

Year 9 Knowledge Organiser



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Maths





Maths



Rounding

Rounding to a given number of 1 decimal places	To do this put a line in 1 number after the decimal point (after the tenths). If the number after this line is less than 5 round down , or round up if the number is 5 or above .
Rounding to 1 significant figure.	The first non zero number is the first significant figure. All numbers after this should be zero.
Rounding to 'n' significant figures.	The first non zero number is the first significant figure all other numbers including zero are significant. Write the first n numbers then all the rest are zero.
ESTIMATE a calculation,	Round every individual number to 1 significant figure then calculate the answer.

Important vocabulary	
Factor	Numbers we can multiply together to get another number
Multiple	The result of multiplying a number by an integer (not by a fraction).
Prime	A number which is divisible by 1 and itself. A Prime number has 2 factors, itself and 1.
Highest Common Factor (HCF)	The highest number that divides exactly into two or more numbers.
Lowest Common Multiple (LCM)	The smallest positive number that is a multiple of two or more numbers.

<u>2. HCF and LCM using Venn Diagram</u>	<u>Instruction</u>	<u>Venn Diagram</u>
Find the Highest Common Factor (HCF)	Multiply numbers in the overlap section of the Venn diagram	
Find Lowest Common Multiple (LCM)	Multiply all the numbers in the Venn diagram	

Standard form

Any number between 1 and less than 10

Any integer

$A \times 10^n$

Indices:

$$3^a \times 3^b = 3^{a+b}$$

$$3^a \div 3^b = 3^{a-b}$$

$$(3^a)^b = 3^{a \times b}$$

$$3^{-a} = \frac{1}{3^a}$$

$$x^1 = x$$

$$x^0 = 1$$

BIDMAS

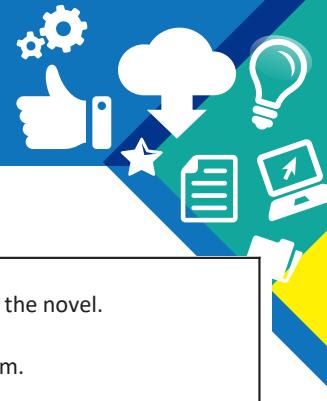
B	Brackets
I	Indices
D	Division
M	Multiplication
A	Addition
S	Subtraction

