YEAR 9 – REASONING WITH ALGEBRA...
Testing conjectures

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:
- Use factors, multiples and primes
- Reason True or False
- Reason Always, sometimes never true
- Show that reasoning
- Make conjectures about number
- Expand binomials
- Make conjectures with algebra
- Explore the 100 grid

Keywords

Multiples: found by multiplying any number by positive integers
Factor: integers that multiply together to get another number.
Prime: an integer with only 2 factors.
HCF: highest common factor (biggest factor two or more numbers share)
LCM: lowest common multiple (the first time the times table of two or more numbers match)
Verify: the process of making sure a solution is correct
Proof: logical mathematical arguments used to show the truth of a statement
Binomial: a polynomial with two terms
Quadratic: a polynomial with four terms (often simplified to three terms)

Factors, Multiples and Primes

Multiplication part-whole models
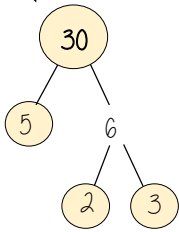
All three prime factor trees represent the same decomposition

HCF – Highest common factor

HCF of 18 and 30

| 18 | 1, 2, 3, 6, 9, 18 |
| 30 | 1, 2, 3, 5, 6, 10, 15, 30 |

Common factors are factors two or more numbers share

LCM – Lowest common multiple

LCM of 9 and 12

| 9 | 9, 18, 27, 36, 45, 54 |
| 12 | 12, 24, 36, 48, 60 |

Common multiples are multiples two or more numbers share

True or False?

Conjecture
A pattern that is noticed for many cases

1, 2, 4....
The numbers in the sequence are doubling each time.

Counterexamples
This sequence isn't doubling it is adding 2 each time

Only **one** counterexample is needed to disprove a conjecture

Always, Sometimes, Never true.

Always — Every value always supports the statement

Sometimes — Examples show the statement being true and counter examples to show when it is false.

Never — No example supports the statement

Examples to try
- 0 and 1
- Fractions
- Negative numbers

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

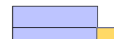**Proof** — Simple proofs using algebra

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

Expanding binomials

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

Algebra tiles can represent a binomial expansion. Has two terms

Algebra tiles

x^2 x 1

Positive values
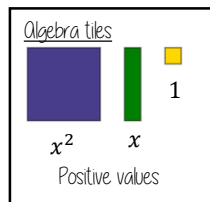
$(x + 3)(x + 3) \equiv x^2 + 6x + 9$
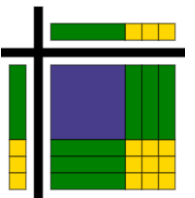
This is a quadratic. It has four terms which simplified to three terms

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

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.
E.g. one space to the right of n
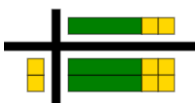$n + 1$

E.g. 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

3D Shapes

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What do I need to be able to do?

By the end of this unit you should be able to:
- Name 2D & 3D shapes
- Recognise Prisms
- Sketch and recognise nets
- Draw plans and elevations
- Find areas of 2D shapes
- Find Surface area for cubes, cuboids, triangular prisms and cylinders
- Find the volume of 3D shapes

Keywords

2D: two dimensions to the shape e.g. length and width

3D: three dimensions to the shape e.g. length, width and height

Vertex: a point where two or more line segments meet

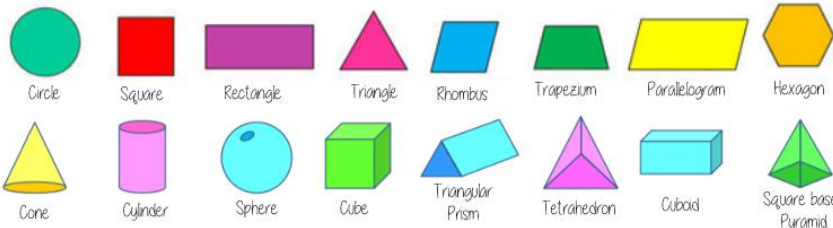**Edge:** a line on the boundary joining two vertex

Face: a flat surface on a solid object

Cross-section: a view inside a solid shape made by cutting through it

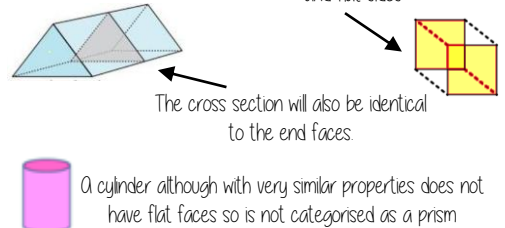**Plan:** a drawing of something when drawn from above (sometimes birds eye view)

Perspective: a way to give illustration of a 3D shape when drawn on a flat surface.
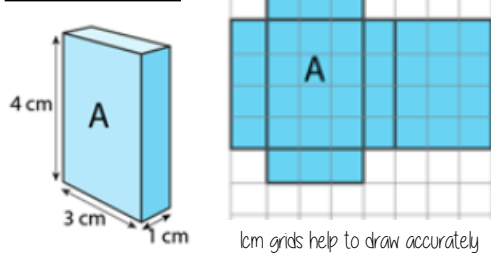
Name 2D & 3D shapes

Circle Square Rectangle Triangle Rhombus Trapezium Parallelogram Hexagon

Cone Cylinder Sphere Cube Triangular Prism Tetrahedron Cuboid Square based Pyramid

Recognise prisms

A solid object with two identical ends and flat sides

The cross section will also be identical to the end faces.

A cylinder although with very similar properties does not have flat faces so is not categorised as a prism

Nets of cuboids

4 cm
3 cm
1 cm

A

Visualise the folding of the net. Will it make the cuboid with all sides touching

1cm grids help to draw accurately

Sketch and recognise nets

Do they have the same number of faces?

Where do the edges join?

Are the shapes of the faces correct?

Plans and elevations

front   side   plan   →   3D Shape

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

Area of a circle
π x radius²
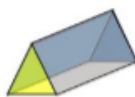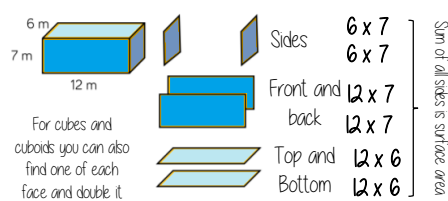
Surface area

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

6 m
7 m
12 m

Sides	6 x 7
	6 x 7
Front and back	12 x 7
	12 x 7
Top and Bottom	12 x 6
	12 x 6

Sum of all sides is surface area

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 them individually

Surface area - cylinders

The area of the circle
π x radius²

Circumference

The width of this face is the same as the circumference
π x diameter x height

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

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
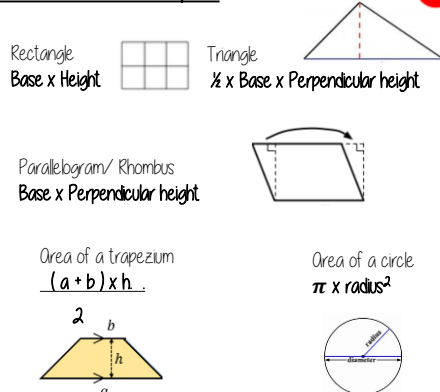
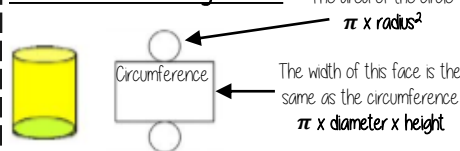Remember multiplication is commutative

Cross section

Prisms and cylinders = area cross section x height

Cross section

Height can also be described as depth

Areas – square units
Volumes – cube units

Areas and volumes can be left in terms of pi π

What do I need to be able to do?

