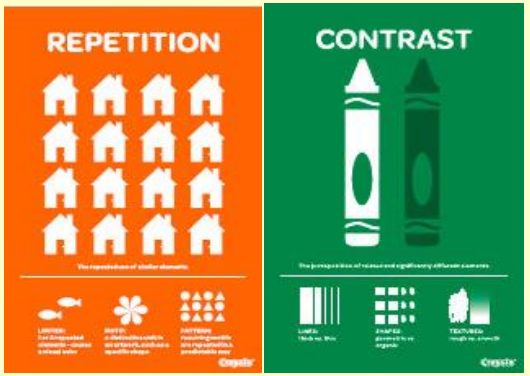
Key Vocabulary:
Trolling
E-safety
Report
CEOPS
Digital Footprint
Cookies
Cyberbullying

Key Questions:
How can you help a friend who is being cyberbullied?
What is the best way to silence an internet troll?

Year 9 Design and Technology – Topic: Textiles

This term's Textile project is to recreate one of Grayson Perry's Political Screen-Printed Tapestries as a collaborative year group piece and to create an individual outcome. You are creating stencils to print with then adding detail using fabric pens, sewing machines and hand embroidery.

The skills you will be using are:
- Cutting with Craft Knives
- Drawing
- Screen Printing
- Hand Embroidery
- Sewing machine stitching.



Key Vocabulary

Stencil	Abstract
Composition	Cartoon
Cutting	Story board
Colour pallet	Negative
Space	
Contrast	Silk Screen
Refinement	Squeegee
Repetition	
Ceramics	

Practice Exam Questions

Which Health and Safety considerations do you need to think about when using a craft knife?

How will you refine your drawings, so they are going to be simple and blocky enough to screen print?

What equipment do you need to get ready and organised for when you screen print?

Why do you tape around the edge of the screen when preparing to print?

Method to Screen Print:

1. Tape round the edge of the screen with parcel tape to stop the paint seeping through onto the fabric.
2. Tape your card stencil back to front to your screen making sure the edges are all covered.
3. Turn the screen over and place faced down on the fabric.
4. Apply the paint in a line at the top of the screen.
5. Use the squeegee to apply pressure and pull down to push the paint through the screen and print the design on the fabric.
6. Lift the screen off the fabric, take it to the sink, strip the screen and wash quickly.

Year 9 Drama: Topic 1 – Stage Combat

Things to remember:

The victim is in control – this way they can end the process whenever they want to and stay safe.

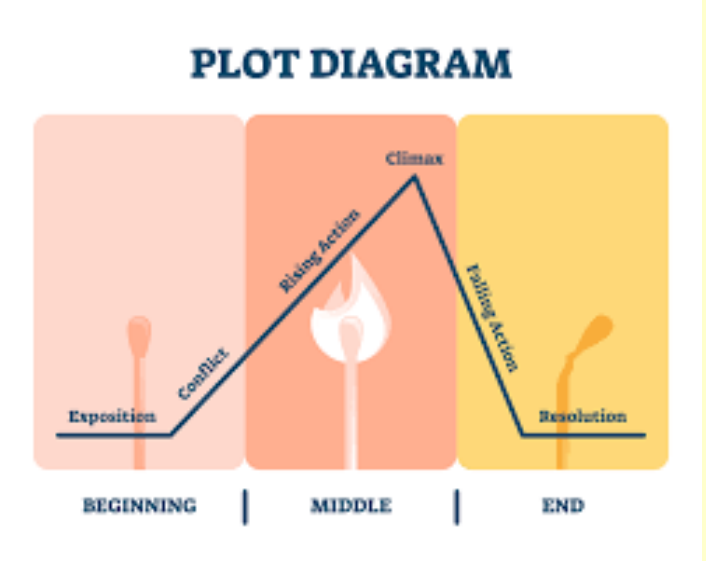
Distance – make sure you work a safe distance from each other (and objects) and use 'masking' techniques to hide the distance from the audience.

Communication – talk to your partner. Plan what visual or sound cues you are using.

Reactions are key! How you respond is vital for a believable performance.

Look at the pictures – who is the victim? How can you tell? How do you think the victim is making sure they don't get hurt?

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



Key Vocabulary

Tension is a growing sense of expectation within the drama, a feeling that the story is building up towards something exciting happening.

Without tension in a scene, it is hard to keep the audience engaged with what is happening, the work may be dull and flat.

A **climax** is when the tension within a scene builds to its highest point. It's the most exciting moment. An **anti-climax** is the release of tension. It happens after the tension has reached its highest points and then suddenly drops

Year 9 English: Topic – To Kill A Mockingbird

Summary

A novel famous for its treatment of race in America, To Kill A Mockingbird is told from the perspective of a daughter who recalls her father defending a black man from accusations of rape. The narrative uncovers how deeply ingrained racism, injustice and prejudice is in America. As the narrator grows older, she comes to realise the harsh and unfair reality of the world she lives in.

Why am I learning this?

Across Year 7 and 8 we've considered stories that might be considered a form of protest and allegorical. This novel is undeniably challenging in the questions that it asks of its readers. You're encouraged to consider the novel in its historical context however many issues are still clearly relevant today. This text will develop your criticality and your ability to take meaning from literature.

Tasks:

1. Research context to American segregation
2. Read a chapter and clarify any unfamiliar words using a glossary and thesaurus
3. Summarise each chapter after you read it
4. Create a list of questions you have for the characters after reading a chapter.

Be ambitious:

On this course you consider the idea of post-colonialism. When we read this way, we consider how race is dealt with in a story. While this novel is critical of racism, its hero at the end of the day is a white man. How might a post-colonial reading consider that choice? What overall effect does it have on the meaning of the novel?

Technical Vocabulary

Exposition – The early stage of a story where key themes, characters and genre is established.

Dystopia – A setting or world which is a bad place, often ruled as a dictatorship.

Juxtaposition – The deliberate placing of two things next to or near each other to compare.

Symbolism – Using symbols or icons to represent an idea.

Zoomorphism – Giving animal qualities to non-animal things. Can create a wild or unsettling effect.

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

Ambitious Vocabulary

Autonomy – The ability to make your own choice or decision.

Conformity – Compliance with rules or standards, used to challenge individuality.

Dehumanisation – Making somebody feel less than human.

Repression – The act of holding back or restraining, particularly around free speech or expression.

Subjugation – The act of bringing something or someone under control.

Totalitarian – A government that seeks control of every action.

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

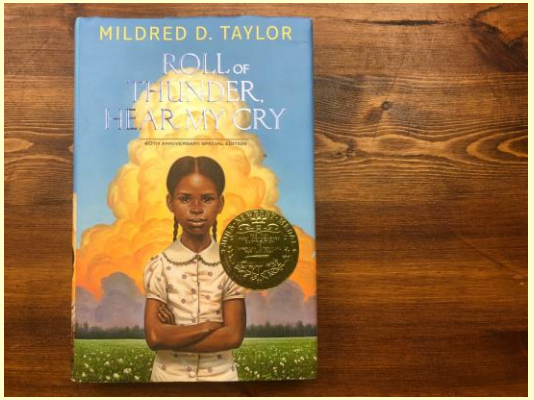
Year 9 English: Topic – Roll of Thunder, Hear My Cry

Summary

A novel set against a backdrop of American segregation, Roll of Thunder, Hear My Cry presents an America gripped by racism and injustice. Told from a child's perspective, her family suffer injustices at the hands of a racist community. However, despite these difficulties the Logan family, including young Cassie remain determined to resist injustice, keeping their dignity and pride.

Why am I learning this?

Across Year 7 and 8 we've considered stories that might be considered a form of protest and allegorical. This novel is undeniably challenging in the questions that it asks of its readers. You're encouraged to consider the novel in its historical context however many issues are still clearly relevant today. This text will develop your criticality and your ability to take meaning from literature.



Tasks:

1. Research context to American segregation
2. Read a chapter and clarify any unfamiliar words using a glossary and thesaurus
3. Summarise each chapter after you read it
4. Create a list of questions you have for the characters after reading a chapter.

Be ambitious:

We have now learned a number of critical theories: Feminism, Marxism, Post-colonialism and psychoanalysis.

How can these texts be considered or read through those ideas?

Technical Vocabulary

Exposition – The early stage of a story where key themes, characters and genre is established.

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Year 9 Food Technology – Topic: Health and Safety

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

Cooking (75°C)	The danger zone (5°C-63°C)
Cooking food above 75°C kills bacteria Re-heat food properly, only once. Reheat food so 75°C for at least 3 minutes Check the food is 75°C with a temperature probe	Bacteria can grow and multiply quickly between 5°C to 63°C. This is called the danger zone The optimum temperature for bacterial growth is 37°C
Chilling (0°C – 5°C)	**Freezing (-18°C)**
Keeping food between 0°C and 5°C slows down the growth of bacteria This extends the shelf life of food Chilling food doesn't change the properties much – food looks and tastes the same	Freezing food below -18°C stops bacteria growing – they become dormant Freezing generally extends shelf life, and the nutrients aren't lost It doesn't kill the bacteria though. They become active again once the food defrosts.

Example exam questions

What happens to bacteria in the freezer?
What is bacteria's favourite temperature to multiply?
What are the three micro-organisms?
What is the danger zone?

Key Vocabulary

Bacteria
Chilling
Cooking
Danger zone
Equipment
Freezing
Hygiene
Temperature

Year 9 German – Topic: Role Models(Vorbilder)

Der Körper *The body*
der Kopf *head*
die Schulter *shoulder*
der Arm *arm*
die Hand *hand*
der Rücken *back*
der Bauch *stomach*
der Po *bottom*
das Bein *leg*
das Knie *knee*
der Fuß *foot*

Das Gesicht *The face*
das Auge *eye*
das Ohr *ear*
die Nase *nose*
der Mund *mouth*
das Kinn *chin*

Charaktereigenschaften *Character traits*
X ist mein Vorbild, weil *X is my role model/idol*
er/sie … ist. because he/she is …
begabt *talented*
berühmt *famous*
dynamisch *energetic*
erfolgreich *successful*
lustig *funny*
originell *original*
reich *rich*
mein(e) Lieblingsschauspieler(in) *my favourite actor/actress*
mein(e) Lieblingssänger(in) *my favourite singer*
mein(e) Lieblingssportler(in) *my favourite athlete*

Was macht er/sie? *What does he/she do?*
Er/Sie läuft schnell. *He/She runs fast.*
Er/Sie fährt schnell Rad. *He/She cycles fast.*
Er/Sie singt viele Lieder. *He/She sings many songs.*
Er/Sie liest die Nachrichten. *He/She reads the news.*
Er/Sie ist oft im Fernsehen. *He/She is often on TV.*
Er/Sie spielt gut Gitarre. *He/She plays guitar well.*

Zukunftspläne *Future plans*
Ich werde … *I will …*
viele Reisen machen travel a lot
viele Länder sehen see lots of countries
Arzt/Ärztin werden become a doctor
im Ausland leben live abroad
Theaterwissenschaft study drama
studieren
viel Geld verdienen earn a lot of money
für eine Hilfsorganisation work for an aid organisation
arbeiten

Was hast du in deinem Leben *What have you done* gemacht? *in your life?*
Ich habe … *I have …*
viele Reisen gemacht travelled a lot
mit Kindern gearbeitet *worked with children*
viele Länder gesehen seen a lot of countries
viele Preise gewonnen won a lot of prizes
viel Geld verdient earned a lot of money
viel trainiert trained a lot
Tennis / Gitarre gespielt played tennis / guitar
in (Amerika) gewohnt lived in (America)
Biologie studiert studied biology
Ich bin nach Afrika gefahren. *I have travelled to Africa.*
Ich habe … *I have …*
Er/Sie hat … *He/she has … gegessen eaten*
geschrieben written
gehabt had
gesungen sung
getanzt danced
Ich bin nach Amerika gesegelt. *I have sailed to America.*
Ich bin in viele Tanzstudios *I have been to lots of dance studios.*
Gegangen.

Was ist passiert? *What happened?*
Ich habe mir das Bein verletzt. *I injured my leg.*
Ich habe mir den Arm gebrochen. *I broke my arm.*
Ich habe einen Unfall gehabt. *I had an accident.*
Ich bin vom Rad gefallen. *I fell off my bike.b*
Ich bin ins Krankenhaus *I went to hospital.*
gekommen.
im Schwimmbad *in the swimming pool*

Oft benutzte Wörter *High-frequency words*
Ich liebe … *I love …*
Ich mag … *I like ...*
Ich mag … nicht *I don't like …*
sehr *very*
ziemlich *quite, fairly*
so *so*
zu *too*
nicht *not*
nie *never*
später *later*
dann *then*
in zehn Jahren *in ten years*
in der Zukunft *in the future*

Year 9 Geography – Topic: Rivers

River landscapes

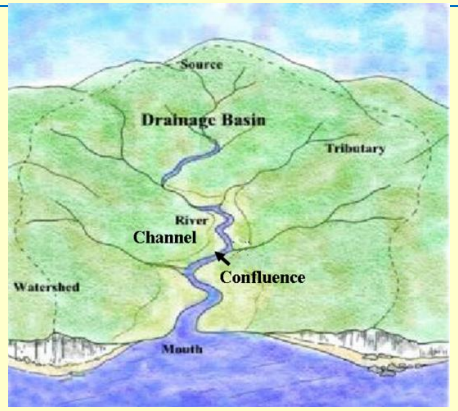
The UK has many famous rivers, these are tiny compared to international examples however some larger examples are the Thames, Severn and Trent.