English





English - Pigeon English by Stephen Kelman



Context	Themes	Characters
<p>The novel is set in modern day London. The novel explores the idea of a child migrating to London and demonstrates the lure of gangs and violence. It also shows how easy it is for vulnerable young people to become involved in this violent lifestyle. The novel mirrors the real life problems with knife crime in London. The novel is loosely based on Damilola Taylor. Damilola was a 10 year old young Nigerian school boy, who lost his life on the 27th November 2000 after being stabbed in the leg on the streets of Peckham. The case became one of the country's most high-profile killings. Damilola crawled to a stairwell where builders found him and called an ambulance. Eventually, after multiple trials, two brothers were charged with manslaughter. They were 12 and 13 when they committed the crime.</p>	<p>Gang culture: A gang is a group with a defined leadership and internal organization that claims control over territory in a community and engages, either individually or collectively, in illegal, and possibly violent, behaviour.</p> <p>Power: The ability to act in a certain way and influence others to act in a certain way.</p> <p>Innocence: Innocence is a lack of guilt, with respect to any kind of crime, or wrongdoing. It also means a lack of experience.</p> <p>Knife crime: Criminal offences committed with a knife.</p> <p>Immigration: The movement from one country to a new country to live.</p>	<p>Harrison – The protagonist and narrator of the novel.</p> <p>Lydia – Harrison's older sister</p> <p>Harrison's mum – Harrison and Lydia's mum.</p> <p>Auntie Sonia – Harrison and Lydia's aunt.</p> <p>Julius – The rich man who dates Auntie Sonia.</p> <p>The DFC – A gang of boys in the local area.</p> <p>Miquita - Miquita is Killa's girlfriend and a friend of Lydia and</p> <p>Chanelle – A friend of Lydia and Miquita.</p> <p>Jordan – One of Harrison's best friends.</p> <p>Dean – Harrison's best friend from school.</p> <p>The Pigeon – The second narrator of the novel.</p> <p>Poppy Morgan –A girl at Harrison's school whom he has a crush on.</p>
Techniques	Symbols	Plot Summary
<p>Simile: A comparison of two things using like or as – <i>The world is like a stage</i>.</p> <p>Metaphor: A direct comparison of two things which is not literal – <i>The world is a stage</i>.</p> <p>Imagery: Creating a mental picture for the reader through appealing to the senses (smell, touch, taste, see, hear) – <i>The smell of freshly cut grass filled the air</i>.</p> <p>Colloquial language: Informal language used by people in their everyday speech – <i>Don't chicken out!</i></p> <p>Pathetic fallacy: When nature reflects human emotion (we often see this in the weather) – <i>The sun shone on the cloudless sky as the friends were reunited</i>.</p> <p>Cyclical structure: When a text begins and ends with the same idea or event.</p> <p>Dual-narrative: A dual narrative is a story that is told from two different perspectives.</p> <p>Foreshadowing: A warning or hint of a future event.</p> <p>Extended metaphor: A metaphor which is repeated or extended over the course of a text.</p> <p>Dramatic Irony: When the reader or audience is aware of something that the character is not.</p>	<p>The Pigeon: The Pigeon is the second narrator of the novel. The Pigeon is the adult voice of the novel. The Pigeon acts as a guardian angel figure towards Harrison and watches over him. Some people think that the Pigeon is a father-like figure towards Harrison as his dad is in Ghana and can't look out for him. The Pigeon is an outsider like Harrison. He talks about humans trying to keep them out. The Pigeon foreshadows the events that happen to Harrison.</p> <p>The fingerprint: Fingerprints and footprints seem to hold an intrinsic link to identity in the novel. They appear as a symbol throughout; Harrison collects fingerprints whilst hunting his 'killer'; Auntie Sonia burns her fingerprints to escape 'her old self' and Harrison and Lydia leave their mark on the world when they leave their footprints behind.</p> <p>The playground: The playground could represent childhood, innocence and freedom. Kelman personifies the playground to emphasise this idea "Everybody went to watch the playground die". Society just watches children's lives perishing. Everybody is aware of gang violence and poverty, but no one really takes responsibility for it.</p> <p>Rain: Rain as a baptism – new beginning. Washing away sins. Rain washes the blood away, Harrison and Lydia tear up her costume and discard it in the rain believing that it has signified a new start.</p>	<p>Newly arrived from Ghana with his mother and older sister, eleven-year-old Harrison Opoku lives on the ninth floor of a block of flats on an inner-city housing estate. The second best runner in the whole of Year 7, Harri races through his new life in his personalised trainers – the Adidas stripes drawn on with marker pen – blissfully unaware of the very real threat all around him. With equal fascination for the local gang – the Dell Farm Crew – and the pigeon who visits his balcony, Harri absorbs the many strange elements of his new life in England: watching, listening, and learning the tricks of inner-city survival. But when a boy is knifed to death on the high street and a police appeal for witnesses draws only silence, Harri decides to start a murder investigation of his own. In doing so, he unwittingly endangers the fragile web his mother has spun around her family to try and keep them safe.</p>

Science





Science: SC1-2



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Pure substances	A pure substance is a single element or compound, not mixed with any other substance.	Pure substances melt and boil at specific temperatures. Heating graphs can be used to distinguish pure substances from impure.	

Solid, liquid, gas	Melting and freezing happen at melting point, boiling and condensing happen at boiling point.		The amount of energy needed for a state change depends on the strength of forces between particles in the substance.
s solid			
l liquid			
g gas			

Phase changes of matter

EDEXCEL TOPIC SC1-2: STATES OF MATTER

Position solvent reaches	Pure substances	Energy and movement	Gas particles have higher levels of energy than liquids and solids	Gas particles move more than the other states of matter, with solids moving the least due to their tightly packed arrangement. Solid particles can only vibrate around their fixed positions.
Mixture separated				

Method of separating substances	Fractional distillation	Fractions	The hydrocarbons in crude oil can be split into fractions	Each fraction contains molecules with a similar number of carbon atoms in them. The process used to do this is called fractional distillation.
Chromatography		Fractional distillation	Crude oil is heated and hydrocarbons boil and condense at certain temperatures	This is due to the different lengths of hydrocarbon chains.