By the end of this unit you should be able to:
- Draw and measure angles
- Construct scale drawings
- Find locus of distance from points, lines, two lines
- Construct perpendiculars from points, lines, angles
- Identify congruence
- Identify congruent triangles

Keywords

Protractor: piece of equipment used to measure and draw angles
Locus: set of points with a common property
Equidistant: the same distance
Discorectangle: (a stadium) — a rectangle with semi circles at either end
Perpendicular: lines that meet at 90°
Arc: part of a curve
Bisector: a line that divides something into two equal parts
Congruent: the same shape and size

Draw and measure angles **R**

Draw a 35° angle

Make a mark at 35° with a pencil and join to the angle point (use a ruler)
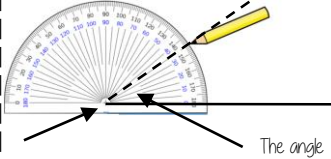
The angle

Make sure the cross is at the end of the line (where you want the angle)

Scale drawings **R**

A picture of a car is drawn with a scale of 1:30

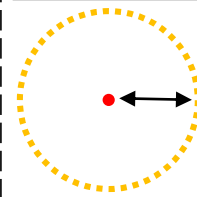For every 1cm on my image is 30cm in real life

The car image is 10cm

Image : Real life
× 10 ⟨ 1cm : 30cm ⟩ × 10
10cm : 300cm

Locus of a distance from a point

All points are equidistant (the same distance) from the fixed point in the middle.
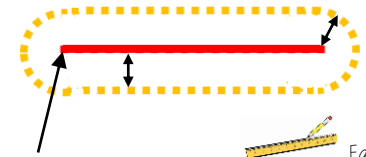
If the point is in the corner it can only make a quarter circle

Equipment needed
The radius is the distance from the fixed point

Locus of a distance from a straight line
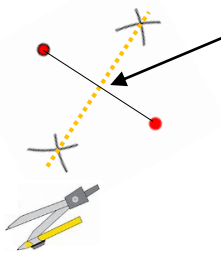
All points are equidistant (the same distance) from line

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

Locus equidistant from two points

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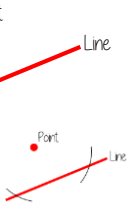Because if the points are joined, this new line intersects it at a 90°

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

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

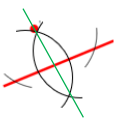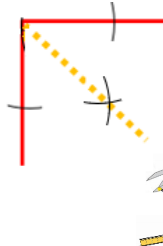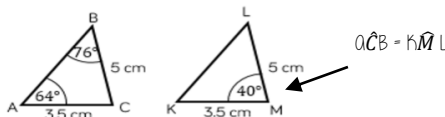Because all the angles are the same and AC=KM BC=LM triangles ABC and KLM are **congruent**

Construct a perpendicular from a point

Point
Line

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

Point
Line

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

Constructing Triangles Link to steps **R**

Side, Angle, Angle

Side, Angle, Side

Side, Side, Side

Year 9 Science Knowledge Organiser – Acceleration

Key Vocabulary:

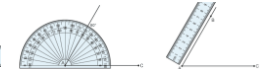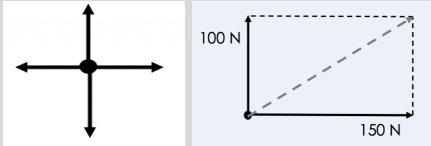|		
1	**Acceleration**	The rate of change of velocity.
2	**Action**	A description of a change in a physical system.
3	**Balanced**	Equal in size and opposite in direction.
4	**Component**	The horizontal or vertical part that makes up a diagonal vector.
5	**Constant Velocity**	When an object travels at the same speed in the same direction.
6	**Contact Force**	Is a force that acts when objects are physically touching each other.
7	**Curve**	A continuous and smooth flowing line without any sharp turns.
8	**Deceleration**	Slowing down, also known as negative acceleration.
9	**Distance**	The length of a path or length between two points.
10	**Displacement**	The change in position of an object.
11	**Gradient**	The slope of a graph.
12	**Initial Velocity**	A vector quantity that describes the velocity of an object before an acceleration.
13	**Mass**	Mass is a measurement of how much matter is in an object.
14	**Non-contact Force**	A force which acts on an object over a distance.
15	**Resultant**	The sum of two or more vectors: the result of adding two or more vectors together.
16	**Scalar**	Quantities that have magnitude (size) only.
17	**Speed**	The distance covered per unit time.
18	**Tangent**	A straight line touching a curve at a single point without crossing the line.
19	**Unbalanced**	Forces that are not equal and opposite, a non-zero resultant force.
20	**Vector**	Quantities that have both magnitude (size) and direction.
21	**Velocity**	The speed of an object in a given direction.
22	**Vertical**	Perpendicular to an x-axis (an up or down line).

23 Scalars & Vectors

1. Scalars are quantities which only have size (magnitude), such as distance, speed, mass and energy.
2. Vectors are quantities with size and direction, such as displacement, velocity, acceleration, force and weight.
3. Resultant force is a vector quantity
4. Forces acting in the same direction can be added together
5. Forces acting in opposite directions can be subtracted
6. Resultant forces can be resolved into their horizontal and vertical components

24 Acceleration

1. Acceleration is the rate of change of velocity
2. Change in velocity is calculated using final velocity minus initial velocity
3. Acceleration happens when there is change in velocity (speeding up, slowing down or a change in direction)
4. Negative acceleration (slowing down) can be called deceleration
5. The SI unit for acceleration is m/s^2
6. An object moving in a circle is accelerating because it is constantly changing direction
7. Objects near Earth's surface experience gravitational acceleration of 9.8 m/s^2
8. Air resistance/drag increases with speed

$$Acceleration = \frac{Change\ in\ velocity}{Time}$$

25 Newtons Laws

1. Newton's Third Law states that every action has an equal and opposite reaction
2. Newton's First Law states than an object's motion will not change unless acted upon by an unbalanced force
3. If the resultant force is 0 N a stationary object will remain stationary
4. If the resultant force is 0 N an object in motion will continue moving at the same velocity
5. If the resultant force is not 0 N a stationary object will accelerate in the direction of the resultant force
6. If the resultant force is not 0 N an object in motion will accelerate in the direction of the resultant force

26 Velocity-Time Graphs

1. Velocity-time graphs can be used to describe motion
2. A horizontal line shows a constant velocity
3. A straight line with a positive gradient (slope) shows that an object has a positive acceleration (speeding up)
4. A straight line with a negative gradient (slope) shows that an object has a negative acceleration/deceleration (slowing down)
5. Acceleration can be calculated by calculating the gradient
6. Distance can be calculated from the area under the graph
7. A curved line shows that acceleration is changing
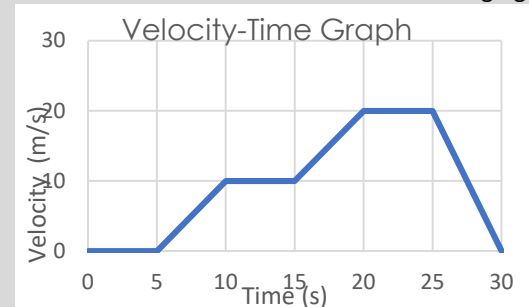
Year 9 Science Knowledge Organiser – Human Interaction

Key Vocabulary:

| 1	Biodiversity	The variety of different species in an ecosystem
2	Sampling	Techniques used to measure populations of living organisms.
3	Quadrat	1 meter wooden square used to estimate populations of living organisms.
4	Abundance	A measure of a population.
5	Stable ecosystem	Where species in an ecosystem do not depend on each other.
6	Peat	Peat from peat bogs is used for compost for gardens and farms, destroying habitats
7	Greenhouse gases	Carbon dioxide, methane and water vapour. Released from combustion of fossil fuels and farming.
8	Global warming	The rise in global temperatures due to greenhouse gases.
9	Pollution	Substance released from human waste that damage ecosystems. E.g. Water, air and land pollution.
10	Biomass	Total quantity or weight of biological matter.
11	Trophic level	Level or position in a food chain.
12	Fusarium fungus	Fusarium fungus is used to produce mycoprotein (Quorn), a protein-rich food suitable for vegetarians.
13	GM (Genetic modification)	GM crops, such as golden rice, can be used to provide increased nutritional value in areas where it is lacking
14	Sustainable	Able to be maintained at a certain rate or level.