Hydrological Cycle

Water circulates and once it falls to the ground (precipitation) it is drained through the underground cracks and over-ground rivers back to the sea.

Drainage Basins

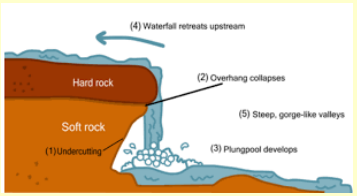
Individual rivers have tree like patterns that show that they start off at the 'source' high up as small in depth and width and gradually join together to make fewer but bigger branches or 'tributaries' that eventually reach the sea as one large river 'mouth'.



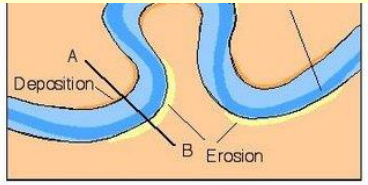
River Landforms

These are the features of the landscape that are seen at each of the 3 stages of a river; Upper, Middle and Lower.

Upper stages:
The river is steep, narrow with a rocky channel. Waterfalls form here due to hard and softer rocks.
Soft rock is lowered leaving a hard rock lip above, gradually this is 'undercut' and collapses, causing retreat and a 'gorge' below



Middle stages:
The river becomes wider and deeper as it moves down hill. Here the river bends from side to side to create 'meanders' and floodplains.



Lower stages:
In the lowest stages of a river the surrounding land is very flat and wide. The river itself is deep and wide. Flooding is common.

River flooding

Rivers flood due to natural and man-made 'factors'. The main cause of floods is too much rain however not all rivers will flood due to their 'factors'.

Man-made factors:
Impermeable concrete/roads
Deforestation
Building on Floodplains

Natural Factors:
Steep slopes
Narrow valleys
Flat floodplains

Flood defences
Rivers can be protected from flooding by natural and man-made defences:

Man-made = Hard engineering
Dams
Walls
Channelisation

Natural = Soft engineering
Afforestation
Floodplain zoning

Flooding can impact upon people and the environment, this causes social and economic problems like stress and repair costs. Rivers can erode banks and change courses causing ships to become stranded and people to be homeless.

Key Vocabulary

- Water/Hydrological cycle
- Surface Run-off
- Infiltration
- Impermeable
- Gradient
- Drainage Basin
- Meanders
- Watershed
- Confluence
- Flood risk
- Deforestation
- Embankments/Levees
- Flood plain
- Dredging
- Delta
- Afforestation
- Hard engineering
- Soft engineering

Year 9 (History): Topic – The Rise of the Nazis

1. Democracy and dictatorship

- Today most countries are democracies. The people of the country can vote and have a say in how the country is run.
- In a dictatorship, one person, or one small group of people, make decisions for everybody.

2. Treaty of Versailles

- At the end of World War I the German Kaiser (King) who had controlled the country was forced to resign. Germany became a democracy. The new government was called the Weimar government, or Weimar republic.
- The Weimar government was forced to sign a peace treaty called the Treaty of Versailles. The treaty said that Germany had to: take all the blame for World War I; pay reparations (money) as an apology for the war; give up territory (land); and reduce the size of her military.
- The Treaty of Versailles was seen as humiliating and was hated by many Germans. The government were seen as traitors because they had signed the treaty.

3. Adolf Hitler

- Born in Austria, he was a soldier in the German army in World War I.
- He felt humiliated by Germany's defeat in World War I. He believed that Germany could have won the war, but that the Weimar government had 'stabbed the army in the back' by agreeing to peace.
- He was anti-Semitic – this means that he hated Jewish people.
- After the war he became interested in politics. He joined a political group who shared some of his ideas. He eventually became the leader. His party became known as the Nazi party.

4. Hyperinflation

- In 1923, Germany was finding it hard to pay reparations to France. France invaded part of Germany, the Ruhr, to try to get the money. The Ruhr is an area full of factories.
- The German government told German workers in the Ruhr not to work and help the French. The German government agreed to pay the workers, even though they were not working. To do this, they had to print more money.
- This caused a problem known as hyperinflation. This means that money lost its value, and prices went up and up very quickly.
- Many people were affected very negatively by hyperinflation. They blamed the Weimar government.

5. The Golden Age

- A man called Gustav Stresemann helped solve the hyperinflation crisis. One way that he did this was by borrowing lots of money from the USA.
- Germany then went through a 'Golden Age' where people became wealthier, life improved, and Germany became famous for its culture.
- The Nazis were not popular at this time because life was good.

6. The Great Depression

- From October 1929, there were economic problems in the USA following an event called 'the Wall Street Crash'.
- The problems spread across the world. Germany was particularly badly affected because the USA asked Germany to pay back all the money they had loaned them.
- Unemployment increased and life became harder.
- Because life was so hard, people listened to extreme ideas like those of Hitler. He promised 'work and bread' and that he would solve Germany's problems.
- The Nazis became more popular.

Key Vocabulary

- **Anti-Semitic**
- **Democracy**
- **Dictatorship**
- **Economic**
- **Election**
- **Extreme**
- **Hyperinflation**
- **Golden Age**
- **Great Depression**
- **Nazi/Nazi Party**
- **Peace treaty**
- **Reparations**
- **Treaty of Versailles**
- **Weimar government/Weimar republic**

7. The Munich Putsch

- In November 1929, Hitler tried to take power in Germany by force. This is a 'putsch'. He planned to take control of Munich, and then Germany.
- His plan failed, and he was sent to prison. He had failed, but he had become famous. In prison he wrote a book called 'Mein Kampf'. This spread his ideas in Germany.
- He also made an important decision. He would not try to take power by force. He would take power democratically, through elections.

8. Hitler comes to power

- Hitler used the depression, the power of his speeches, and propaganda, to increase support for him and the Nazis..
- Hitler took control of Germany democratically in 1933. He then became a dictator.

Year 9 Unit 1 – Straight Line Graphs

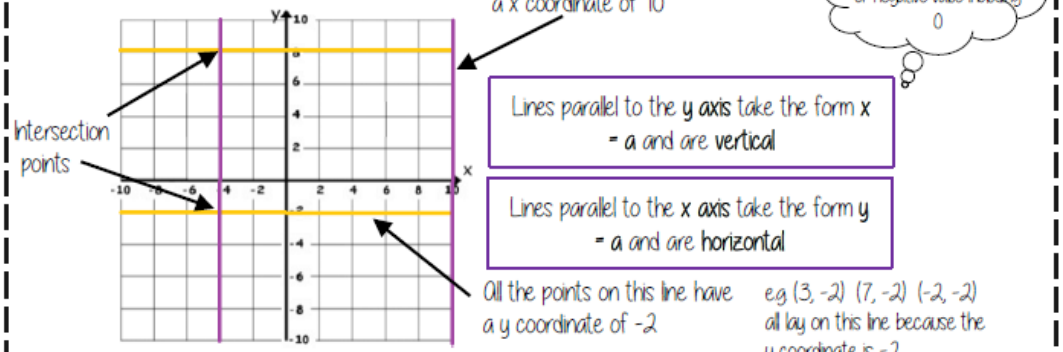
What do I need to be able to do?

- Compare Gradients
- Compare Intercepts
- Understand and use y=mx+c
- Find the equation of a line from a graph
- Interpret gradient and intercepts of real-life graphs

Vocabulary

Coefficient: the number in front of x
Coordinate: a set of values that show an exact position on a graph
Gradient: the steepness of a line
Intercept: where two lines cross
Linear: a sequence that increases or decreases by the same amount each time and when plotted makes a straight line
Parallel: two lines that never meet and so share the same gradient
Perpendicular: two lines that meet at a right angle
Y-Intercept: Where a line crosses the y-axis

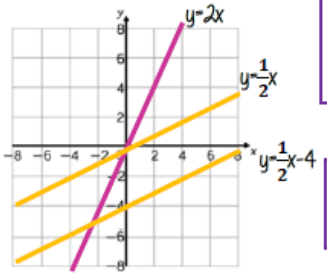
Lines parallel to the axes (R)



Compare Gradients

$y = mx + c$

The coefficient of x (the number in front of x) tells us the gradient of the line



The greater the gradient – the steeper the line

Parallel lines have the same gradient

Positive gradients

Negative gradients

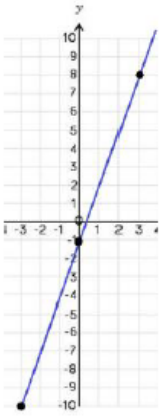
Plotting y = mx + c graphs (R)

$y = 3x - 1$ → 3 x the x coordinate then – 1

x	-3	0	3
y	-10	-1	8

Draw a table to display this information

This represents a coordinate pair (-3, -10)



You only need two points to form a straight line

Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

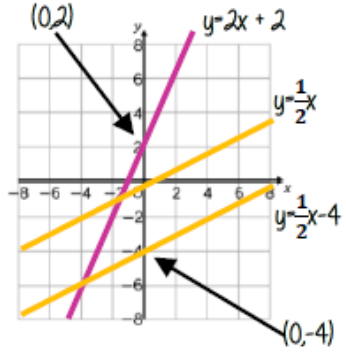
Using xy tables

Horizontal and Vertical Lines

Gradient of Lines

Compare Intercepts

$y = mx + c$ ← The value of c is the point at which the line crosses the y-axis. Y intercept



The coordinate of a y intercept will always be (0,c)

Lines with the same y-intercept cross in the same place

y = mx + c

The coefficient of x (the number in front of x) tells us the gradient of the line

$y = mx + c$ ← The value of c is the point at which the line crosses the y-axis. Y intercept

y and x are coordinates

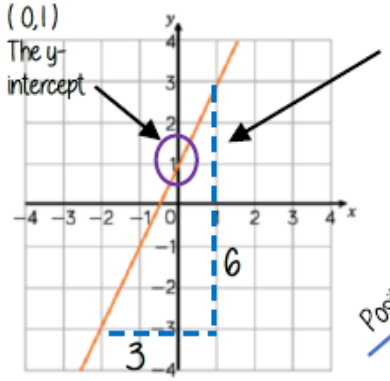
The equation of a line can be rearranged: E.g

$y = c + mx$

$c = y - mx$

Identify which coefficient you are identifying or comparing

Find the equation from a graph



The Gradient $\frac{6}{3} = 2$

$y = 2x + 1$

The direction of the line indicates a positive gradient

Positive gradients

Negative gradients

Real life graphs

A plumber charges a £25 callout fee, and then £12.50 for every hour. Complete the table of values to show the cost of hiring the plumber.

Time (h)	0	1	2	3	8
Cost (£)	£25				£125

The y-intercept shows the minimum charge. The gradient represents the price per mile

In real life graphs like this values will always be positive because they measure distances or objects which cannot be negative.

Direct Proportion graphs To represent direct proportion the graph must start at the origin

When you have 0 pens this has 0 cost. The gradient shows the price per pen

A box of pens costs £2.30

Complete the table of values to show the cost of buying boxes of pens.

Boxes	0	1	2	3	8
Cost (£)		£2.30			

Air traffic controllers are the people who coordinate the movement of airplanes. Their job is to be sure that planes stay a safe distance apart. They also direct planes to keep flying schedules on time. Some control traffic at airports. Other air traffic controllers handle planes between airports. Every plane that is taking off or landing is handled by an air traffic controller.