Simple distillation

Distillation	Used to separate a mixture of liquids	During distillation, the mixture gets heated causing one liquid at a time to evaporate and then condense in the Liebig condenser.
Boiling points	Each of the liquids in the mixture will have a different boiling point	This enables the liquids to be separated. Distillation can also be used to analyse purity of a substance as pure substances have a sharp boiling point.

Using fractions

Crude Oil Fractionation Column

- Crude Oil enters at the bottom.
- The oil is heated in a furnace.
- At 20 °C: Butane & Propane
- At 150 °C: Petrol
- At 200 °C: Kerosene
- At 300 °C: Diesel
- At 370 °C: Fuel Oil
- At 400 °C: Lubricating oil, Paraffin Wax, Asphalt

Chromatography

R_f values

Pure substances

Using fractions

Fractions can be processed to produce fuels and feedstock for petrochemical industry

We depend on many of these fuels; petrol, diesel and kerosene.

Many useful materials are made by the petrochemical industry; solvents, lubricants and polymers.

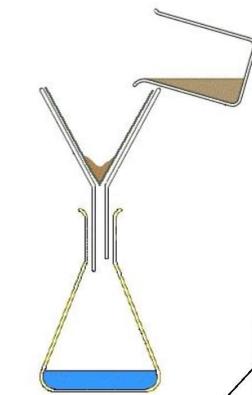
better hope – brighter future



Science: SC1-2



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The filtrate is the liquid that moves through the filter paper and collects underneath

The residue is the insoluble solid that collects in the filter paper.

Filtration

This technique separates substances that are insoluble in a solvent from those that are soluble

An example is sand in water; the sand will collect in the filter paper and the water will move through it.

Filtration

Methods of separating substances

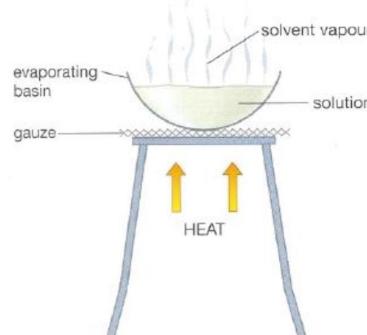
Sterilising agents include chlorine, ozone and UV light.

Crystallisation

This technique separates a soluble substance from a solvent by evaporation

An example is the crystallisation of sodium chloride from a salt solution.

Crystallisation



Waste water

Produced from urban lifestyles and industrial processes

These require treatment before used in the environment. Sewage needs the organic matter and harmful microbes removed.

Sewage treatment

Includes many stages

- Screening and grit removal
- Sedimentation to produce sludge and effluent (liquid waste or sewage).
- Anaerobic digestion of sludge
- Aerobic biological treatment of effluent.

Potable water	Water of an appropriate quality is essential for life	Human drinking water should have low levels of dissolved salts and microbes. This is called potable water.
UK water	Rain provides water with low levels of dissolved substances	This water collects in the ground/lakes/rivers. To make potable water an appropriate source is chosen, which is then passed through filter beds and then sterilised.
Desalination	Needs to occur is fresh water is limited and salty/sea water is needed for drinking	This can be achieved by distillation or by using large membranes e.g. reverse osmosis. These processes require large amounts of energy.
Potable water		
Using water	Water used for chemical analysis must not contain any dissolved salts	Water used for this purpose must be treated in order to be suitable.
Producing potable water	There are 4 main steps to producing potable water	<ol style="list-style-type: none"> 1. Choosing appropriate source of fresh water 2. Sedimentation 3. Passing the water through filter beds 4. Chlorination





Science: Motion and Forces



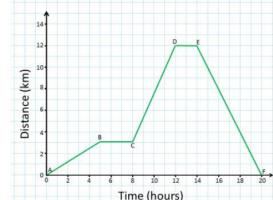
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Wind	5 – 20 m/s
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Walking	1.4m/s
Running	3m/s
Cycling	5.5m/s

Speed	How fast an object moves	The speed of a car is 30m/s. A car moves forward with a velocity of 30m/s.
Velocity	Speed + direction	
Distance	How far	The table is 1m long.
Displacement	Distance + direction	The beach is 1km due east of the town.

Scalar	A quantity that only has magnitude (size)	e.g. mass, time, speed, temperature, energy, distance.
Vector	A quantity that only has magnitude and direction	e.g. force, velocity, momentum, displacement, acceleration, weight.