Human Interactions

15 Sampling

a) Techniques used to measure populations of living organisms.

b) Random sampling - Used to measure the abundance of a living organism in a habitat using random coordinates.

c) Systematic sampling - Used to measure the effect of a factor on the distribution of a species, using a transect.

d) Quadrat

16 Greenhouse Effect

Levels of carbon dioxide and methane in the atmosphere are increasing, contributing to global warming

The greenhouse effect
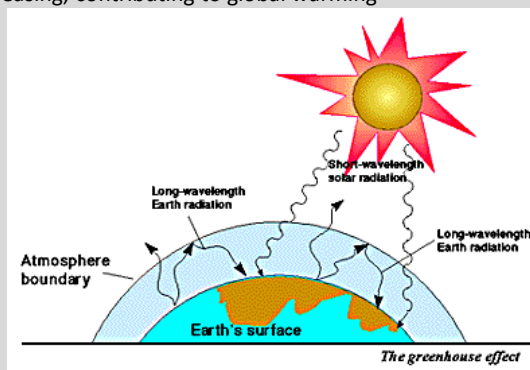
17 Consequences of Global Warming

There are many biological consequences to global warming including:
a) Melting polar ice caps
b) Rising sea levels
c) Extreme weather patterns
d) Flooding
e) Loss of habitats

18 Reducing Human Impact

How humans can reduce their impact on Biodiversity by:
a) Protecting rare habitats
b) Maintaining nature reserves
c) Breeding programmes for endangered species
d) Recycling resources to reduce landfill waste
e) Reducing deforestation
f) Growing hedgerows on farms to allow more crops to grow

Increasing Human Population

19 Increasing Human Population

The increasing human population means that more resources are required and more waste is produced. More waste is also produced through the improved standard of living.

If waste is not treated properly it results in pollution:
a) **Water pollution** is caused by poor sewage treatment and leaching of fertilisers
b) **Air pollution** is caused by smoke and acidic gases
c) **Land pollution** is caused by landfill and toxic chemical waste

20 Pyramids of Biomass

- Biomass is lost between trophic levels in a food chain
- Biomass is lost through waste (faeces, urine, sweat, gas) and through life processes such as movement and thermoregulation
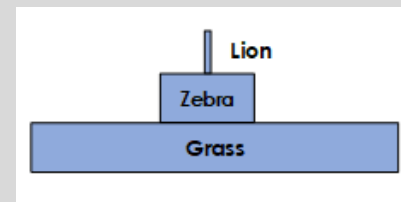
21 Farming

a) Efficiency of food production can be improved by restricting energy transfer from food animals to the environment.
b) This includes intensive farming methods where movement of animals is limited and the temperature of their surroundings is controlled.
c) Fish stocks in oceans are declining because of overfishing

22 Food Security

Food security is having enough food to feed a population. Many factors can threaten food security:
a) Increasing birth rate.
b) Changing diets in developed countries means that scarce food resources are being transported across the world
c) New pests and pathogens are affecting farming
d) Environmental changes, including droughts, which can lead to famines
e) Political instability and conflicts in some parts of the world threaten access to food and water

Keywords

Iconic – Having the character of an icon, for example, an important and enduring symbol, an object of great attention and devotion.

Illustrator – An illustrator often creates images for magazines, books, advertising and more. They specialise in creating a visual representation of an idea or text.

Contemporary – This is similar to the word 'modern', and means the present and now.

Commissioned – An artist or illustrator can be commissioned by a client to produce of work of art to order; they are often paid to do so.

Illuminous – This means bright and clear.

Montage is the technique of producing a new whole piece from fragments of pictures, text, or music. In art, this is often expressed through collaging different materials.

Lino Printing – A Lino Printing is a form of block printing that involves carving a pattern or design into a linoleum, rubber or vinyl surface that can then be printed from.

Concentric – This is a collection of shapes, which graduate in size and all share the same centre. E.g.:

Symbolism

Symbolism is the practice or art of using an object or a word to represent an abstract idea. An action, person, place, word, or object can all have a symbolic meaning. There is symbolism in colours, animals, everyday objects and flowers. Symbolism can be found in modern day life through our use of emojis, such as a love heart to represent love.
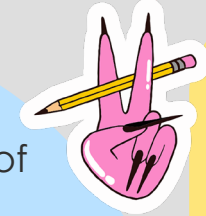
Hattie Stewart

Hattie Stewart is a London based Illustrator. She refers to herself as a 'professional doodler', with her unique and playful style popular for advertising. Her work is based upon pattern and colour, and is well-known for 'doodle-bombing' over influential publications such as Vogue.

Art History – Pop Art

Started: Mid 1950s
Ended: Late 1970s

The Pop Art movement was art which was based on modern popular culture at the time, and the mass media. Pop artists, such as **Andy Warhol** and **Roy Lichtenstein**, rejected traditional, classical aspects of fine art and instead began to celebrate the everyday life through their work. For example, artists were inspired by objects such as soup cans and popular comic strips. It was an exciting, colourful art movement, and the artists used many different techniques such as painting and collage to make their work.

Year 9 History Term 1 Knowledge Organiser: THE RUSSIAN REVOLUTION

Key People

Tsar Nicholas II (1868-1918)	The last Tsar or emperor of Russia.
Rasputin (1869-1916)	Rasputin was a Russian man who became very powerful at the court of Tsar Nicholas II. He claimed to be able to heal the sick
Vladimir Lenin (1870-1924)	A Russian communist who led the Russian Revolution and set up the Soviet Union
Leon Trotsky (1879-1940)	The leader of the Red Guards and a communist thinker.
Joseph Stalin (1878-1853)	The dictator of Russia and the Soviet Union after the death of Lenin in 1924.

Map of Russia
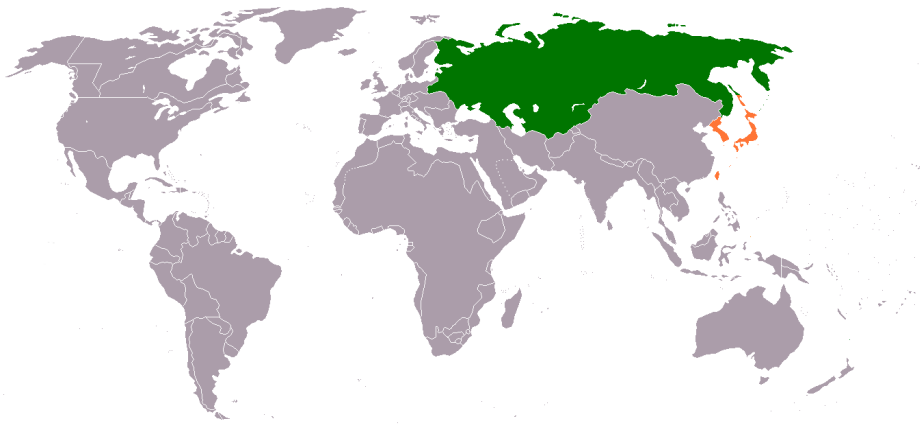
DEMOCRACY	A system of government where people vote in order to choose the government.
DICTATORSHIP	A system of government where a strong leader has absolute power.
SOCIAL CLASS	A group within a society who have similar status and wealth.
TSAR	Emperor; specifically : the ruler of Russia.
PROLETARIAT	Working class workers who work in industrial areas of cities.
BOURGEOISIE	Wealthy middle class people. Usually from cities who earned their money rather than inheriting it.
REVOLUTION	A complete change in government. Usually by force.
DUMA	The Russian parliament.
COMMUNISM	The political belief that all people are equal and that workers should control the means of producing things.
BOLSHEVIKS	A group of communists led by Lenin.
CIVIL WAR	A war between two sides in the same country.
CHEKA	A Russian secret police force set up by Lenin.
TOTALITARIAN	A system of government where the leaders have total control over all aspects of life.
HOLODOMOR	A famine in Ukraine and Russia which killed 7 million people died.

TIMELINE OF THE RUSSIAN REVOLUTION

Nicholas II crowned Tsar 1896	Tsar Nicholas II set up the Duma 1905	Russia joined the First World War 1914	Rasputin became a key advisor 1915	The Bolsheviks seized power. 1917	Lenin died and Stalin became dictator 1924

Year 9 Subject Term Knowledge Organiser: Python

Python is a **text** based **programming language**. That can be used to create programs, games, applications and much more!