A job that relies on Algebra:

Air Traffic Controller

y=mx+c

Real-Life Graphs

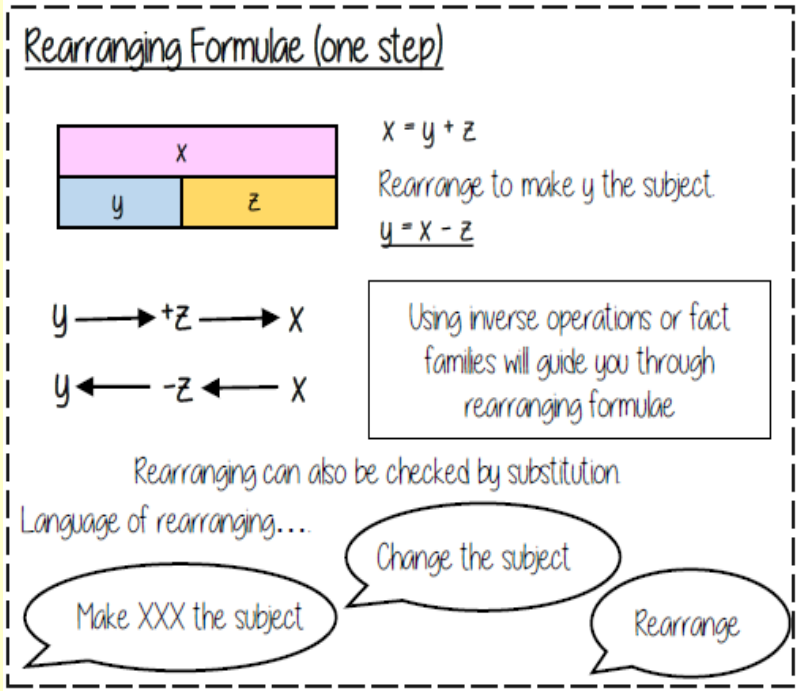
Year 9 Unit 2 – Forming and Solving Equations

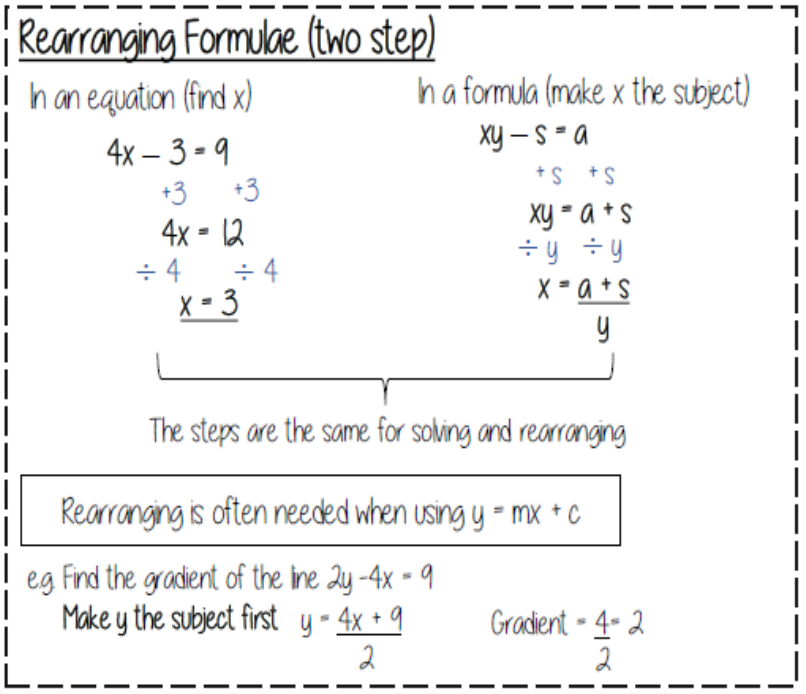
What do I need to be able to do?

- Solve inequalities with negative numbers
- Solve equations with unknowns on both sides
- Solve inequalities with unknowns on both sides
- Substitute into formulae and equations
- Rearrange Formulae

Vocabulary

Equation: a mathematical sentence with an equals signs
Expand: to get rid of a bracket by multiplying
Expression: a mathematical sentence without an equal sign
Factorise: put an algebraic expression into brackets by finding a common factor
Inequality: a symbol comparing two values, showing is one is greater than, less than or equal to another
Inverse Operation: the operation that reverses an action
Rearrange: change the order of something
Simplify: to collect terms together to make it appear more simple
Solve: find the numerical answer that satisfies an equation
Substitute: replace an algebraic variable with a numerical value

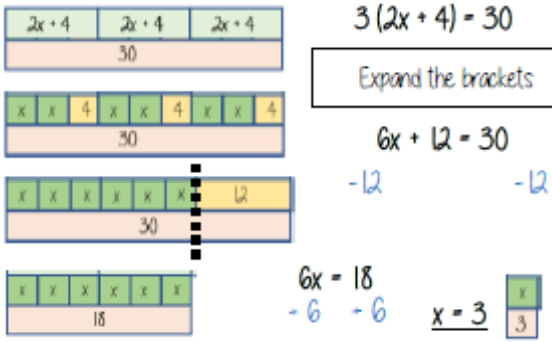




Rearranging Formulae

Solving Linear Equations

Solve equations with brackets (R)



$3(2x + 4) = 30$

Expand the brackets

$6x + 12 = 30$

$-12 \quad -12$

$6x = 18$

$-6 \quad -6$

$x = 3$

Form and solve inequalities (R)

Two more than treble my number is greater than 11

Find the possible range of values

$3x + 2 > 11$

Solve

$x \leftarrow -3 \leftarrow -2 \leftarrow 11$

$x > 3$

Inequalities with negatives

Method 1 Make x positive first

$2 - 3x > 17$

$+3x \quad +3x$

$2 > 17 + 3x$

$-17 \quad -17$

$-15 > 3x$

$\div 3 \quad \div 3$

$-5 > x$

x is true for any value smaller than -5

Smaller ← → Bigger

-7 -5 -3

✓ CHECK IT!

$2 - 3(-6) = 20$

TRUE/ CORRECT

Method 2 Keep the negative x

$2 - 3x > 17$

$-2 \quad -2$

$-3x > 15$

$\div -3 \quad \div -3$

$x > -5$

x is true for any value bigger than -5

This cannot be true...

$x < -5$

When you multiply or divide x by a negative you need to reverse the inequality

Equations with unknown on both sides

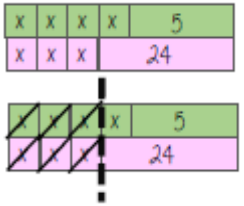
$4x + 5 = 3x + 24$

$-3x \quad -3x$

$x + 5 = 24$

$-5 \quad -5$

$x = 19$



Inequalities with unknown on both sides

Solving inequalities has the same method as equations

$5(x + 4) < 3(x + 2)$

$5x + 20 < 3x + 6$

$2x + 20 < 6$

$2x < -14$

$x < -7$

Check it!

$5(-8 + 4) < 3(-8 + 2)$

$5(-4) < 3(-6)$

$-20 < -18$

✓ -20 IS smaller than -18

Formulae and Equations

Formulae – all expressed in symbols

Substitute in values

Equations – include numbers and can be solved

Solving Inequalities

Forming Expressions

Forming and solving equations

A job that relies on algebra:

Formula 1 Engineer

The primary job of a Formula 1 engineer is to make sure that the driver and vehicle achieve the most efficient performance on the track. Formula 1 race car engineers must ensure that the car is safe and roadworthy; this requires a high level of coordination and planning. A big part of the role involves analysing past performances and assessing engine data to set up the vehicle's systems to generate superior performance in the next race. Moreover, F1 engineers must conduct briefings with the driver before the race to maximise their performance on the track.

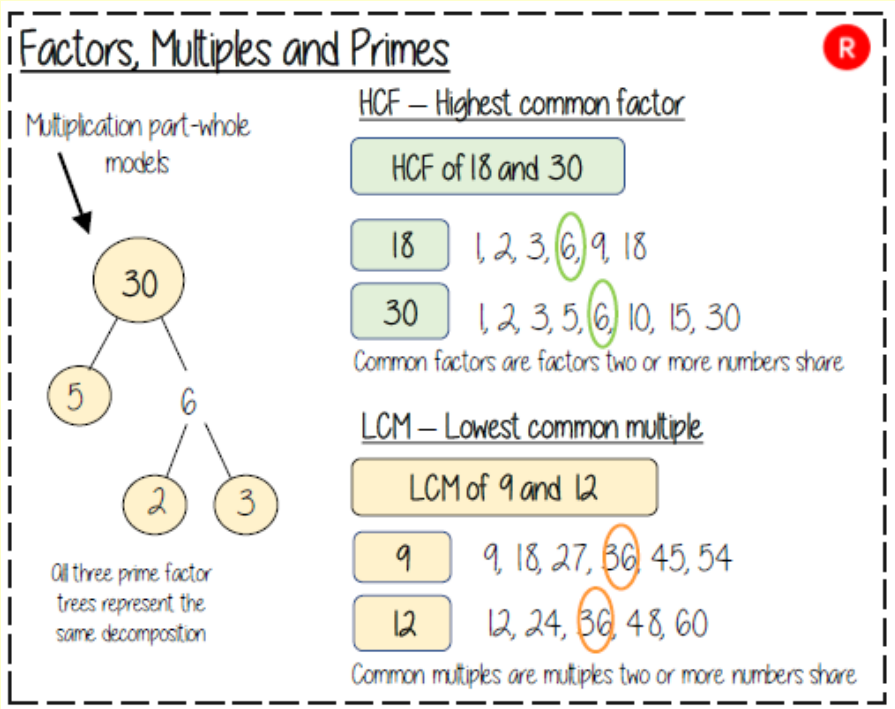
Year 9 Unit 3 – Testing Conjectures

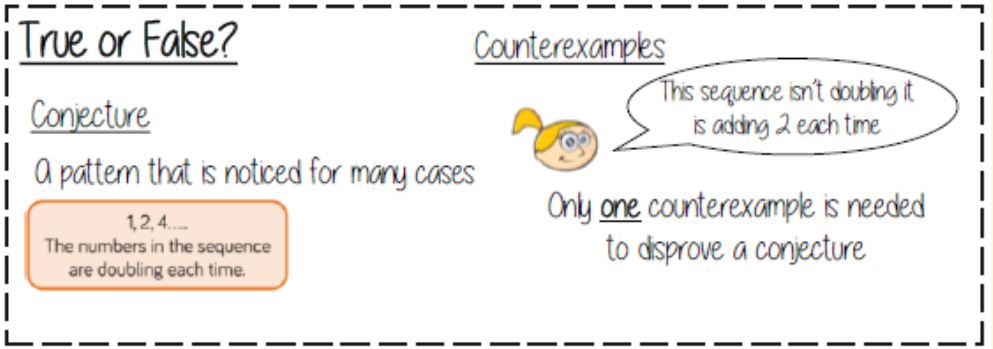
What do I need to be able to do?

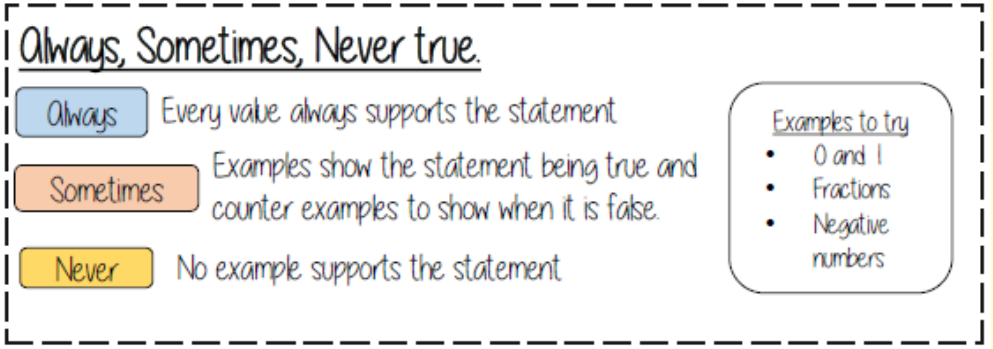
- Use factors, multiples and primes
- Reason for true or false statements.
- Reason for always, sometimes, never statements.
- Expand Polynomials
- Make conjectures with algebra
- Explore the 100 grid

Vocabulary

Binomial: an algebraic multiplication with two brackets multiplied e.g (x+3)(x+4)
Factors: an integer that multiplies to make another number
Highest Common Factor: the biggest number that is shared by two numbers
Integer: a whole number with no decimal part.
Lowest Common Multiple: the lowest number belonging to both timetables
Multiples: numbers belonging to that times table
Prime: a number with exactly two factors
Proof: logical mathematical arguments used to show a statement is true
Quadratic: an algebraic statement involving x squared as the highest power of x
Square Number: an integer that can be made by squaring another integer
Verify: the process of making sure something is correct







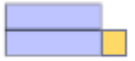
Show that

- Numerical verification — Show the stages to a solution with numerical values
- Algebraic verification — Show algebraic properties of the solution. You may want to use pictorial images to support this
- Proof — Simple proofs using algebra

Compare the left hand side of an equation with the right hand side – are they the same or different?

Conjectures

Even
$(2n)$
Multiple of 2



Odd
$(2n + 1)$
One more than any even

Use numerical verification first
Use pictorial verification – the representations of numbers of odd and even

Exploring the 100 square

In terms of 'n' is used to make generalisations about relationships between numbers

Positions of numbers in relation to n form expressions
Eg one space to the right of n
$n + 1$

Eg One row below n
$n + 10$

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

The size of the grid for generalisation changes the relationship statements

Expanding binomials

$2(x + 2) \equiv 2x + 4$

Algebra tiles can represent a binomial expansion
Has two terms

Algebra tiles

Positive values

$(x + 3)(x + 3) \equiv x^2 + 6x + 9$

This is a quadratic
It has four terms which simplified to three terms

The order of the binomial has no impact on the outcome.
e.g. $(x + 3)(3 + x)$

Product of

HCF

LCM

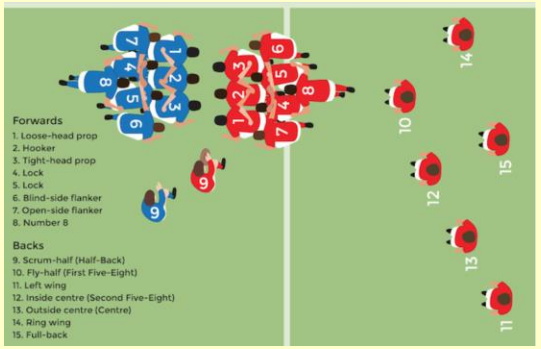
Expanding

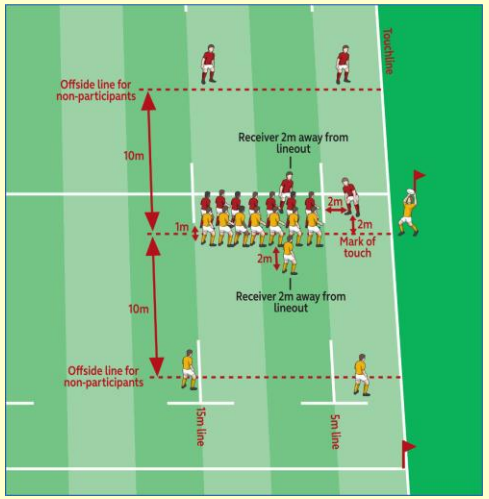
A job that relies on problem solving:

An electrician

An Electrician, or a Wireman, installs and repairs electrical power systems in businesses, homes, factories and public spaces. Their main duties include planning the layout of electrical wiring, diagnosing electrical problems and conducting general electrical maintenance.