Distance-time graphs

Distance-time graph	Shows how far an object moves along a straight line
Speed of object	Use the gradient of graph
Object stopped	Graph line flat
Object going faster	Graph line steeper
Object accelerating	Graph line curves

Calculating speed from d-t graph	If the graph is a straight line, the speed along the line is equal to the gradient of the line	Gradient = vertical ÷ horizontal
	If the graph is a curve, the speed is found by drawing a tangent to the curve and then the gradient of the tangent	

Acceleration is negative, object is decelerating

Acceleration is positive, object is accelerating

Average speed = distance ÷ time

Scalar and vector quantities

$$a = (v - u) \div t$$

Acceleration = (final velocity – initial velocity) ÷ time taken
How quickly an object speeds up
The change in velocity in a certain amount of time

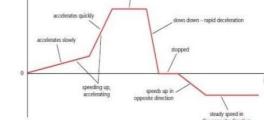
Equations

Measuring Motion

EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Motion Graphs

Velocity-time graphs



Velocity-time graph	Shows how fast an object moves
Gradient of graph	Object accelerating
Graph line flat	Object has constant / steady speed
Graph line steeper	Object has greater acceleration
Positive diagonal line	Object is accelerating at a constant rate
Negative diagonal line	Object is decelerating at a constant rate
Graph line curves	Object is changing acceleration

Calculating distance travelled from v-t graph	The area under a section of the graph is equal to the distance travelled in that time	Distance = Speed X time
	If the acceleration is constant, the area can be split into a rectangle or a triangle	Area of rectangle = base X height Area of triangle = $\frac{1}{2}$ base X height



Science: Motion and Forces



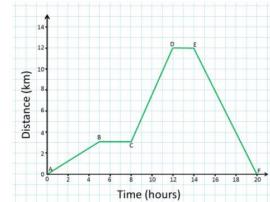
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Car in town	13m/s
Car on motorway	31m/s
Train	55m/s
Sound in air	340m/s

Walking	1.4m/s
Running	3m/s
Cycling	5.5m/s

Speed	How fast an object moves
Velocity	Speed + direction
Distance	How far
Displacement	Distance + direction

Scalar	A quantity that only has magnitude (size)
Vector	A quantity that only has magnitude and direction



Distance-time graphs

Distance-time graph	Shows how far an object moves along a straight line
Speed of object	Use the gradient of graph
Object stopped	Graph line flat
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Calculate speed from graph	If the graph is a straight line, the speed along the line is equal to the gradient of the line
	If the graph is a curve, the speed is found by drawing a tangent to the curve and then the gradient of the tangent

Acceleration is negative,
object is decelerating

Acceleration is positive,
object is accelerating

Average speed = distance ÷ time

The speed of a car is 30m/s.
A car moves forward with a velocity of 30m/s.

The table is 1m long.

The beach is 1km due east of the town.

Scalar and vector quantities

$a = (v - u) \div t$

Acceleration = (final velocity – initial velocity) ÷ time taken

Acceleration
How quickly an object speeds up
The change in velocity in a certain amount of time

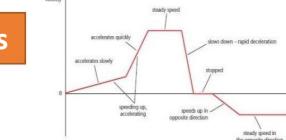
Equations

Measuring Motion

EDEXCEL
TOPIC 2 -
MOTION AND
FORCES (part 1)

Motion Graphs

Velocity-time
graphs



Velocity-time graph	Shows how fast an object moves
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Calculating distance travelled from v-t graph	The area under a section of the graph is equal to the distance travelled in that time
	If the acceleration is constant, the area can be split into a rectangle or a triangle

PiXL
Science

$$v^2 - u^2 = 2 \times a \times s$$

(final velocity squared – initial velocity squared) = 2 X acceleration X distance ÷ time taken

Uniform acceleration
Acceleration due to gravity is constant for objects in free fall
Constant acceleration