A **program** is a set of precise instructions, expressed in a **programming language**.
Translating the programming language is necessary for a machine to be able to **execute** the instructions.

To execute a Python program, you need a **Python interpreter**.

This is a program that translates and executes your Python program.

A list is where values can be stored. This is a comma-separated list of values (items) in square brackets.
flavours = ["strawberry", "chocolate", "mint", "cherry","raspberry"]

This is an data structure organised in a structure, each item has its own index indicating its position in the list.
NOTE: List item numbering starts from 0—zero based system

When this code is executed
print (flavours[2])
Mint will be output as it is looking in the list flavours and selecting index position 2 to output

Arithmetic operators + addition, - difference, * multiplication, / division, // integer division

% remainder of integer division, ** exponentiation (to the power of)

Useful snippets of code	
list.append(item)	Add an item to the end of a list
list.insert,index.item)	Inserts an item to a given index
list.pop(index)	Remove item at given index and return it
list.remove(item)	Remove the first item from the list with a particular value
list.index(item)	Search for the index of an item
list.count(item)	List the occurrences of the item
list.reverse()	Reverse the list
list.sort()	Sort the list

Use an structure , a (**while**) when the program needs to **repeat** actions, while a **condition** is satisfied.

for loops are convenient for **iterating** over any sequence of elements

Walk through the program keeping track of what is happening to lists and variables as the loops are executed.

Knowledge Organiser Year 9 Drama

DNA by Dennis Kelly

You need to KNOW this to include in your answers.

'Is it right to sacrifice the individual for the many? This for me is the central question in the play' *Dennis Kelly*

The structure
It has been constructed with a

cyclical narrative, in three
different locations.

A street, a field, a wood.

There is a pattern to the sequence, Jan and Mark introduce the problem of that particular section, then it's Leah and Phil before moving onto to the wood where everyone is present and the problem is solved. **The structure is broken in the final section when it is just a street, then a field.**
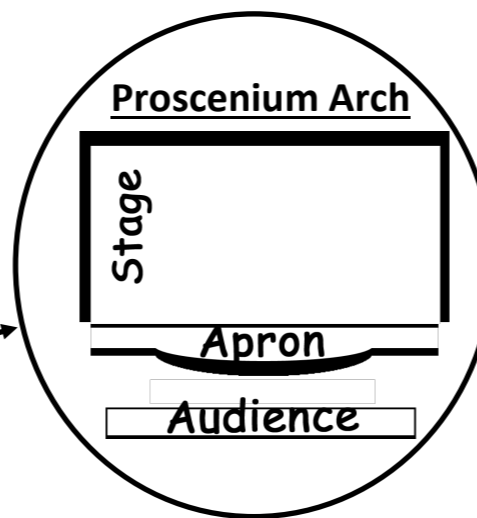
Themes
Bullying – the most obvious character that is bullied is Adam which happens before the beginning of the play and seemingly has caused his death. However, it is worth considering who the main bullies are and what types e.g. verbal, mental and physical.
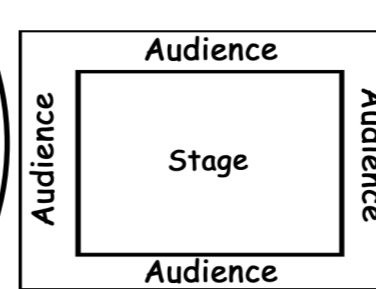
Gangs – Adam is not only desperate to be part of the gang but consider what the others are prepared to do to remain part of the gang.

Power – there are numerous power struggles within the play and it shifts throughout. It is Cathy that ultimately takes on the role as gang leader in the end, we should consider why?
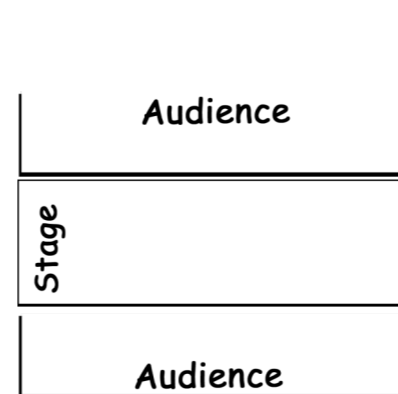
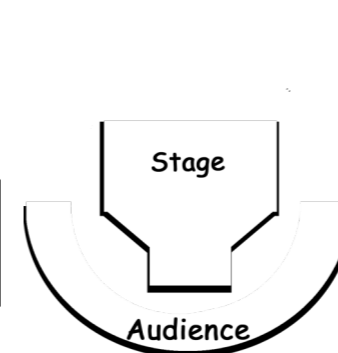Other themes are **Responsibility, Violence, Fear and Friendship.**

The plot.
DNA by Dennis Kelly is about a group of teenagers, who could be described as a 'gang', who have accidently killed one of their classmates. When they realise their terrible mistake, they try to cover it up, but inadvertently implicate an innocent man in the process. At each moment when they could come clean, the group instead weaves a darker, more complex web of lies.

The Original Staging

PRODUCTION FACTS
- DNA was first written by Dennis Kelly for the National Theatre Connections Programme in 2007.
- It was performed in the Cottlesloe at the National Theatre, London.
- It was directed by Paul Miller
- Set, Costume and Video Design by Simon Daw.
- The lighting was designed by Paule Constable.
- Sound Designer Rich Walsh

Original staging and style
DNA was originally staged in 2007 at The National Theatre, in **Proscenium Arch staging**. The locations were conveyed through **Projections across a bare stage** and the street/field/wood could be anywhere in Britain. The year could be any year.

The play was written with the intention that it could be interpreted or staged in different ways leaving it up to the director to consider their own artistic intentions. Although the **acting is naturalistic** the set doesn't have to be and its fast transitions between scenes to keep the tension will need to be considered with any choice of set or staging. The gender of the characters is also left up to the director and are easily interchangeable.

Use of colour – the colour blue was prominent creating a cold tense atmosphere. The school uniform ties were blue and the plastic bag was blue.

Costume – school uniform but each character wore a jacket or hoody to create an individual image, the ties were loosened. Adam's shirt was muddied and bloodied.

Space – the grey stage remained bare and if they sat, they sat on the floor. The focus was on the dialogue and the characters listening to the instructions. The acting was stripped down and there was strength in the stillness and the space between the characters.

Transitions – the street scene was created by an isolated strip of light downstage. The transitions were swift and stylised movements were kept to a minimum getting character from A to B. SFX were used to show the passing of time, similar to a 'whoosh' sound.

Proscenium Arch

Stage

Apron

Audience

Theatre in a Round

Audience

Audience | Stage | Audience

Audience

Traverse

Audience

Stage

Audience

Thrust / Arena

Stage

Audience

Characters
Mark and Jan act as narrators who explain what's happening. They are always together and help in the cover up.

Leah is a moral character who worries about the groups actions. She is insecure and seeks Phil's attention.

Phil is the groups leader for most of the play. He's quiet, emotionless and manipulative.

John Tate starts as the group leader but his authority is weak and he leaves early on in the play.

Danny is a selfish character who is more worried about becoming a dentist than Adam's well being. Richard seems unhappy about the cover-up but he goes along with it. He challenged John Tate's leadership.

Cathy is violent and remorseless about Adam's death. She helps to kill Adam after he reappears.

Lou worries about the group getting caught.she follows whoever is in charge.

Brian is the weakest group member. He's bullied into covering up Adam's death and he suffers a mental breakdown as a result.

Adam is bullied by the group and thought to be dead. He turns out ot be alive but Phil has him killed.

Explain how __an actor__ conveys meaning on stage through their use of...