Year 9 Physical Education – Topic - Rugby





Key skills

Passing & Use of Space

Is being able to accurately replicate prior learnt types of passes and performing these in a game to retain ball possession & outwit opposition. Also understanding what the use of space means for attacking opportunities.

Outwitting opponents - 5 vs 3

Is developing knowledge and understanding of strategic play used to outwit opponents. This means developing and refining tactics based on the analysis of opposition. This also means to begin to correctly officiate.

Tackling & Rucking

Is developing an understanding & knowledge of how to perform a ruck and to replicate the correct tackling & rucking technique. This includes understanding the safety aspects of tackling and the rules regarding rucking and offside.

Restarting play - Line Outs

Is being able to perform a small line out with the correct technique and understanding how a line out is formed with the necessary positions.

Scrum development

Is developing the knowledge & understanding of how to form a 3-man scrum, understanding and accurately describing the scrum positions and to develop knowledge of when a scrum is used. Then integrating scrummage skills into a small sided game after an infringement.

Rules of The Game

Scrum

A scrum will be awarded for:

a forward pass, a knock on, where the ball does not emerge from a maul or ruck; or when the ball becomes unplayable.

The referee will call “Crouch” and then “Bind”. The front rows crouch and using their outside arm each prop must bind onto the body or side of their opponent and the second rows crouch and bind onto the prop in front of them.

Following a pause, the referee calls “Set” only when the front rows are ready. The front rows may then engage.

Key Vocabulary

Backwards
Conversion
Line Out
Offside
Outwit
Pass
Penalty
Possession
Ruck
Scrum
Tackle
Tactical

Year 9 Physical Education – Topic: Pickleball

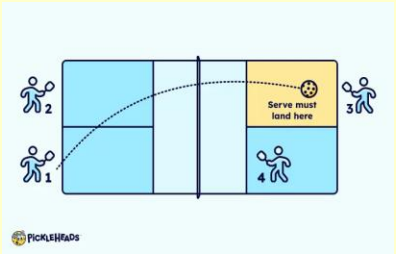
Scoring:

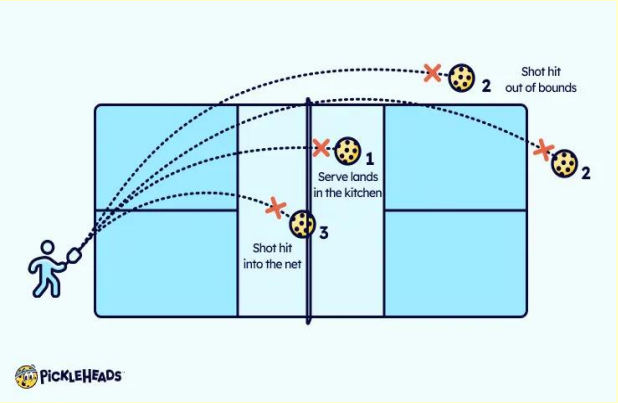
First Number	Second Number	Third Number
score of the serving team	score of the receiving team	which player of the team is serving, first server (1) or second server (2)

3 – 3 – 1

Serving team's score | Receiving team's score | Current server (will be 1 or 2)

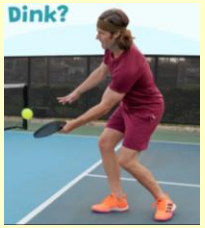
Serving and faults:





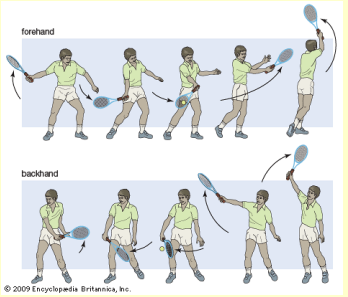
Shots:

Dinks
Played closer to the net, these touch shots are hit into your opponent's kitchen and help keep the other team from attacking.



Drop Shots
Played at the back of the court, these shots aim to land in the opponent's kitchen to keep them from attacking.

Forehand/ backhand Drives
These powerful shots are hit off the bounce, often from the baseline. They are played using a forehand or backhand swing.

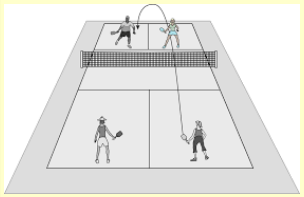


Volleys
These shots are hit out of the air before the ball bounces. They can only be played outside the kitchen.

Smash
The overhead smash is designed for one thing and one thing only: to destroy the ball and make it impossible for your opponents to return it.

Overheads
Shots hit above the head with a tennis serving motion, used to attack lobs before they bounce.

Lobs
These shots are hit high into the air to move opponents away from the kitchen.



Key words:
Score
Serve
Dink
Drop shot
Volley
Forehand
Backhand
Lob
Smash
overhead

Year 9 Physical Education – Topic: Netball

Umpiring/Officiating:

A game of netball has two umpires. They have specific areas on the court to officiate in.

There are many rules or infringements they will penalise players for eg obstruction, contact, footwork, ball handling, over a third, off side, held ball, short passes, ball not received in the centre third.

Alongside these rules, they will use hand signals to identify them and a whistle to enforce them.

The game should run smoothly and quickly, substitutes are allowed in netball.

The team taking the centre pass alternates after each goal is scored.

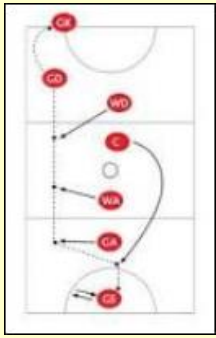
If a free pass is given, then the player penalised is free to mark another. If a penalty pass is given, then the penalised player must stand by the side of the player taking the penalty pass.

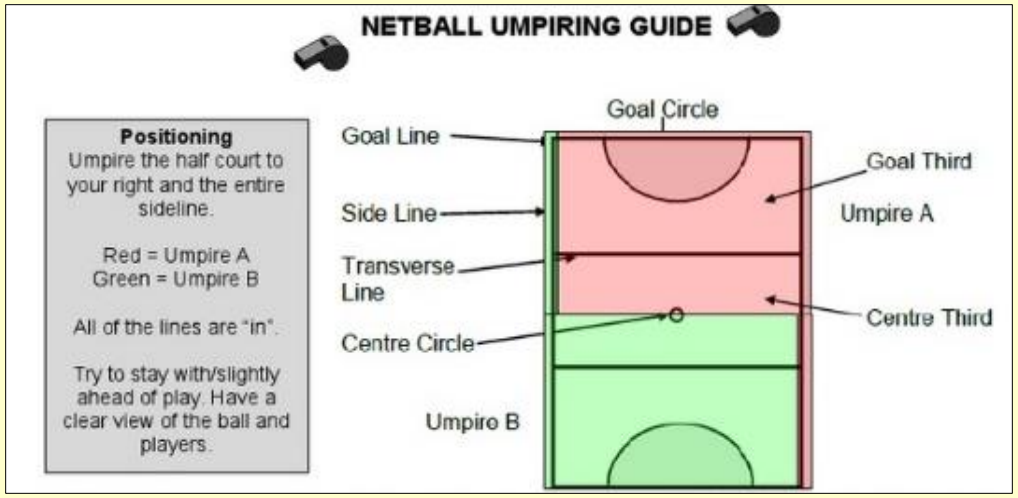
Key vocabulary:

Defending
Set pieces
Set patterns
Umpiring
Positioning
Goal circle
Goal third
Centre third
Transverse line
Side line

Set Pieces and Patterns of Play

Centre pass strategies, sideline passes and back line passes, all have the ability to gain your team some vital passages of play. If executed well, they help you outwit opponents and master your defending skills also.

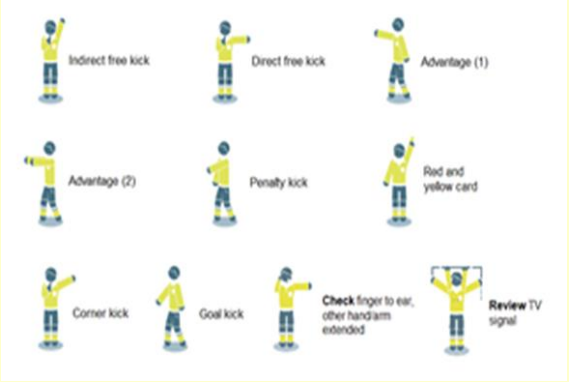




Defending

Marking is used to prevent your opponents from gaining an advantage. It can be man-to-man, sometimes zonal and also in the form of blocking. Tipping is also a good skill to have as it will enable you to intercept and if advanced tipping is achieved, you can touch the ball to players on your team.

Year 9 Physical Education – Topic: Football



Officiating in Football

Each match is controlled by a referee who has full authority to enforce the Laws of the Game in connection with the match.

The officials must be respected at all times.

Their role is to give free kicks, whether to award a goal, give yellow or red cards for fouls/decent and the result of the match.

PLAY ADVANTAGE

Allows play to continue when an offence occurs, and the non-offending team will benefit from the advantage and penalises the offence if the anticipated advantage does not ensue at that time or within a few seconds

Referee signals (SEE Above)

Key skills

Passing - To understand the benefits of passing and where different types of passes should be used i.e. Over defensive line. To be able to outwit opponents with a variety of passes.
Control & Turning - To be able to use the different parts of the body to control the ball. To perform and replicate different types of dribbling with control, speed and fluency in a pressured situation. To outwit opponents with the combination of advanced turns and dribbles making decisions about how best to advance on opposition.
Attack/Beating an opponent - To be able to outwit opponents using dummies & fakes at speed. To understand the importance of width and playing into space in order to attack. To develop strategic and tactical play.
Shooting - To perform a variety of shooting techniques on goal. i.e. low drive, chip and volley. To develop their understanding and knowledge of how to execute a successful shot on goal i.e. success criteria. To appreciate how to adjust shot selection based on opponents positioning.
Defensive Tactics - To develop their understanding and knowledge of how to stop attack effectively. To perform the different types of defensive techniques in different situation.
Set Plays - To perform crosses using varying height, speed and positioning. To develop creativity in developing new strategies from corner kicks in attack and defence.

PRIOR LEARNING
It is helpful if the pupils have:
Experienced setting up and organising football practices in groups.
Applied and adapted the principles of attack and defence in small, sided games
Lead own warm up and cool down safely.
Learnt about specific techniques
Used and applied football rules correctly.

Key Vocabulary
Offside
High-line
Man-to-man
Offside trap
Through pass
Touch line
Pressure
Attack
Defence
Push-up
Goal side
Play-on
Advantage

Autumn 1

Year 9 Science: Optometrist, Dog Breeder

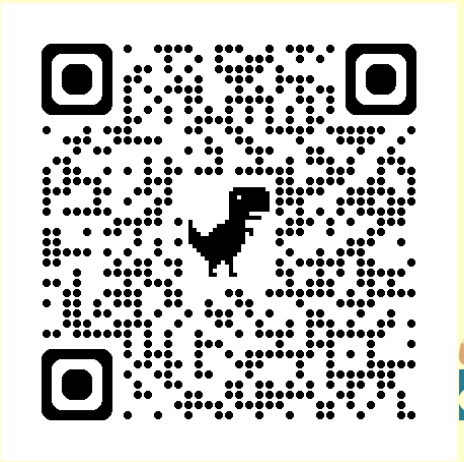
Key Vocabulary:
Media
Reflection
Incidence
Normal
Frequency
Wavelength
Wavespeed
Compression
Rarefraction

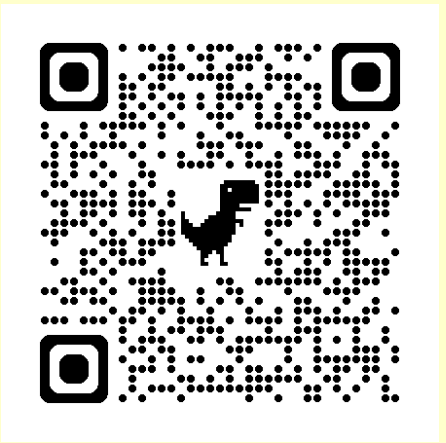
Waves are classified as either **transverse** or **longitudinal**. Transverse waves can be an electromagnetic wave. White light is made up of different wavelengths from red to blue.