Estimating Acceleration
Estimate how long it takes the object to stop and then use the acceleration equation

$$\text{Acceleration in free fall} = 10\text{m/s}^2$$

Speed	Metre/second (m/s)
Distance	Metre (m)
Time	Second (s)
Current	Ampere (A)
Temperature	Kelvin (K)
Acceleration	Metres/second squared (m/s ²)
Velocity	Metre/second (m/s)

$$\text{Distance} = \text{Speed} \times \text{time}$$

$$\text{Area of rectangle} = \text{base} \times \text{height}$$

$$\text{Area of triangle} = \frac{1}{2} \text{base} \times \text{height}$$



Science: Motion and Forces



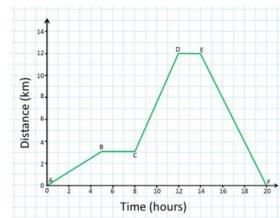
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	13m/s
	31m/s
	55m/s
	340m/s

	1.4m/s
	3m/s
	5.5m/s

	How fast an object moves	The speed of a car is 30m/s. A car moves forward with a velocity of 30m/s.
	Speed + direction	
	How far	The table is 1m long.
	Distance + direction	The beach is 1km due east of the town.

	A quantity that only has magnitude (size)	e.g. mass, time, speed, temperature, energy, distance.
	A quantity that only has magnitude and direction	e.g. force, velocity, momentum, displacement, acceleration, weight.



Distance-time graphs

Distance-time graph	Shows how far an object moves along a straight line
	Use the gradient of graph
	Graph line flat
	Graph line steeper
	Graph line curves

	If the graph is a straight line, the speed along the line is equal to the gradient of the line	Gradient = vertical ÷ horizontal
	If the graph is a curve, the speed is found by drawing a tangent to the curve and then the gradient of the tangent	

Acceleration is negative, object is decelerating

Acceleration is positive, object is accelerating

$$s = d \div t$$

Average speed = distance ÷ time

$$a = (v - u) \div t$$

Acceleration = (final velocity – initial velocity) ÷ time taken

How quickly an object speeds up

The change in velocity in a certain amount of time

Equations

$$v^2 - u^2 = 2 \times a \times s$$

(final velocity squared – initial velocity squared) = 2 X acceleration X distance ÷ time taken

Acceleration due to gravity is constant for objects in free fall

Constant acceleration

Estimate how long it takes the object to stop and then use the acceleration equation

Acceleration in free fall = 10m/s²

	Metre/second (m/s)
	Metre (m)
	Second (s)
	Ampere (A)
	Kelvin (K)
	Metres/second squared (m/s²)
	Metre/second (m/s)

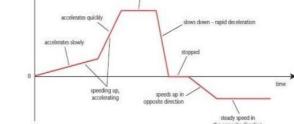
Measuring Motion

Describing Motion

EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Motion Graphs

Velocity-time graphs



Velocity-time graph

Shows how fast an object moves

Object accelerating

Object has constant / steady speed

Object has greater acceleration

Object is accelerating at a constant rate

Object is decelerating at a constant rate

Object is changing acceleration

$$\text{Gradient} = \frac{\text{vertical}}{\text{horizontal}}$$

$$\text{Use the gradient gradient} = \frac{\text{vertical}}{\text{horizontal}}$$

The area under a section of the graph is equal to the distance travelled in that time

$$\text{Distance} = \text{Speed} \times \text{time}$$

If the acceleration is constant, the area can be split into a rectangle or a triangle

$$\text{Area of rectangle} = \text{base} \times \text{height}$$

$$\text{Area of triangle} = \frac{1}{2} \text{base} \times \text{height}$$



Science: Motion and Forces



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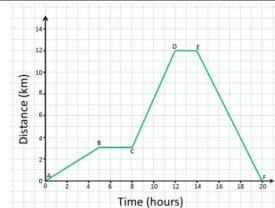
W/M	
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Car in town	
Car on motorway	
Train	
Sound in air	

Walking	
Running	
Cycling	

Speed		
Velocity		
Distance		
Displacement		

Scalar		
Vector		



Distance-time graphs

Distance-time graph	<i>Shows how far an object moves along a straight line</i>
Speed of object	
Object stopped	
Object going faster	
Object accelerating	

Calculating speed from d-t graph		Gradient =
----------------------------------	--	------------