Vocals

Volume— *Loud / Soft / Booming and Powerful / Ear piercing / Nervously quiet, conveying...*
Pace— *Slow / Moderate / fast / Hurried / Alarming / Casual / Sluggish / Deliberate / Fearful / Frantic / Rapid, which creates an atmosphere of...*
Pause— *which marks or highlights...*
Tone— *aggressive / questioning / intense / worried / impatient / Anxious, suggests mood and intention.*
Rhythm— *Unfinished / Short sharp / Erratic rhythms, variation of rhythms expressing her rollercoaster of emotions.*
Pitch— *high / low, to indicate...*
Accent— *Upper/Lower class / Regional*
Emphasis— *making certain words stand out and can change their meaning.*
Intonation— *Rise and fall of the voice helps us to say what we mean.*
His/her speech is · erratic · stuttering · varying in pace · attention seeking, · trying to reassure herself · revealing her panic.

Movement

Body language
Gesture
Mime
Physical Theatre— *representing / symbolises*
Slow and Steady gestures *which communicate...*
Over exaggerated hand gestures moving from hips to head to folded highlighting his/her...
Pacing across the stage creating an atmosphere of...
His/her movement / gestures are · threatening · fearful · friendly · sudden · disturbingly in a tentative manner.

Interaction

Repetition of lines not expecting an answer
Isolation from the group suggesting...
Sitting closely for reassurance
Silence and only interacting when necessary
Sudden bursts of physical violence make others wary of her.
Needing to fill the space with words.
Lack of eye contact to suggest...

Motivation

A characters reasons for doing what they are doing. This can relate to their background and how this effects their actions or it may be more in the moment. It also is about how the character is feeling at that moment and what they are perhaps thinking but not saying or revealing.

He wants to exert his power over them and take control in order to protect them from the consequences.
She needs to be loved/liked
She yearns for affection
She won't show any emotion and doesn't appear to have any.

The exam questions will ask you to **consider your role as a director**. You need to consider how to prepare the actor for the role they will play in performance. Be prepared *to explain how rehearsal techniques prepare actors for their roles and help them to understand the characters motivation and relationships with the other characters. E.g.*
• Hot seating/Thought tracking/Freeze frames
• Improvising outside the text/Vocal games
• Spatial games to consider proxemics and interactions.

Set design

Entrances and exits
Rostra
Flats - *static / suspended or moveable*
Backdrop
Levels
Suspended
Projection
Sightlines
Sloping
Rotating
Colours
Naturalistic
Non-Naturalistic
Symbols - *Dressed with - leaves - drinks crate*
Symbols of youth, den, meeting place, proximity to city
Hidden, dark secret

Lighting LFX

Intense — Bright / Dim / Focussed / wash covering larger area.
Flashing / Chase — A chase is a sequenced set of flashing lights
Colour— can be altered by using gels, helps inform mood or can be used to symbolise something.
GOBO— creates shapes / patterns for the lights.

Types of light
    Fresnel - *soft edge effect*
    Flood - *covers larger areas, can create washes*
    Parcan - *good for strong saturated colours*
    Profile spot - *Fixed, hard edged spot light*
    Follow spot - *Moveable spot light*

Position - *Overhead / side / floor / on stage / rear*

Explain what decisions __a designer__ may make in order to convey meaning through Lighting/sound/set design and costume.

Sound SFX

Sound to mark or Music to highlight transition
Live or recorded sound
Volume
Intense
Calm
Contrasts
Fast paced creating tension, setting a mood of...

Costume

Describe
    Head -> Toe
    Hat -> Shoe
Makeup
Accessories *which indicate...*
Bags, scarfs, headband, cap *etc...*
Colour / Logo / Uniform
State— *smart / scruffy / trendy / unkept*

This highlights her status...
Conveying her need to fit in...
Portraying her individual nature and desire to stand out.

1. Naturalism	2. Rehearsal
3. Stanislavski	4. Exploration
5. Technical Theatre	6. Analysis and evaluation
7. Make-up	
8. Set-design	

19th Century Anthology - Knowledge Organiser

Simple sentence: Contains only one main clause. It must have a subject and a verb, and may have an object.	**Authorial intent:** What the writer's purpose is and why they wanted to write the piece.	**Analysing an Extract** • Write as **succinctly** as you can, without letting your **point** get lost in lots of wasteful words. • Try to **embed** your **quotations**, choose the shortest, most **precise** phrase from the text as you can and try to let it flow naturally in the paragraph you're writing. • Zoom in to **key words**, particularly explaining **connotations** and the **semantic field.** • Don't rely on knowing what the text means, focus instead on **working out** what the writer is **implying.** • Refer to the **structure** of the **sentences** and why the writer has used that **type of sentence**.
Compound sentence: Has two main clauses, joined by a co-ordinating conjunction.	**Thesis statement:** An argument to introduce and outline the main points of an essay.	
Complex sentence: consists of a main clause plus one or more subordinate clauses.	**Appositive:** An appositive is a noun or a noun phrase that sits next to another noun to rename it or to describe it in another way.	
Periodical sentence: placing the main clause at the very end.	**Personification:** Describing a non-living thing with living qualities.	**Analysing using a Thesis Statement** • Use the **text** to convey your understanding of **authorial intent.** • Use an **appositive** to detail knowledge on the **author.** • Refer to an **argument** based on the question and the **ideas** you want to explore in your essay. • Try to **explore connection** to the **time** the writer has based their piece on and how this reflects their **intentions.** • Use **evidence** from the text to prove your ideas.
Cumulative sentence: are long sentences which place the main clause at the start of the sentence with the modifiers following after.	**Juxtaposition:** Two or more things being seen or placed close together with contrasting effect.	
Minor sentence: An incomplete sentence. It may lack a **subject** or a **main verb** but nevertheless we understand what is meant.	**Alliteration:** The same letter or sound at the beginning of words next to one another or closely connected words.	
Exclamatory sentence: making an exclamation of shock, horror, anger, delight, excitement… using an exclamation mark!	**Oxymoron:** Two words next to each other that are opposite and contradict one another.	**Creative Writing** • You can control the mood and tone of your writing by choosing **vocabulary** with the right **connotations.** • Use of imagery, pathetic fallacy, alliteration and personification creates a visual image for the reader. • Write a piece to match the **purpose, audience and format.** • Create **pathos, ethos and logos** within your piece through the use of **language and structure.** • Use a variety of **sentence types** to emulate 19th century writing. • **Proof reading** is a key skill; no writer publishes their first draft of anything! Check your **punctuation**, particularly **capital letters** and that your **sentences** are complete.
Imperative sentence: Featuring an imperative verb, an imperative sentence gives an instruction or a command	**In medias res:** Starting in the action.	
Interrogative sentence: A sentence which interrogates, or questions, ending in a question mark. Remember that a rhetorical question is a different kind of question.	**Pathetic fallacy:** Where the mood and emotions are attributed to non-human things.	
Declarative sentence: The most commonly used sentence type, simply stating or declaring information.	**Syntax:** The way in which such as words are put together to form clauses in sentences.	

Tenses

REGULAR **PRESENT TENSE**

	-ER	-IR	-RE
Je	e	is	s
Tu	es	is	s
Il/Elle/On	e	it	
Nous	ons	issons	ons
Vous	ez	issez	ez
Ils/Elles	ent	issent	ent

REFLEXIVE VERBS

FRENCH REFLEXIVE VERBS

JE **ME** LAVE – I WASH MYSELF

TU **TE** LAVES – YOU WASH YOURSELF

IL **SE** LAVE – HE WASHES HIMSELF

NOUS **NOUS** LAVONS – WE WASH OURSELVES

VOUS **VOUS** LAVEZ – YOU WASH YOURSELVES

ILS **SE** LAVENT – THEY WASH THEMSELVES

Opinions & Pronouns

J'adore

J'aime   Je n'aime pas

J'aime beaucoup   Je deteste

Connectives

Parce que = because

Car = because

Aussi = also

Pourtant = however

Mais = but

Bien que = although

Translate it!

Verbs

Je prends le petit déjeuner	I have breakfast
Je déjeune	I have lunch
Je dîne	I have tea
Je m'habille	I get dressed
Je fais	I do
Je joue	I play
Je lis	I read
Je sors	I go out
Je vais	I go

Du matin = in the morning

De l'après midi = at lunchtime

Du soir = in the evening

A _____ heure = At _____ o'clock

Is religion a power for peace or a cause for conflict in the world today?