Characteristics are either influenced by your environment and/or genetics. The genetics are passed on through reproduction between two different organisms.

Key Vocabulary:
Phenotype
Allele
Gene
Heterozygous
Homozygous
Reproduction
Clone
Mitosis

Key Question:
What is the difference between reflection and refraction?
What is frequency?

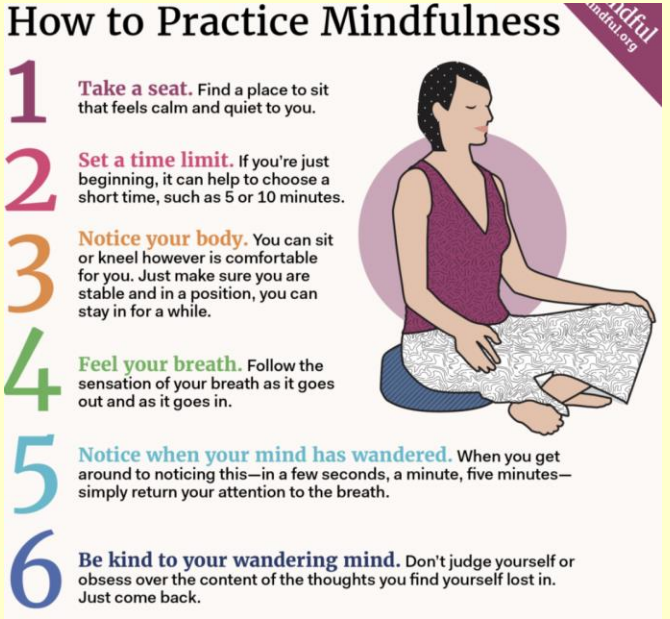




Key Question:
Why is obesity a complex issue?
Consider environment and genetics

Year 7 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…

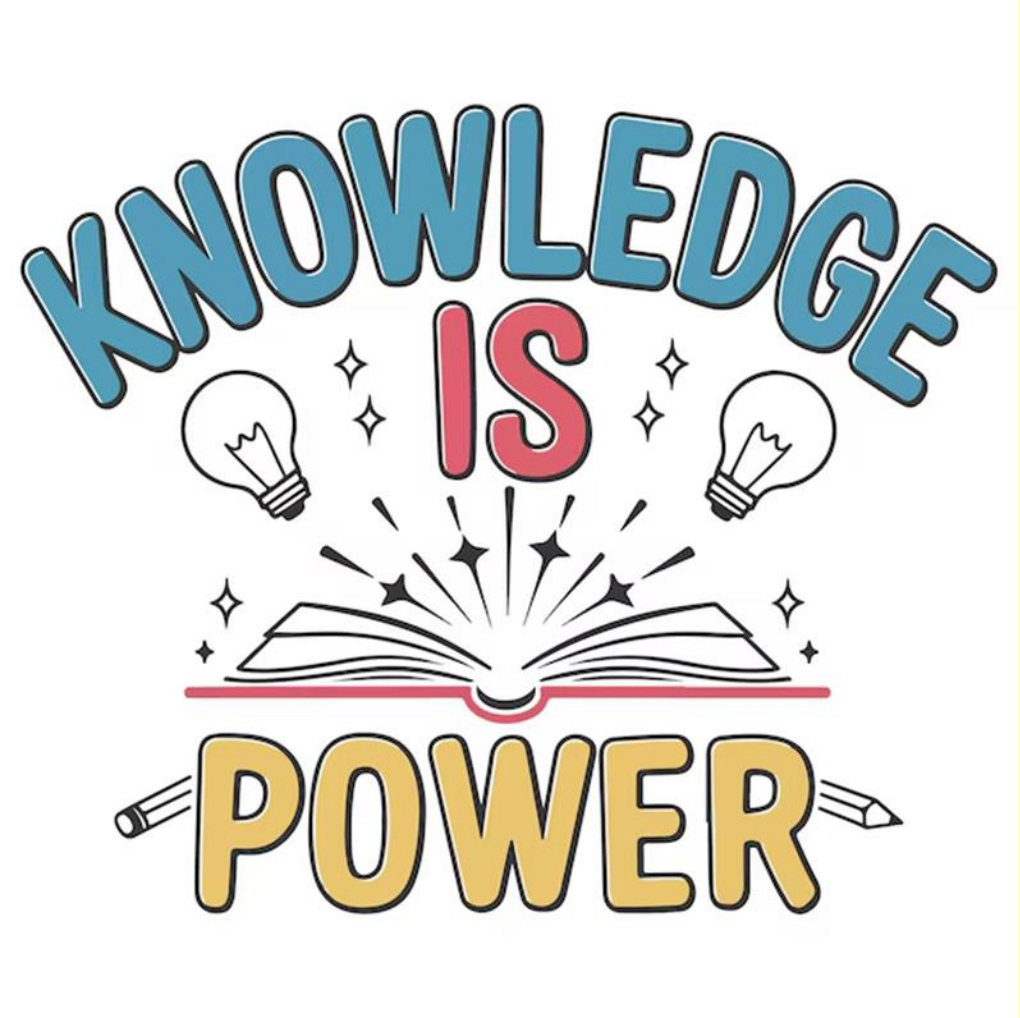


I know it seems way too simple! But this is an ancient practice with traditions in all major religions – including Islam and Christianity!
I know that it will seem odd at first. That is your worrying mind trying to stop you taking control over it!
But stick with it – it will help! Regularly practicing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

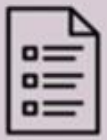
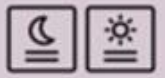
Open Academy Year 9 Knowledge Organiser

Autumn Term 2



Contents Page Autumn Term 2 Page 28 - 47

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: Pop Art

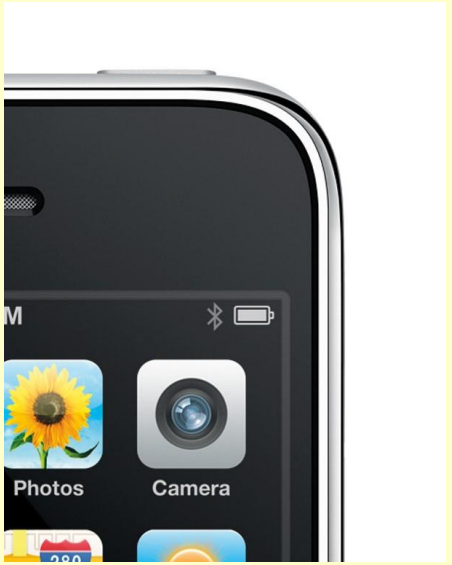
What is POP ART?

These are two famous Pop Artists

“Marilyn” Andy Warhol

“Whaam!!!” Roy Lichtenstein

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



We will be making enlarged drawings of these objects and Using different techniques on them. Please make sketches of these items and use pop art style colours.

Year 9 Computer Science: Topic – Computing Basics

Computers are made of various pieces of **hardware** which each have a specific function. Data is stored on memory devices such as a Hard Disk Drive, or Solid State Drive.

Data is stored on these drives as a bunch of 1s and 0s. This system is called Binary and dictates how computers send, receive and write down data.

Sound and images are also stored with 1s and 0s. We use bitmap images and quantification to assign values.

Data is stored as 1s and 0s in a format called Binary. Characters such as letters, punctuation and symbols are also stored as 1s and 0s but are decoded via ASCII

Key Vocabulary:
CPU
RAM
HDD
SSD
Transmission
Bit map

Key Questions:
What is a bitmap?
What does a CPU do?

Base^{Exponent}	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
Place Value	128	64	32	16	8	4	2	1
Example: Binary Number	1	0	1	1	1	0	0	1
Decimal Number Total: 185	128	0	32	16	8	0	0	1

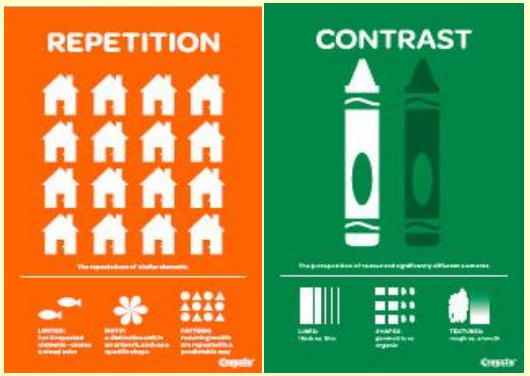
1 0 1 1 1 0 0 1 = (128 * 1) + (64 * 0) + (32 * 1) + (16 * 1) + (8 * 1) + (4 * 0) + (2 * 0) + (1 * 1)
1 0 1 1 1 0 0 1 = 128 + 0 + 32 + 16 + 8 + 0 + 0 + 1
1 0 1 1 1 0 0 1 = 185

learncisco

Year 9 Design and Technology – Topic: Textiles

This term's Textile project is to recreate one of Grayson Perry's Political Screen-Printed Tapestries as a collaborative year group piece and to create an individual outcome. You are creating stencils to print with then adding detail using fabric pens, sewing machines and hand embroidery.

The skills you will be using are:
- Cutting with Craft Knives
- Drawing
- Screen Printing
- Hand Embroidery
- Sewing machine stitching.



Key Vocabulary

Stencil	Abstract
Composition	Cartoon
Cutting	Story board
Colour pallet	Negative
Space	
Contrast	Silk Screen
Refinement	Squeegee
Repetition	
Ceramics	

Practice Exam Questions

Which Health and Safety considerations do you need to think about when using a craft knife?

How will you refine your drawings, so they are going to be simple and blocky enough to screen print?

What equipment do you need to get ready and organised for when you screen print?

Why do you tape around the edge of the screen when preparing to print?

Method to Screen Print:

1. Tape round the edge of the screen with parcel tape to stop the paint seeping through onto the fabric.
2. Tape your card stencil back to front to your screen making sure the edges are all covered.
3. Turn the screen over and place faced down on the fabric.
4. Apply the paint in a line at the top of the screen.
5. Use the squeegee to apply pressure and pull down to push the paint through the screen and print the design on the fabric.
6. Lift the screen off the fabric, take it to the sink, strip the screen and wash quickly.

Year 9 Drama: Topic 2 – Physical Theatre

Key Practitioners

Frantic Assembly are contemporary theatre practitioners who use physical theatre to tell stories.
Frantic Assembly devise using a series of 'building blocks' to create complex work. Movement is built up slowly using the idea of action/reaction. Working this way the story becomes secondary to the movement.

DV8 are arguably among the main practitioners of Physical theatre. They focus on looking at the dramatic potential that can be unlocked from movement. Their work is often described as existing at a crossroads where dance, sound and drama meet. DV8 are well known for using Physical Theatre to explore complex aspects of human relationships or cultural issues.

Why not have a look on line and see if you can find examples of either Frantic Assembly or DV8s work?

Physical Theatre is a **genre** of drama where you don't have to use words to express ideas. It uses techniques such as movement, mime gesture and dance to explore complex **social** and **cultural** issues.

Physical theatre is anything that puts the human body at the centre of the storytelling process. As a result, it's often **abstract** in style, using movement in a **stylised** and **representational** way.
.

Key Vocabulary

Social – the interactions, relationships and structures within a group of people
Cultural – shared values, beliefs, traditions and practices
Abstract – represents situations and emotions in a non-realistic way
Stylised – non – naturalistic movement which is exaggerated for dramatic effect
Synchronised – Where everyone does the same thing at the exact same time
Canon – where one person does a movement and then the nest person does the exact same thing
Pace – How fast or slow you are doing something.
Proxemics – showing the relationship between characters through distance.
Ensemble – Everyone working together

Year 9 English: Topic – Gothic Fiction

Summary

A classic genre that links Elizabethan storytelling to more modern literature, Gothic fiction remains a favourite. You'll read extracts including Frankenstein, Dracula and The Woman in Black. Consider a number of narrative voices and writing styles, you'll also get the chance to explore and develop your own writing skills inspired by some of English literature's most famous novels.

Why am I learning this?

Gothic fiction practiced a number of different writing styles, helping support you in developing your own literary choices.

Gothic fiction also explores personal dilemmas and responses to changing worlds. In this way it demands a lot of your ability to use context to understand and explain what has motivated authors to create their characters and stories.

Tasks:

1. Where vocabulary is challenging, create a glossary to clarify and then use the term in your own writing.
2. Extracts can be long, so keep track of your reading through summarising each extract after reading.

Be ambitious:

Writing styles and narrative voice is crucial to Gothic fiction. Practice writing in an epistolary style.

Gothic fiction also dealt with advances in science. What modern advances might prove a good subject for a contemporary take on the genre?

Technical Vocabulary

Epistolary – A narrative style involving use of letters of diary entries.

Direct Speech – The reporting of speech using quotation marks and the exact speech said.

Oxymoron – Two contrasting ideas of things placed next to each other for effect.