Acceleration is negative,

Acceleration is positive,

Average speed

$$s = d \div t$$

$$a = (v - u) \div t$$

Acceleration
Equations

$$v^2 - u^2 = 2 \times a \times s$$

Uniform acceleration	
Estimating Acceleration	

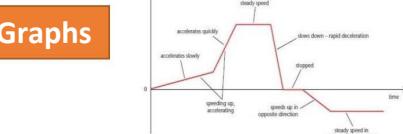
Core Practical	
Speed	

Distance	
Time	
Current	
Temperature	
Acceleration	
Velocity	

EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Motion Graphs

Velocity-time graphs



Velocity-time graph	<i>Shows how fast an object moves</i>
Gradient of graph	
Graph line flat	
Graph line steeper	
Positive diagonal line	
Negative diagonal line	
Graph line curves	

Calculate acceleration	
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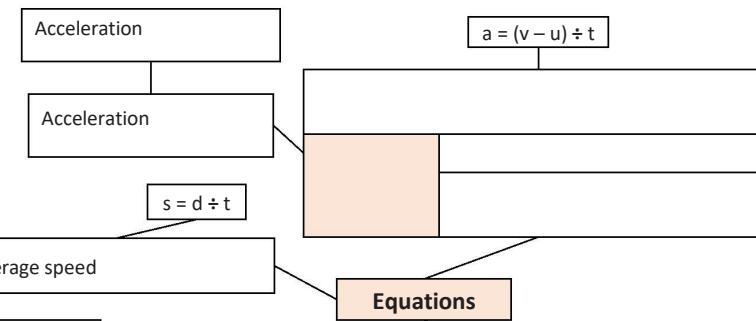
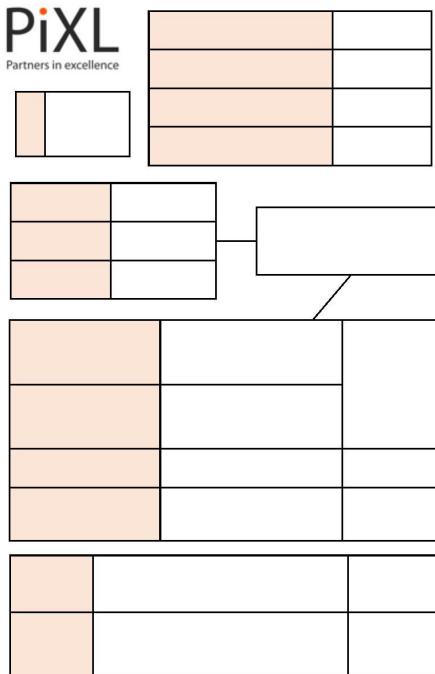
Calculating distance travelled from v-t graph	



Science: Motion and Forces



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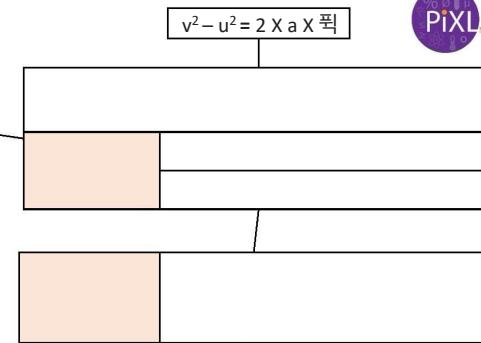


$$a = (v - u) \div t$$

$$s = d \div$$

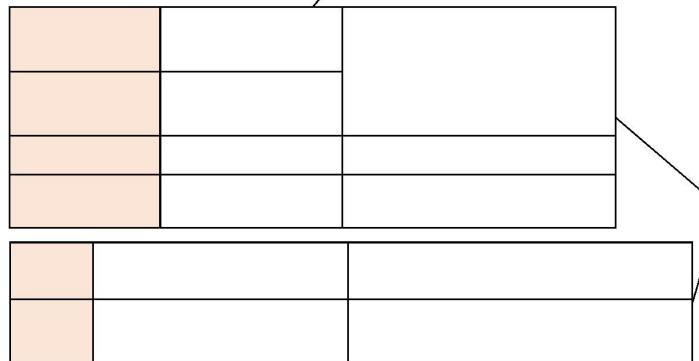
Average speed

Equations



$$v^2 - u^2 = 2 \times a \times \frac{\pi}{2}$$

Acceleration in free fall = 10m/s^2



Scalar and vector quantities

Measuring Motion

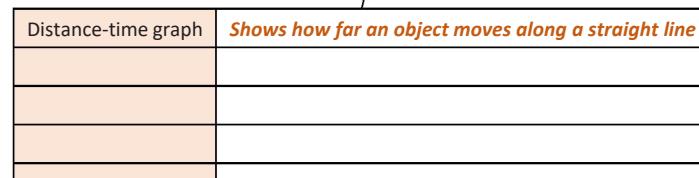
EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