Key terms

1. **War:** A state of armed conflict between different countries or different groups within a country.
2. **Extremism:** The holding of extreme political or religious views.
3. **Sikh:** Student.
4. **9/11:** The September 11 attacks, commonly known as 9/11, were a series of four coordinated suicide terrorist attacks carried out by the Islamic extremist group Al-Qaeda against the United States.
5. **Pacifist:** A person who believes that war and violence is unjustifiable.
6. **Just War Theory:** Helping people to change for the better
7. **Prejudice:** An attitude someone might have that is not based upon fact.
8. **Discrimination:** The action of discriminating against people (putting prejudice into practice).
9. **Jihad:** Striving/ struggle.

Crucial Commands:

Describe: Say in detail what something or someone is like, and the impact it has. E.g. Describe some consequences of going to war.

Explain: Say why something or someone is important, and the impact it has. E.g. Explain religious attitudes to the Just war theory..

Discuss: Write about at least two points of view and explain why these points of view are valuable or not. E.g. "Is religion a power for peace or cause of conflict in the world today?"

Why do people go to war?

- To show power
- To remove a dictator/ government
- To gain resources e.g. land
- To defend an ally/ belief/ lifestyle/ freedom/ country
- To stop mass murder

As a result of war over the last 100 years millions have died. More civilians have died than troops. Disease usually spreads in epidemic proportion due to poor water, sanitation and lack of medical resources.

Christianity and War

Conditional pacifist Christians are against violence, however, accept that there may be circumstances such as justice or self defence when force may be necessary. i.e. Matthew 21:12-13 when Jesus forcibly drove out anyone that was selling from the temple.

Absolute Pacifist Christians believe violence is wrong in all circumstances. They support non-violent example of Jesus and in the New Testament on turning the other cheek, loving your enemies and praying for those who persecute you (Matthew 5:44).

Pacifism

Martin Luther King strongly believed the only way to achieve equal rights of black people in America was through non-violent means and peaceful forms of protest. His Christian beliefs told him that violence and hatred could only be conquered by love and forgiveness.

On the other hand, Malcom X (a Muslim convert), believed that sometimes violence was the only way people's voices could be heard.

Religion and Terrorism

Northern Ireland (NI) – The community in NI is divided into two: Unionists, Protestants who wanted NI to stay part of the UK and Nationalists, Catholics who wanted to join the Republic of Ireland, the IRA supports this.

9/11 – The Terrorist plot against the American people and George Bush. orchestrated planes flown by terrorists into the World Trade Centres killing around 3000 people in New York.

Israel/ Palestine – Israeli (Jewish) and Palestinian (Muslim) people both believe they have religious rights to land. The Palestinians fire rockets into Israeli towns, villages and cities and the Israeli's bombard the towns the Palestinians live in.

Sikhism and 9/11

Gurkhas come from Nepal which is in the Himalayas. As they are very brave people, the British Army employed them for over a century. Although Gurkas fought and died for Britain, they were not allowed to permanently live in the UK. Similarly, although Sikhs bravely fought along side others in wars, they were mistaken for being Muslims because of their Turbans and were subjected to attacks across the world.

Islam and Jihad

JUST WAR THEORY ISLAM:
1) **There must be a just cause.**
2) **Self-defence.**
3) **Another country has been attacked.**
4) **Tyrannised.**
5) **The correct authority.**
6) **Last resort.**

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6)**Last resort.**

Tenses

Verbos Regulares

	VERBOS -AR	VERBOS -ER	VERBOS -IR
	HABLAR	COMER	VIVIR
yo	hablo	como	vivo
tú	hablas	comes	vives
él / ella	habla	come	vive
usted	habla	come	vive
nosotros / as	hablamos	comemos	vivimos
vosotros / as	habláis	coméis	vivís
ellos / ellas	hablan	comen	viven
ustedes	hablan	comen	viven

REFLEXIVE VERBS

PRONOUN	REFLEXIVE PRONOUN	*ARSE* VERB (Lavarse)	*ERSE* VERB (Romperse)	*IRSE* VERB (Vestirse)
Yo	me	lavo	rompo	visto
Tú	te	lavas	rompes	vistes
Él	se	lava	rompe	viste
Ella	se	lava	rompe	viste
Usted	se	lava	rompe	viste
Nosotros	nos	lavamos	rompemos	vestimos
Ustedes	se	lavan	rompen	visten
Ellos	se	lavan	rompen	visten
Ellas	se	lavan	rompen	visten

Opinions & Pronouns

Me encanta(n)   Me gusta(n)

Me chifla(n)   No me gusta(n)

Me gusta(n) mucho   No me gusta(n) nada

Connectives

Porque

Porque es

Dado que

Por eso

También

Sin embargo

Aunque

Translate it!

Verbs

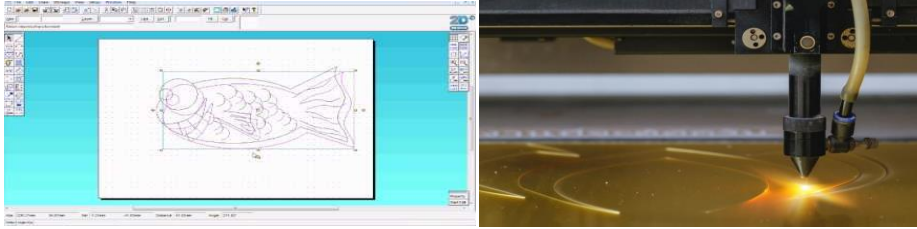| Desayuno	*I have breakfast*
Almuerzo	*I have lunch*
Ceno	*I have tea*
Meriendo	*I have a snack*
Hago	*I do*
Juego	*I play*
Leo	*I read*
Salgo	*I go out*
Voy	*I go*

A las ___ = At ___ o'clock
De la mañana = in the morning
De la tarde = in the evening
De la noche = at night
Mediodíá = midday

Year 9 Design Knowledge Organiser

CAD / CAM

CAD and CAM are a really important part of designing products and manufacturing them. They're used in lots of different industries from food packing to component manufacture.

CAD
Using computers to create/draw/present designs. E.g. 2D Design or Tinkercad. Accurate, easy to adapt/ share/ copy, links to CAM, fast global communication

CAM
Using computers to cut, print, paint, assemble or package products. E.g. robotics, LASER cutters, lathes, 3D printers, CNC milling machines, knitting machines. Accurate and fast mass production, lower product cost.

Pewter

Pewter is a traditional low-temperature metal-(casting material 170°C - 230 °C).

It is used to make everything from jewellery to goblets.

Pewter is an alloyed metal made primarily from tin(tin 91%, antimony 7.5% & copper 1.5%)

Pewter is grey in colour and was traditionally used to make plates and beer tankards.

Pewter is 100% recyclable.

Casting

Casting is a manufacturing process in which a liquid material is usually poured into a mould, which contains a hollow cavity of the desired shape.

Casting can be used to mass produce lots of identical products. Engine blocks are cast so that they are very strong and durable.

MDF

Medium-density fibreboard (MDF) is made from pulverized wood fibres blended with resins and pressed into sheets under temperature and pressure. MDF is generally denser than plywood.
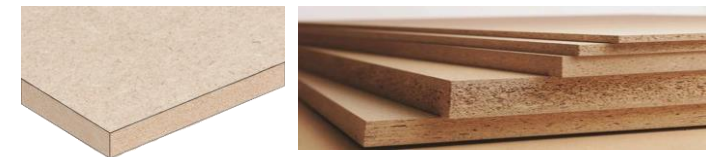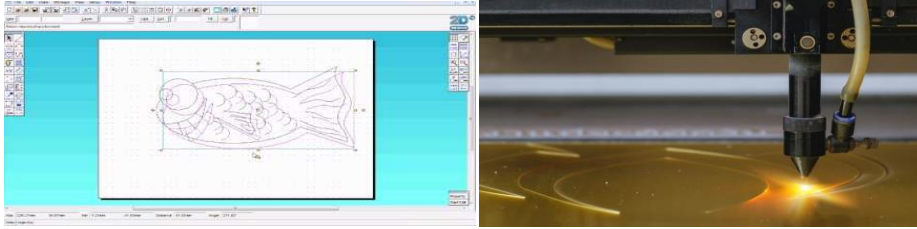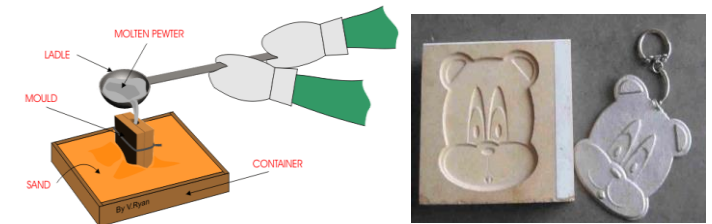
Health and Safety

Junior Hacksaw

Junior hacksaws are commonly used for cutting through metal pipes or plastic tubing. The blade of a junior hacksaw can be used for more precise cutting or for applications that require a neater finish.