Symbolism – Using symbols or icons to represent an idea.

Zoomorphism – Giving animal qualities to non-animal things. Can create a wild or unsettling effect.

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

Ambitious Vocabulary

Doppelganger – A double of a living person.

Heroine – A female character, often central to the plot of Gothic fiction.

Prognostic – Indicating something that will happen in the future. .

Sublime – Evoking a sense of awe or terror.

Monstrosity – Having characteristics of monsters, often showing a break from rules or norms.

Transgression – Breaking of boundaries or rules.

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

Year 9 Food Technology – Topic: Macro nutrients

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, how ever, 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 of 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 sloand provide short term energy

Types: Starchy and sugary

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.

Key vocabulary
Carbohydrates
Fat
High Biological Value
Low biological Value
Protein
Saturated
Starchy
Sugary
Unsaturated

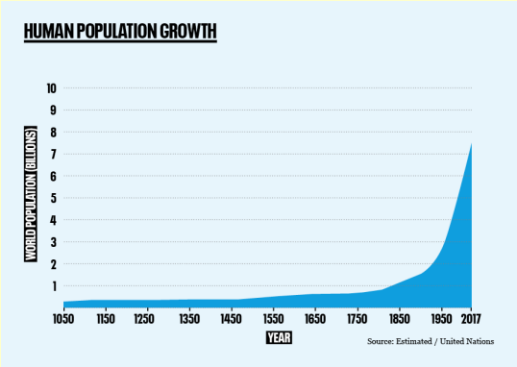
Example exam questions:

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)

Year 9 Geography – Topic: Population

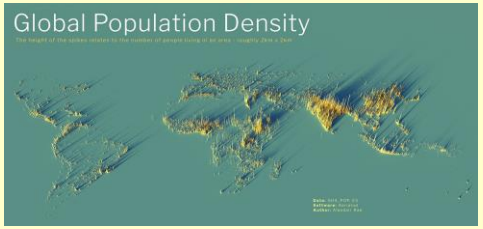
Population Growth

The global population is over 8 billion people, it has risen steeply over the last 75 years. One reason this growth is rapid is due to high 'Birth Rates' in developing countries another is people are living longer.

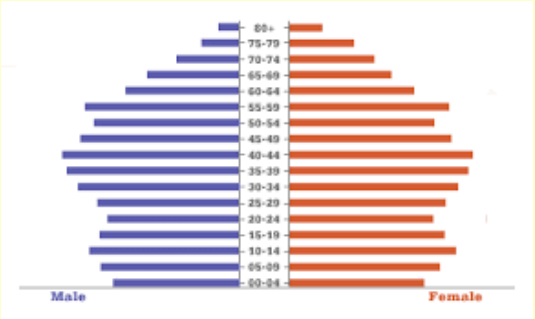


Population density vs Population Distribution

Some areas of the world are 'densely' populated such as western Europe with many people in a small area, some are sparse with few in a large area such as the Sahara desert.
Distribution means where are people concentrated or spread.



Population pyramids are simply graphs that show the amount of males and females living in a country at differing age groups.
As a country becomes more developed it will change shape from a wide Aztec pyramid shape to a tall skyscraper shape.
A wide base means a high **Birth Rate** and a low height means a low life expectancy.
Deep steps in at the side show a high **death rate.**

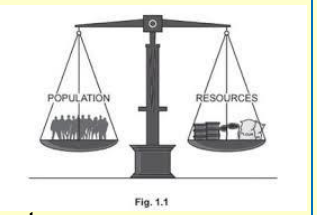


Ageing vs Youthful populations

Developing countries (poorer) tend to have higher birth rates and declining death rates. This means there are more younger people than old.
Developed countries have long life expectancy and lower birth rates therefore there are a growing number of elderly people compared to younger.
This means that care homes and pensions would be a priority.

Population and resources

Theories proposed that the world population would reach un-sustainable levels if population was not controlled. Today we try to follow the ideals of 'sustainable development' which means that we try (as difficult as it may be) to live in a way that reduces impacts upon the environment.



Reducing birth rates

Some countries like China famously introduced population control policies to reduce their rate of population growth. This was known as the 'One child policy'.
This has now been abandoned but it once meant that people could be fined or forcibly sterilised if they had too many children.
China did however grow rapidly in this time but today has an ageing population.

Falling death rates

Despite the terrible occurrence of wars, generally death reates are falling across the world due to better healthcare, education and higher standards of living.

Key Vocabulary

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

35

Year 9 German – Topic: Musik

Musikarten *Types of music*
Ich höre gern … *I like listening to …*
Ich höre nicht gern … *I don't like listening to …*
R&B-Musik *R&B music*
Jazzmusik *jazz*
Rap-Musik *rap*
Hip-Hop *hip-hop*
Popmusik *pop music*
Rockmusik *rock music*
Klassische Musik *classical music*

Wie ist die Musik? *What is the music like?*
Sie ist … *It is …*
toll *great*
lustig *fun*
originell *original*
melodisch *tuneful*
energiegeladen *full of energy*
dynamisch *dynamic*
kreativ *creative*
nervig *annoying*
modisch *fashionable*
altmodisch *outdated/old-fashioned*
kitschig *corny*
monoton *monotonous*

Was hast du auf dem Festival *What did you do at the festival?* *gemacht?*
Ich habe ... *I ...*
Wir haben ... *We ...*
viel getanzt *danced a lot*
Souvenirs gekauft *bought souvenirs*
coole Bands gesehen *saw cool Bands*
in einem Zelt geschlafen *slept in a tent*
neue Freunde gefunden *made new friends*
viel gesungen *sang a lot*
exotische Spezialitäten *ate exotic specialities*
gegessen
Ich bin auf das Festival *I went to the festival.*
gegangen.

Wer ist dein(e) Lieblings…? *Who is your favourite …?*
Mein Lieblingssänger ist … *My favourite (male) singer is …*
Meine Lieblingssängerin ist … *My favourite (female) singer is …*
Meine Lieblingsband ist … *My favourite band is …*
Mein Lieblingslied ist … *My favourite song is …*
Instrumente *Instruments*
das Keyboard *keyboard*
das Klavier *piano*
das Saxofon *saxophone*
das Schlagzeug *drums*
die Gitarre *guitar*
die Geige *violin*
die Trompete *trumpet*
die Klarinette *clarinet*
Ich spiele kein Instrument. *I don't play an instrument.*
Ich singe. *I sing.*
Seit wann spielst du? *How long have you been playing?*
Ich spiele ... *I've been playing ...*
seit drei Jahren *for three years*
seit sechs Monaten *for six months*
seit Juli *since July*

Wie oft spielst du? *How often do you play?*
Ich spiele ... *I play ...*
jeden Tag *every day*
einmal pro Woche *once a week*
zweimal pro Woche *twice a week*
am Wochenende *at the weekend*
ab und zu *now and then*

Wo spielst du? *Where do you play?*
Ich spiele ... *I play ...*
zu Hause *at home*
in der Schule *at school*
in einer Band *in a band*
in meinem Zimmer *in my room*

Die Band-Kandidaten *The band hopefuls*
Ich habe keine Lieblingsmusik. *I don't have a favourite type of music.*
Ich habe momentan keinen *I don't have a favourite singer at the Lieblingssänger. moment.*
Ich schreibe meine eigenen *I write my own lyrics.*
Liedtexte.
Ich kann keine Noten lesen. *I can't read music.*
Ich höre Musik und spiele mit. *I listen to music and play along.*
X ist mein Vorbild, weil ... *X is my idol because ...*

Wie findest du die Band? *What do you think of the band?*
Ich finde sie ... *I find them ...*
cool *cool*
energiegeladen *full of energy*
begabt *talented*
originell *original*
monoton *monotonous*
(zu) laut *too loud*
dynamisch *dynamic*
modern *modern*

Year 9 (History): Topic – The Second World War

1. Steps to war

- Hitler was the dictator of Germany. He was aggressive.
- He wanted to remove the Treaty of Versailles and make Germany strong again.
- He rebuilt Germany's military forces, then he started taking land from other countries.
- When Germany did this, Britain and France did not try to stop them. Britain and France did not want another war. This policy of allowing Hitler to take land was called 'appeasement'.
- In 1939, Britain and France finally told Hitler that if he invaded Poland, they would fight Germany. Germany invaded Poland in September 1939, and World War II started in Europe.

2. Blitzkrieg and the Battle of Dunkirk

- The Germans used a new tactic called 'Blitzkrieg' (lightning war). This used tanks, airplanes, and soldiers cleverly to quickly defeat their enemies.
- The German army quickly defeated Poland, then invaded France. The French and the British (who had sent soldiers to help), were also quickly defeated by the Blitzkrieg tactics.
- The British army retreated to a coastal town called Dunkirk.
- Ships of all kinds were sent from Britain to rescue the soldiers from Dunkirk. Over 338,000 soldiers were rescued and returned to Britain.
- The British army had to leave in France most if its equipment and over 40,000 soldiers to be captured by the Germans.
- Britain had lost the battle – but they had not lost the war.

3. The Battle of Britain

- Britain had not been defeated, so Hitler planned to invade. The Germans would have to send their army across the sea. To do this, they had to control the skies over the sea.
- In 1940, the Battle of Britain took place with British and German aircraft fighting for control. Pilots from other countries, such as Poland and India, helped Britain to fight.
- Germany had more aircraft, but the British were able to win. Some of the reasons for the British victory include: the quality of their aircraft; technology, like radar; the advantages of fighting over home territory.
- Germany was defeated, so decided to attack a different enemy.

4. Operation Barbarossa

- Hitler hated the Soviet Union because they were Communists, and he believed that Communism had been created by the Jews.
- The Germans invaded the Soviet Union in June 1941. Hitler believed that the Soviet army was weak, and that Germany would win quickly. The German army was only prepared for a short war.
- At first the German Blitzkrieg tactics were very successful, but the Soviets did not give up.
- As the war continued, the German advance slowed down and the Soviets started to win. This was caused by a range of factors, including: the cold winter weather that the Germans did not have the equipment to deal with; improvements in the Soviet army, such as the introduction of the powerful T-34 tank; the bravery and patriotism of Soviet soldiers who continued to fight no matter the conditions and how many casualties they took.
- The Germans lost major battles at Moscow, Leningrad, and Stalingrad. These were major turning points in the war. From this point on, the Germans were generally retreating and losing.

Key Vocabulary

- Allies/Allied
- Appeasement
- Blitzkrieg
- Communist/Communism
- Dictator
- Military
- Patriot/patriotism
- Radar
- Soviet Union
- Treaty of Versailles
- Turning point

5. D-Day / Operation Overlord

- The main fighting in World War II took place in the East between Germany and the Soviet Union. But in 1944, Britain and America (who had joined the war following the Japanese attack on Pearl Harbour in December 1941), supported by other countries like Canada, attacked the Germans from the West. The countries fighting against the Germans were known as the allies.
- They attacked German controlled France. This was called Operation Overlord but is commonly known as D-Day.
- The British and American soldiers travelled from Britain by boat across the English Channel to land in Normandy in France. The attack was a success, but the Americans suffered terrible casualties.
- The British and Americans continued to attack the Germans from the West, while the Soviets continued to attack from the East.

6. The end of World War II in Europe

- The Allied armies continued to push the Germans back in the East and West. Eventually they reached Berlin, the capital of Germany. Hitler committed suicide in Berlin. The war in Europe ended in May 1945.

Year 9 Unit 4 – 3D shapes

What do I need to be able to do?