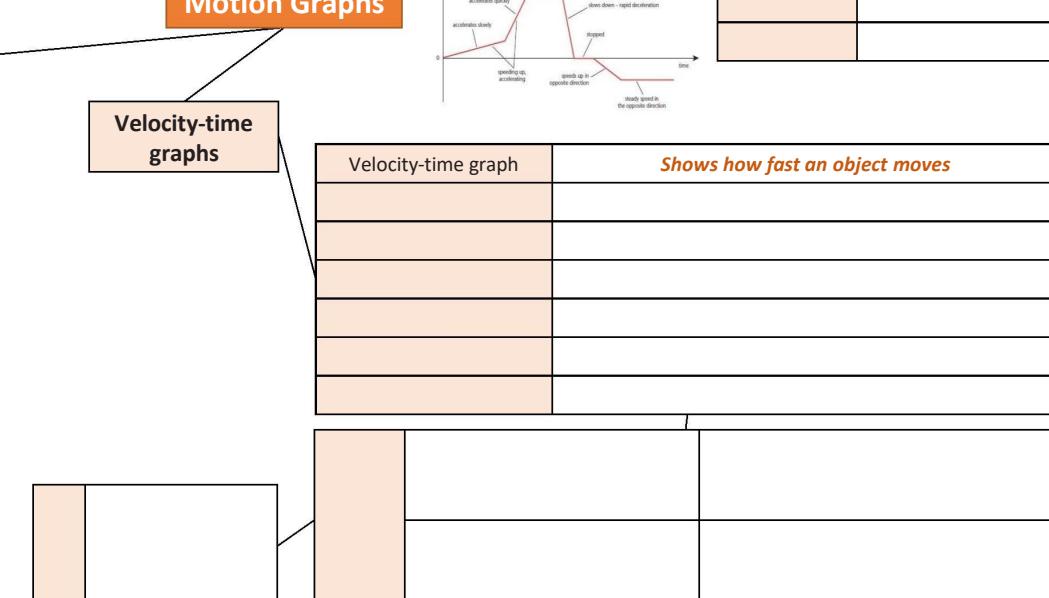
Motion Graphs

Core Practical

A distance-time graph plotted on a grid. The horizontal axis represents time in hours, ranging from 0 to 14. The vertical axis represents distance in kilometers, ranging from 0 to 14. The graph shows a piecewise linear function with the following points: A(0,0), B(4,3), C(6,3), D(12,12), E(14,12), and F(14,0). The segments AB, BC, and CF are straight lines. The segments BD and DE are also straight lines.

Distance-time graphs





better hope – brighter future



Science: Motion and Forces

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Each Kg has a gravitational pull of 9.8N.

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

$$W = m \times g$$

Weight = mass X gravitational field strength

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

Core Practical	Acceleration is proportional to resultant force.
Investigate force, mass and acceleration	Acceleration is inversely proportional to mass.
Vary mass added to trolley.	Frictional forces decelerate a moving object and bring it to rest.
	Force = mass X acceleration. $F = m \times a$

Conservation of momentum	When two objects collide, the momentum they have before the collision = the momentum they have after the collision
	Closed system = no external forces acting on it.

$$F = (mv - mu) \div t$$

Is a vector.

Force = change in momentum \div time.

Momentum = mass X velocity
 $p = m \times v$

Crumple zones

Changes in momentum

Force is applied to stop momentum

If momentum changes slowly, the force applied is small so less damage.

Car travelling around a bend	Constant speed, direction changes.
Satellite orbiting the Earth	Constant speed, direction changes.



There must be a resultant force acting upon the object.

Centripetal force This force acts towards the centre of the circle

Changing velocity Objects in a circular motion, change direction but keep a constant speed

HIGHER ONLY

When objects continue in the same state of motion Speed or direction only changes if a resultant force acts on the object

Inertia

HIGHER ONLY

Newton's Laws and Momentum

Newton's first Law Balanced forces

When the resultant force on a still object = 0, the object is stationary.