Bradawl

A bradawl is a woodworking hand tool with a blade similar to that of a straight screwdriver and a handle typically made from wood or plastic.

Longdendale
HIGH SCHOOL

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Health and Safety

Junior Hacksaw

Junior hacksaws are commonly used for cutting through metal pipes or plastic tubing. The blade of a junior hacksaw can be used for more precise cutting or for applications that require a neater finish.
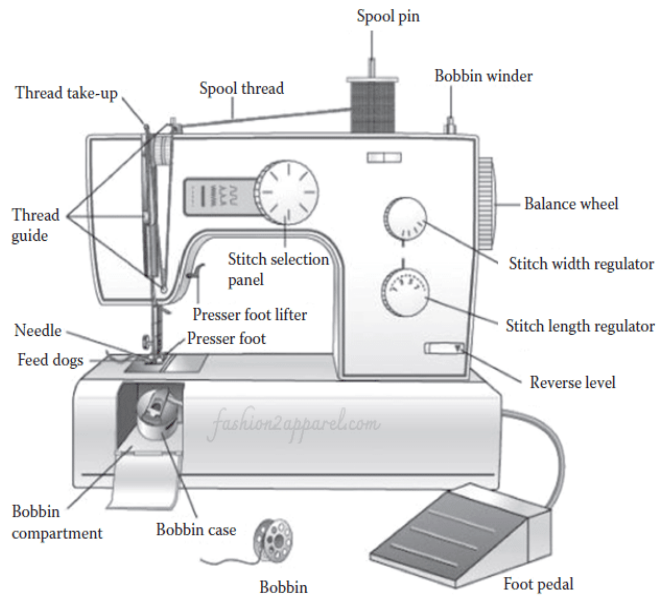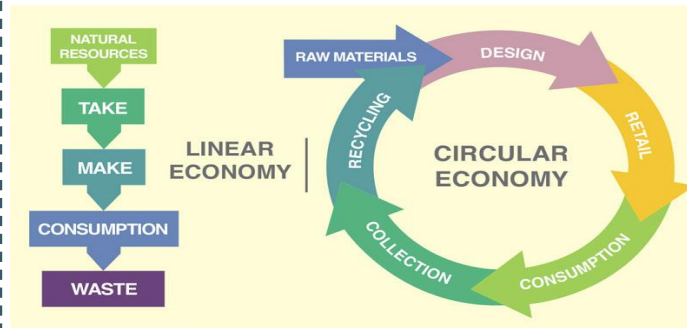
Bradawl

A bradawl is a woodworking hand tool with a blade similar to that of a straight screwdriver and a handle typically made from wood or plastic.

Year 9 Textiles Knowledge Organiser

Longdendale HIGH SCHOOL

Sewing Machine

Sustainability

Sustainable textiles refers to fabrics derived from eco-friendly resources, such as sustainably grown fibre crops or recycled materials.

Sustainable textiles includes the use of second-hand retail repair and often utilizes upcycling and recycling of clothing. It also refers to how these fabrics are made.

Hems

Hems lie at the end of a piece of cloth, where the fabric has been folded and sewn into place to prevent the material from fraying or loosing its shape.
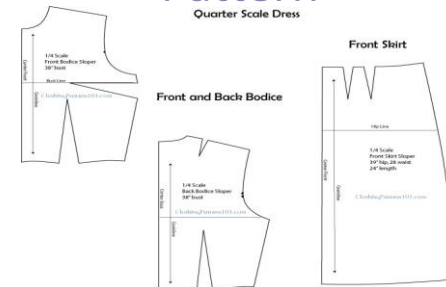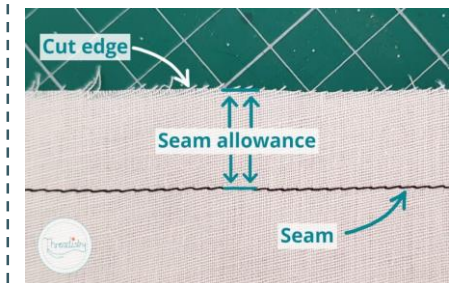
Pattern

A pattern is the template from which the parts of a garment are traced onto woven or knitted fabrics before being cut out and assembled. Deconstructing an existing garment can provide you with a template to base your own pattern on.
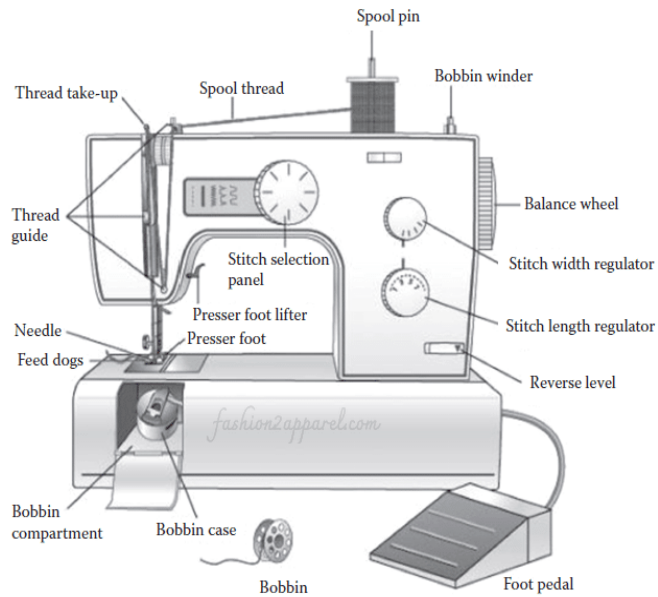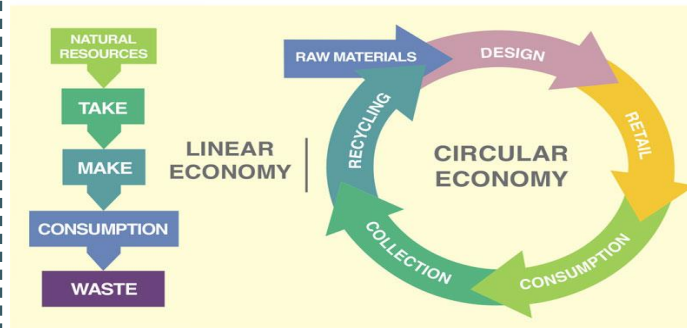
Seam Allowance

Seam allowance is the distance from the raw edge of the fabric to the seamline (or seam stitch line). Seam allowance allows for the formation of all seams by providing excess fabric for efficiently stitching a seam together

Decorative Textile Techniques

Embroidery

Marbling

Appliqué

Fabric Manipulation

Year 9 Textiles Knowledge Organiser

Longdendale
HIGH SCHOOL

Sewing Machine

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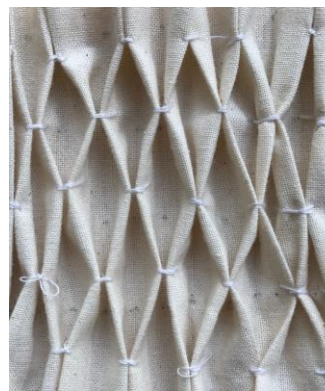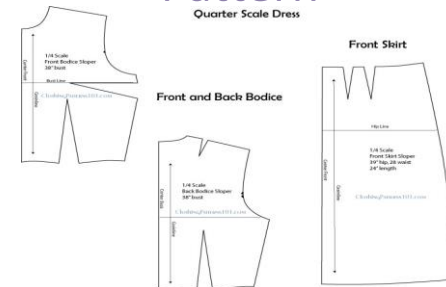## Decorative Textile Techniques