- Name 2D and 3D shapes
- Recognise prisms
- Sketch and recognise nets
- Draw plans and elevations
- Find areas of 2D shapes
- Find surface area of 3D shapes
- Find the volume of 3D shapes

Vocabulary

2D : has two dimensions e.g length and width but no depth
3D: has three dimensions to the shape. e.g length, width and height
Cross-Section: a view inside a solid shape made by cutting through it
Dimension: a measurement in a certain direction
Edge: a line between two faces
Elevation: what you see from in front or to the side of an object
Face: a flat surface on a 3D object
Net: the 2D shape you get when you unfold a 3D shape
Plan view: the view from above an object (birds eye view)
Vertex: a corner of a 3D shape

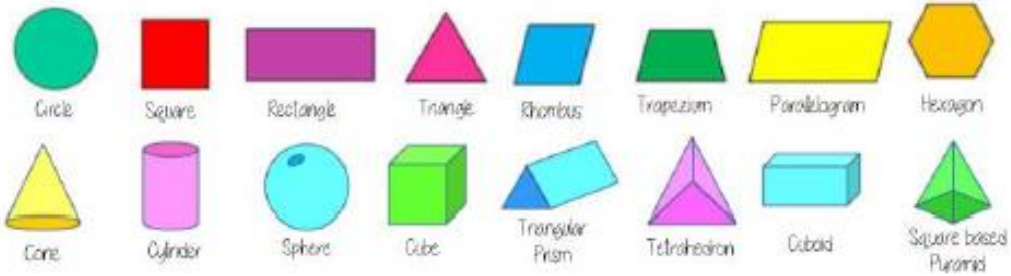
3D Shapes

Nets of 3D Shapes

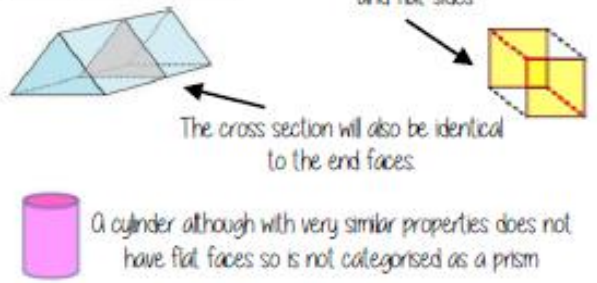
Nets

Plans and Elevation

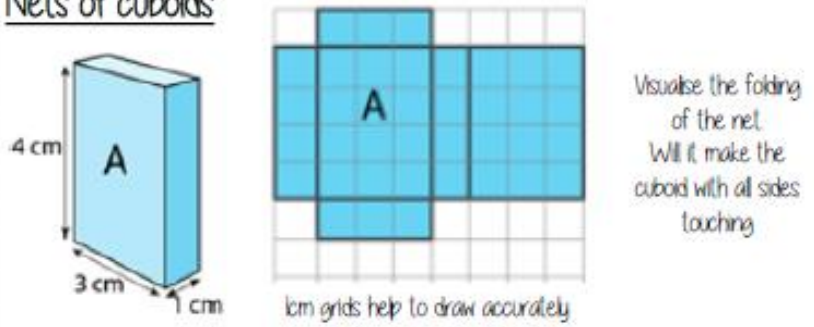
Name 2D & 3D shapes



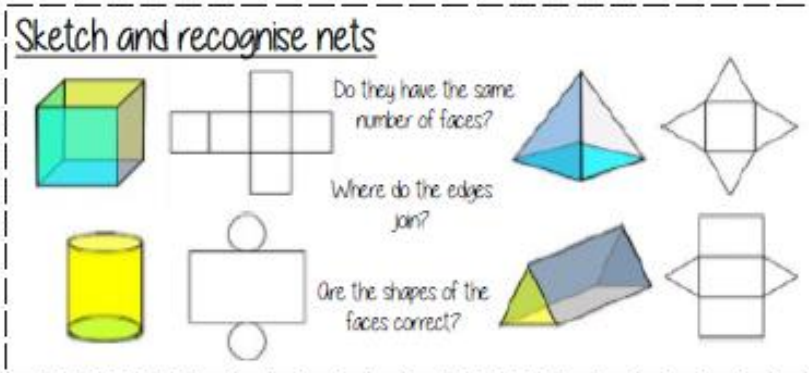
Recognise prisms



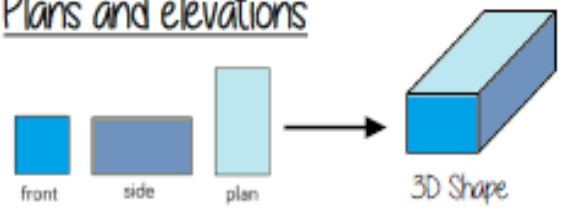
Nets of cuboids



Sketch and recognise nets



Plans and elevations



The direction you are considering the shape from determines the front and side views

Area of 2D shapes

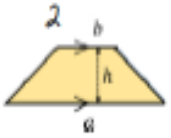
R

Rectangle
Base x Height

Triangle
½ x Base x Perpendicular height

Parallelogram/ Rhombus
Base x Perpendicular height

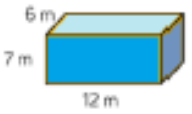
Area of a trapezium
$\frac{(a+b)}{2} \times h$



Area of a circle
$\pi \times \text{radius}^2$

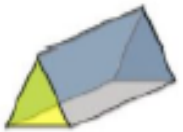
Surface area

Sketching nets first helps you visualise all the sides that will form the overall surface area



Sides	6 x 7 6 x 7	Sum of all sides is surface area
Front and back	12 x 7 12 x 7	
Top and Bottom	12 x 6 12 x 6	

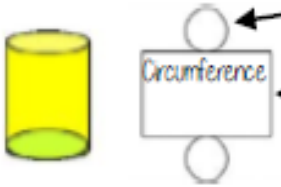
For cubes and cuboids you can also find one of each face and double it



For other shapes - not all the sides are the same, so calculate the individually

Surface area - cylinders

The area of the circle
$\pi \times \text{radius}^2$



The width of this face is the same as the circumference
$\pi \times \text{diameter} \times \text{height}$

$2 \times \pi \times \text{radius}^2 + \pi \times \text{diameter} \times \text{height}$

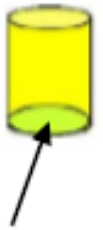
Volumes

Volume is the 3D space it takes up – also known as capacity if using liquids to fill the space

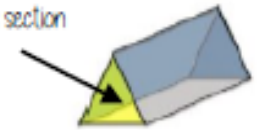
Counting cubes
Some 3D shape volumes can be calculated by counting the number of cubes that fit inside the shape.

Cubes/ Cuboids - base x width x height

Remember multiplication is commutative



Cross section



Cross section

Prisms and cylinders
- area cross section x height

Height can also be described as depth

Areas – square units
Volumes – cube units

Areas and volumes can be left in terms of pi π

Surface Area

Volume of Prisms

SA of Cylinders

A job involving geometry: **Architect**

An architect builds design plans for offices, buildings and homes. Their key responsibilities include using the client's preferences, needs and ideas to create well-designed structures, providing clients with cost estimates, designing construction plans using specifications and scaled drawings and negotiating construction contracts.

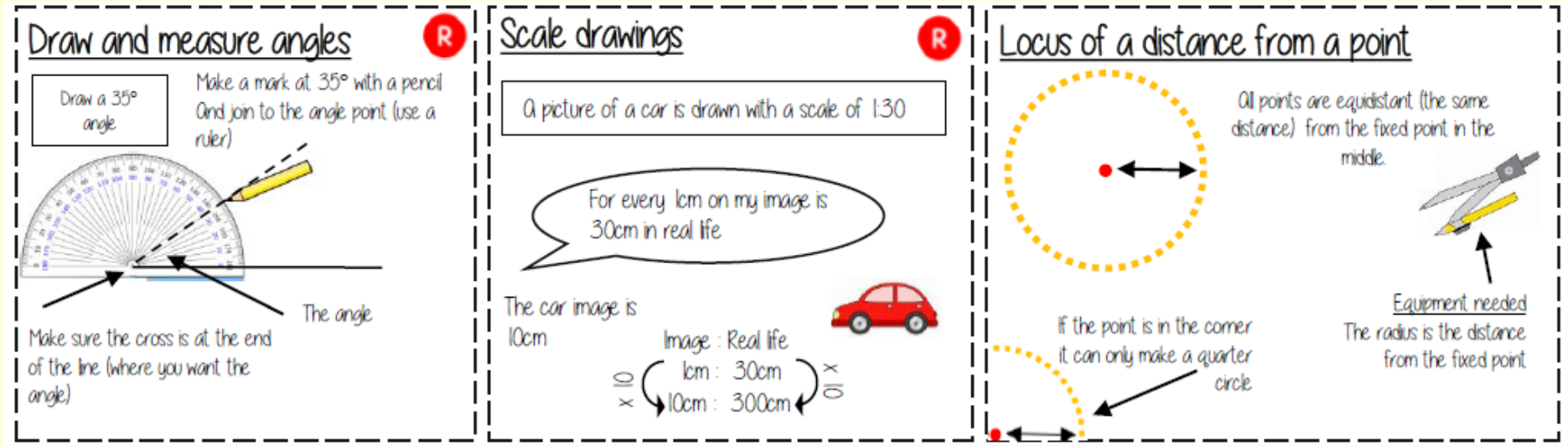
Year 9 Unit 5 – Constructions and Congruency

What do I need to be able to do?

- Draw and measure angles
- Construct Scale Drawings
- Find the locus of distance from points, lines, angles
- Construct perpendicular bisectors
- Identify congruent shapes
- Identify congruent triangles using the rules

Vocabulary

Arc: part of a curve
Bisector: a line that divides something into two equal parts
Compass: piece of equipment used to draw circles
Congruent: the same shape and size
Construct: Accurately draw a picture to a given scale
Discorectangle: (a stadium) – a rectangle with semi-circles at either end
Equidistant: equal in distance from a point
Locus: the set of points following a certain rule
Perpendicular: lines that meet at 90 degrees
Protractor : piece of equipment that is used to draw and measure angles
Similar: a shape that has been enlarged



Draw and Measure Angles

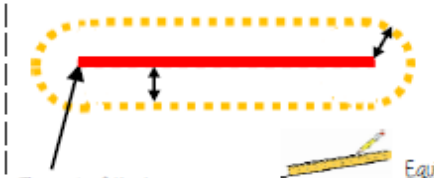
Scale Drawings

Loci

Constructing Triangles

Perpend-icular Bisector

Locus of a distance from a straight line



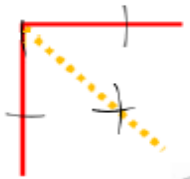
All points are equidistant (the same distance) from line

The ends of the line are fixed points

Equipment needed

The line is straight so a ruler is used for the straight lines parallel to your original line

Locus of a distance from two lines



Also an angle bisector
This cuts the angle in half

From the angle vertex draw two arcs that cut the lines forming the angle

Keep the compass the same size and use the new arcs as centres to draw intersecting arcs in the middle

Join the vertex to the intersection

Constructing Triangles

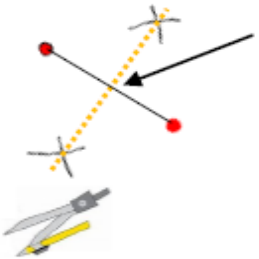
Link to steps

Side, Angle, Angle

Side, Angle, Side

Side, Side, Side

Locus equidistant from two points



Also a perpendicular bisector

Because if the points are joined, this new line intersects it at a 90°

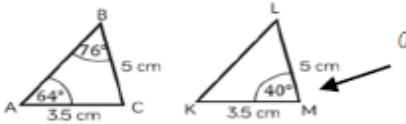
Keep the compass the same size and draw two arcs from each point

Join the intersections with a ruler.
All points on this line are equidistant from both points

Congruent figures

Congruent figures are identical in size and shape – they can be reflections or rotations of each other

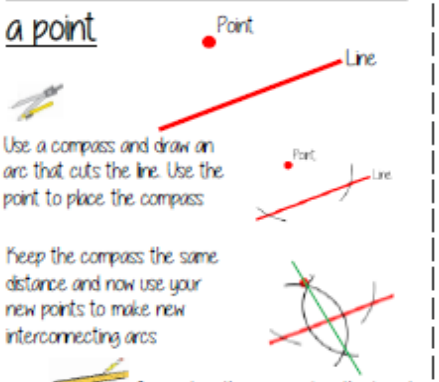
Congruent shapes are identical – all corresponding sides and angles are the same size



$A\hat{C}B = K\hat{M}L$

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

Construct a perpendicular from a point



Use a compass and draw an arc that cuts the line. Use the point to place the compass

Keep the compass the same distance and now use your new points to make new interconnecting arcs

Connecting the arcs makes the bisector

If P is a point on the line the steps are the same

Congruent triangles

Side-side-side

All three sides on the triangle are the same size

Angle-side-angle

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

Side-angle-side

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

Right angle-hypotenuse-side

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

Perpendicular from point to line

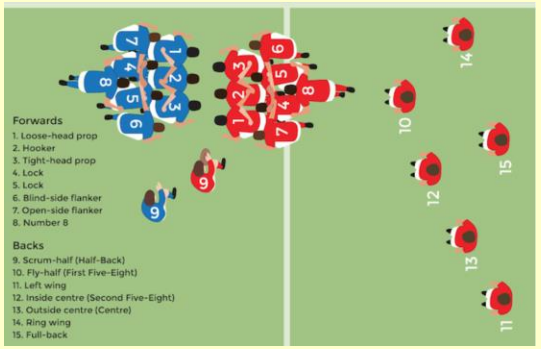
Angle Bisector

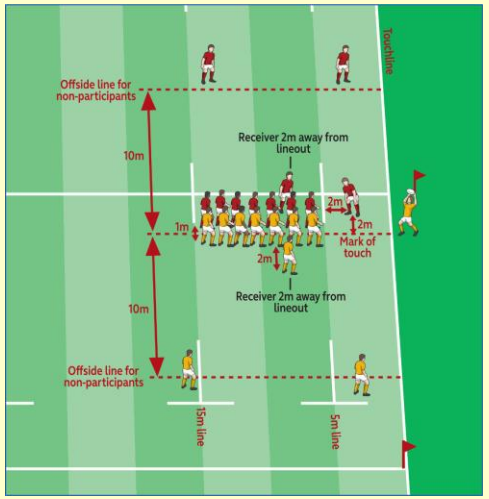
Congruent Triangles

A landscape gardener designs, develops, maintains and remodels gardens. Landscape gardeners are responsible for designing, crafting, regenerating and maintaining outside spaces. The creative side of a landscape gardener's job involves two main stages: briefing and design. Firstly, the landscape gardener will meet with their client to discuss their wants and desires for the proposed landscaping project. They will then produce a series of sketches, plans and designs before presenting them to the client. Once the designs are finalised, the landscape gardener will be responsible for taking care of the business side of things: hiring equipment, recruiting additional labourers where necessary, and procuring all the required materials, such as wood, cement, wood chippings, pebbles and soil.