Embroidery
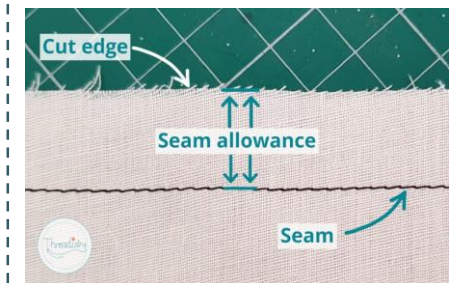

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Keywords:

PA system – Collective name for speakers, amp and mixer

XLR lead – For Microphones

Jack lead – For instruments

Kettle lead – For power

Mixing desk – To balance the sound

Reverb – Similar to echo

JACK LEAD

XLR LEAD

GAIN

MONITORS

REVERB

EQ

PANNING

VOLUME FADER

SM58 MICROPHONE

GUITAR AMP

MIXING DESK

MONITOR SPEAKER

The Rise…and Rise of China Knowledge Organiser

Migration – *When people move from one place to another.*

Push factors
These are the reasons for why someone would want to move away from a place:
- Lack of services
- War
- Famine (starvation/food shortages)
- Few Jobs
- Natural Disasters

Pull factors
These are the reasons for why someone would want to move to a place:
- Higher quality of life (better homes, etc.)
- Access to education
- "Bright Lights" of the city
- Better healthcare
- Better job opportunities

Refugees and Asylum Seekers
Refugees: *people who have been forced to move away from their home country and have been granted asylum in another country.*

Economic migrants: *a person who has left his or her own country and seeks to find employment in another country.*

Asylum seekers: *means a person who has applied for asylum in another country*

Rural-urban migration
- Rural to urban migration is the movement of people from the countryside to the city.
- People move from the countryside due to various push factors. People believe that by moving to the city they will have access to more opportunities. However, in many cases moving to the city does not mean a better quality of life.
- Many poor people end up living in areas on the edge of a city, in small, very cheaply built houses. These areas are known as shantytowns or slums.

Case Study: China's One Child Policy
In order to manage its own growing population, China introduced the One Child Policy in 1979. The new policy meant that any couple having a second child would get a heavy fine, around £3,000.

Impacts of the Policy
- The fertility rate has dropped from 5.7 in 1960 to 1.7 in 2016.
- Large numbers of female babies have ended up homeless or in orphanages, and in some cases killed.
- Many people claim that some women, who became pregnant after they had already had a child, were forced to have an abortion and many women were forcibly sterilised.
- There have been reports of female infanticide (killing of infants).

Long-term implications of the policy are that China now has a gender imbalance in their population. Its ageing population also has a high **dependency ratio**.

6 metres

4 metres

28 metres

3.6 metres
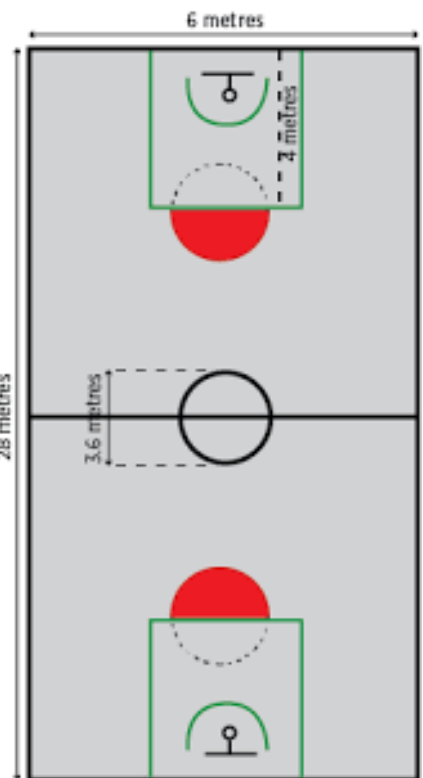
Key Skills

Vocabulary

- Dribbling
- Chest Pass
- Bounce Pass
- Set Shot
- Lay up
- Jump shot
- Pivot

Referee Signals

3-point shot

Traveling

Personal foul

Double Dribble

Lay – up technique = 2 points

Main Rules

1. The games consists of 2 teams with 5 players on court.
2. Aim to score as many hoops, shooting through the hoop, as you can in the time allocated.
3. Players cannot travel with the ball or perform a double dribble
4. Players cannot hold the ball for longer than 5 seconds
5. If ball goes out of play then a side line ball is taken from the opposite team.
6. Once the offense (attacking team) has brought the ball across the mid-court line, they cannot go back across the line during possession.
7. Fouls are given for hitting, holding or pushing an opponent.
8. If a player fouls the shooter, then 1-3 free throws can be awarded (each 1 point).

Key Words/Phrases

Triple Threat Position - Knees bent/hands positioned on ball so ready to shoot/head up/can dribble, pass or shoot from here

Attacking - Dribble into space/screen defenders/dribble out wide and quick inward passes/drive towards ball to receive pass losing defender/overload zone defence

Defending - Man to man/knees bent/back straight/head up/arms out/watch opponents belly-button. Zone marking/team defence around the key/take up positions around key when possession is lost

Rebounding – Involves maintaining possession after a shot has been taken. The team who has the most number of rebounds after the game has more shot attempts and chances to score.

Offense - is the only chance that the team has a shot at the basket and scoring.

Defence – This is the prevention of a scoring opportunity or possession intervention.

Year 9 Computing Term Knowledge Organiser

INTRODUCTION TO PYTHON

Python is a **text** based **programming language**. That can be used to create programs, games, applications and much more!

A **program** is a set of precise instructions, expressed in a **programming language**.
Translating the programming language is necessary for a machine to be able to **execute** the instructions.

To execute a Python program, you need a **Python interpreter**.

This is a program that translates and executes your Python program.

Syntax Errors
All programming languages have rules for **syntax**, i.e. how statements can be assembled.
Programs written in a programming language must follow its syntax.
Programs with **syntax errors** cannot be translated and executed.

You can use multiple branches using if, elif and else

Python helps by telling the programmer where the error is. So if you see red error text—read it first.
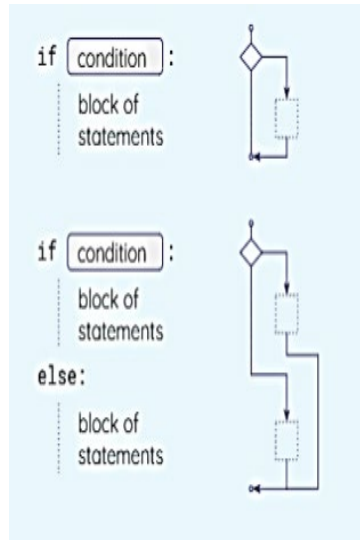
Useful snippets of code	
print ("Year 8")	Will display the string "Year 8"
input ()	Reads a line of text from the keyboard and returns it
variable name = expression	Allows an expression to be assigned to a variable. E.g. year=1944
Name=[item1, item2, item3]	Allows ctreation of a list e.g. shopping = ["oranges", "apples", pears"]

```
if  condition :
    block of
    statements
```

```
if  condition :
    block of
    statements
else:
    block of
    statements
```

Data types
Whole numbers—**integer**

Yes/no or True/False—**boolean**

Letters, combination of letters, numbers—**string**

Arithmetic operators
+ addition
- difference
* multiplication
/ division
// integer division
% remainder of integer division
** exponentiation (to the power of)

Some common syntax errors in selection
· use if and else—no capitals
· A colon : is always required after the condition and after else.
· Use **indentation** to indicate which statements 'belong' to the if block and the else block.
· The == operator checks for equality.
· A single = is only used in assignments