Landscape Gardener

Year 9 Physical Education – Topic - Rugby





Key skills

Passing & Use of Space

Is being able to accurately replicate prior learnt types of passes and performing these in a game to retain ball possession & outwit opposition. Also understanding what the use of space means for attacking opportunities.

Outwitting opponents - 5 vs 3

Is developing knowledge and understanding of strategic play used to outwit opponents. This means developing and refining tactics based on the analysis of opposition. This also means to begin to correctly officiate.

Tackling & Rucking

Is developing an understanding & knowledge of how to perform a ruck and to replicate the correct tackling & rucking technique. This includes understanding the safety aspects of tackling and the rules regarding rucking and offside.

Restarting play - Line Outs

Is being able to perform a small line out with the correct technique and understanding how a line out is formed with the necessary positions.

Scrum development

Is developing the knowledge & understanding of how to form a 3-man scrum, understanding and accurately describing the scrum positions and to develop knowledge of when a scrum is used. Then integrating scrummage skills into a small sided game after an infringement.

Rules of The Game

Scrum

A scrum will be awarded for:

a forward pass, a knock on, where the ball does not emerge from a maul or ruck; or when the ball becomes unplayable.

The referee will call “Crouch” and then “Bind”. The front rows crouch and using their outside arm each prop must bind onto the body or side of their opponent and the second rows crouch and bind onto the prop in front of them.

Following a pause, the referee calls “Set” only when the front rows are ready. The front rows may then engage.

Key Vocabulary

Backwards
Conversion
Line Out
Offside
Outwit
Pass
Penalty
Possession
Ruck
Scrum
Tackle
Tactical

Year 9 Physical Education – Topic: Pickleball

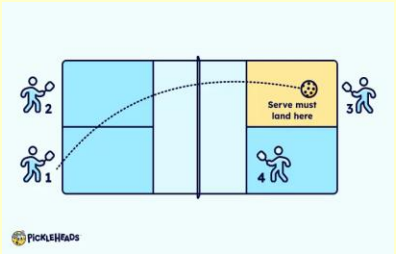
Scoring:

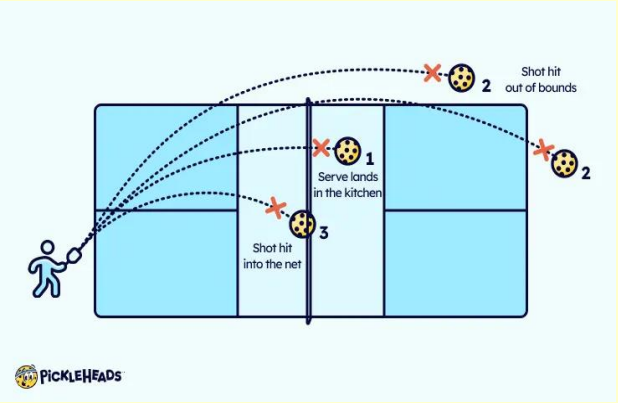
First Number	Second Number	Third Number
score of the serving team	score of the receiving team	which player of the team is serving, first server (1) or second server (2)

3 – 3 – 1

Serving team's score | Receiving team's score | Current server (will be 1 or 2)

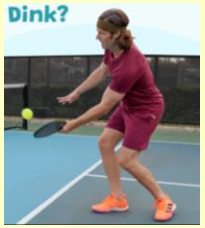
Serving and faults:





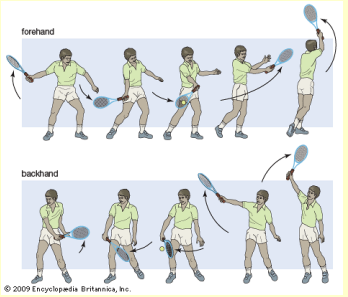
Shots:

Dinks
Played closer to the net, these touch shots are hit into your opponent's kitchen and help keep the other team from attacking.



Drop Shots
Played at the back of the court, these shots aim to land in the opponent's kitchen to keep them from attacking.

Forehand/ backhand Drives
These powerful shots are hit off the bounce, often from the baseline. They are played using a forehand or backhand swing.

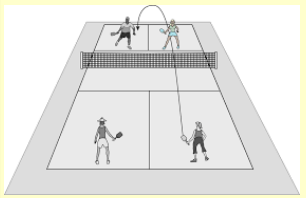


Volleys
These shots are hit out of the air before the ball bounces. They can only be played outside the kitchen.

Smash
The overhead smash is designed for one thing and one thing only: to destroy the ball and make it impossible for your opponents to return it.

Overheads
Shots hit above the head with a tennis serving motion, used to attack lobs before they bounce.

Lobs
These shots are hit high into the air to move opponents away from the kitchen.



Key words:
Score
Serve
Dink
Drop shot
Volley
Forehand
Backhand
Lob
Smash
overhead

Year 9 Physical Education – Topic: Netball

Umpiring/Officiating:

A game of netball has two umpires. They have specific areas on the court to officiate in.

There are many rules or infringements they will penalise players for eg obstruction, contact, footwork, ball handling, over a third, off side, held ball, short passes, ball not received in the centre third.

Alongside these rules, they will use hand signals to identify them and a whistle to enforce them.

The game should run smoothly and quickly, substitutes are allowed in netball.

The team taking the centre pass alternates after each goal is scored.

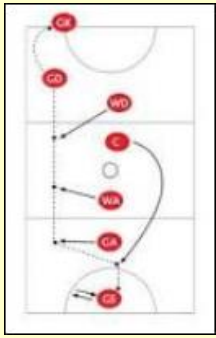
If a free pass is given, then the player penalised is free to mark another. If a penalty pass is given, then the penalised player must stand by the side of the player taking the penalty pass.

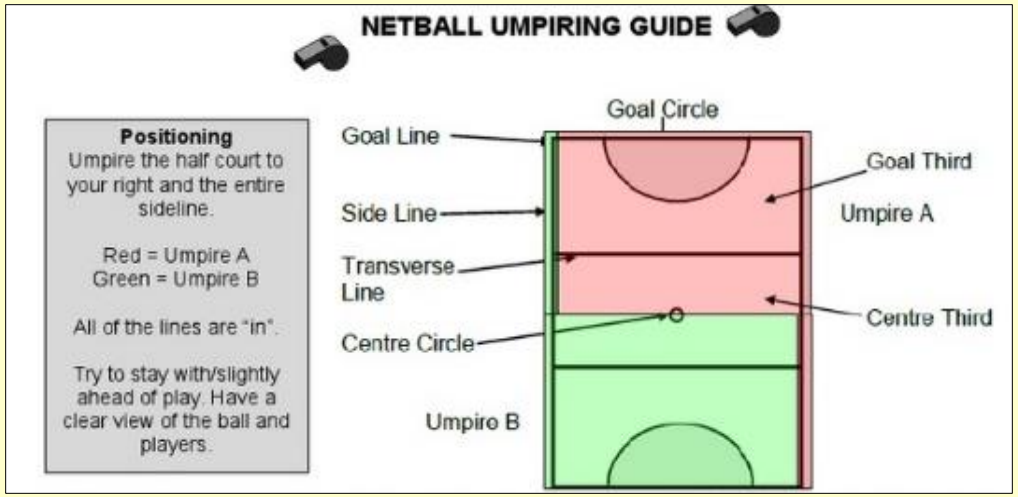
Key vocabulary:

Defending
Set pieces
Set patterns
Umpiring
Positioning
Goal circle
Goal third
Centre third
Transverse line
Side line

Set Pieces and Patterns of Play

Centre pass strategies, sideline passes and back line passes, all have the ability to gain your team some vital passages of play. If executed well, they help you outwit opponents and master your defending skills also.

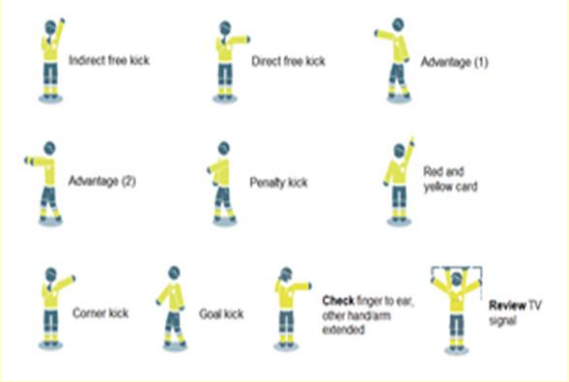




Defending

Marking is used to prevent your opponents from gaining an advantage. It can be man-to-man, sometimes zonal and also in the form of blocking. Tipping is also a good skill to have as it will enable you to intercept and if advanced tipping is achieved, you can touch the ball to players on your team.

Year 9 Physical Education – Topic: Football



Officiating in Football

Each match is controlled by a referee who has full authority to enforce the Laws of the Game in connection with the match.

The officials must be respected at all times.

Their role is to give free kicks, whether to award a goal, give yellow or red cards for fouls/decent and the result of the match.

PLAY ADVANTAGE

Allows play to continue when an offence occurs, and the non-offending team will benefit from the advantage and penalises the offence if the anticipated advantage does not ensue at that time or within a few seconds

Referee signals (SEE Above)

Key skills

Passing - To understand the benefits of passing and where different types of passes should be used i.e. Over defensive line. To be able to outwit opponents with a variety of passes.
Control & Turning - To be able to use the different parts of the body to control the ball. To perform and replicate different types of dribbling with control, speed and fluency in a pressured situation. To outwit opponents with the combination of advanced turns and dribbles making decisions about how best to advance on opposition.
Attack/Beating an opponent - To be able to outwit opponents using dummies & fakes at speed. To understand the importance of width and playing into space in order to attack. To develop strategic and tactical play.
Shooting - To perform a variety of shooting techniques on goal. i.e. low drive, chip and volley. To develop their understanding and knowledge of how to execute a successful shot on goal i.e. success criteria. To appreciate how to adjust shot selection based on opponents positioning.
Defensive Tactics - To develop their understanding and knowledge of how to stop attack effectively. To perform the different types of defensive techniques in different situation.
Set Plays - To perform crosses using varying height, speed and positioning. To develop creativity in developing new strategies from corner kicks in attack and defence.

PRIOR LEARNING
It is helpful if the pupils have:
Experienced setting up and organising football practices in groups.
Applied and adapted the principles of attack and defence in small, sided games
Lead own warm up and cool down safely.
Learnt about specific techniques
Used and applied football rules correctly.

Key Vocabulary
Offside
High-line
Man-to-man
Offside trap
Through pass
Touch line
Pressure
Attack
Defence
Push-up
Goal side
Play-on
Advantage

Autumn 2

Year 9 Science: Architect, Astronaut

Key Vocabulary:
Sturdy
Carbon Neutral
Payback time
Insulation
Conductor
Convection
Radiation
Kinetics

We use a variety of materials to build in the UK. Why do we use them? Why do our building look the way they do? Convection is the overall movement of a fluid generally linked to temperature.

Imagine you're living in the ISS. How can we test for Carbon dioxide, we can use limewater. Tropisms are how plants negatively or positively react to a stimuli. Weight is an application of mass.

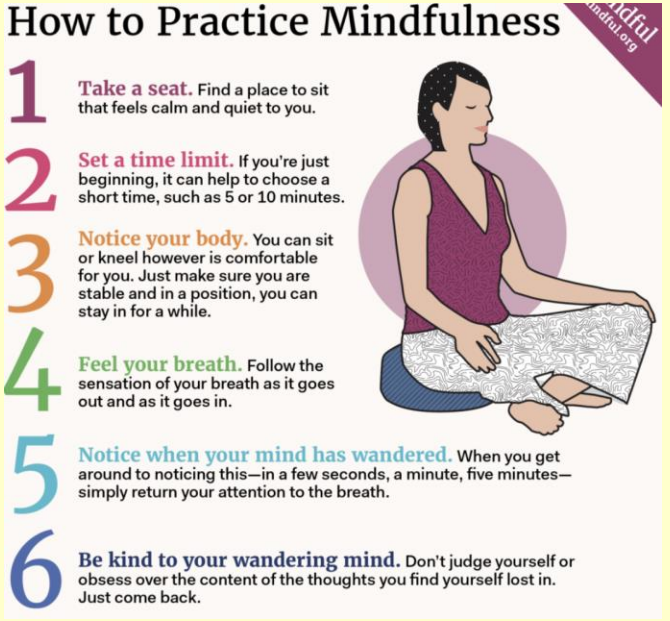
Key Vocabulary:
Geotropism
Positive result
Mass
Weight
Gravitational field strength
Skeletal
Nebula
Star
Orbitals

Key Question:
What ways can we help prevent thermal energy escaping our houses? Think about convection and conduction

Key Question:
How would a plant grow in a zero-gravity environment? Why would you weigh more on Mars than on Earth?

Year 7 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!