When the resultant force on a moving object = 0, the object is at a constant speed.

Newton's second Law Unbalanced forces

When the resultant force is greater than 0, the object accelerates. It could speed up, slow down or change direction.

Newton's third Law Equal and opposite forces

When two objects interact the forces exerted are equal and in an opposite direction.

Momentum

HIGHER ONLY

Inertial mass

Inertial mass = force \div acceleration.

How difficult it is to change the velocity of an object

If the mass is large, to change velocity a big force is needed.

An object travelling in a circle at a constant speed, is constantly changing direction so it is constantly changing velocity which means it is accelerating.

Resultant force

Exerted between two objects when they touch

Non-contact force

Exerted between two objects without touching

Stretch, squash, turn.

Friction, air resistance, tension.

Gravity, electrostatic forces, magnetic forces.

Two forces acting in the same direction are added.

Two forces acting in the opposite direction are taken away.

Resultant force

The overall effect of all of the forces acting upon an object

Contact and Resultant forces

Reactions and stopping

Measuring reaction times How fast someone reacts

Dropping the ruler test or computer based test.

Typical reaction time = 0.2 – 0.6s.

Car's mass ~1000Kg, single decker bus ~10,000Kg, double decker

Thinking distance Distance travelled whilst the driver reacts

Braking distance Distance travelled whilst the car is stopped by the brakes

Stopping distance Total thinking and braking distances

PHYSICS ONLY

Speed increases so does stopping distance.

Speed increases thinking distance also increases at the same rate.

Factors affecting stopping distances

Drivers reaction times

Braking distances

Drinking alcohol, taking drugs, tired.

Weather conditions, worn brakes or tyres, road surface, size of braking force.

Braking and kinetic energy Work done by braking force, reduces kinetic energy

Kinetic energy decreases, temperature of brakes increases due to frictional forces.





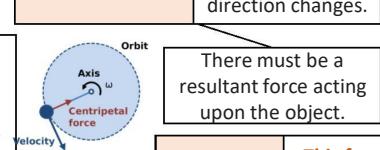
Science: Motion and Forces



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Each Kg has a gravitational pull of 9.8N.

	Constant speed, direction changes.
	Constant speed, direction changes.



Gravity exerted around an object.
Earth's gfs = 9.8N/kg.

$$W = m \times g$$

Weight = mass X gravitational field strength

Force acting upon an object due to gravity	Newton (N)
How much matter	Kilograms (Kg)

Investigate force, mass and acceleration	Acceleration is proportional to resultant force.
Vary mass added to trolley.	Acceleration is inversely proportional to mass.
Frictional forces decelerate a moving object and bring it to rest.	

Force = mass X acceleration.
 $F = m \times a$

When two objects collide, the momentum they have before the collision = the momentum they have after the collision
Closed system = no external forces acting on it.

$$F = (mv - mu) \div t$$

Is a vector.
Momentum = mass X velocity
 $p = m \times v$

Force = change in momentum \div time.

Crumple zones
If momentum changes slowly, the force applied is small so less damage.

	Constant speed, direction changes.
	Constant speed, direction changes.

There must be a resultant force acting upon the object.

This force acts towards the centre of the circle

Objects in a circular motion, change direction but keep a constant speed

HIGHER ONLY

When objects continue in the same state of motion Speed or direction only changes if a resultant force acts on the object

HIGHER ONLY

Newton's Laws and Momentum

Balanced forces When the resultant force on a still object = 0, the object is stationary.

Unbalanced forces When the resultant force on a moving object = 0, the object is at a constant speed.

Equal and opposite forces When two objects interact the forces exerted are equal and in an opposite direction.

Momentum

HIGHER ONLY

Inertial mass = force \div acceleration.

How difficult it is to change the velocity of an object If the mass is large, to change velocity a big force is needed.

If speed doubles, braking distance increases by a factor of four (2^2).

Work done to bring a vehicle to rest = its initial kinetic energy

	Push or pull	Stretch, squash, turn.
	Exerted between two objects when they touch	Friction, air resistance, tension.

	Exerted between two objects without touching	Gravity, electrostatic forces, magnetic forces.
--	--	---

Object moves left with a force of 5N.

1N 5N 1N

Show magnitude and direction of all forces upon an object

Newton (N)

Kilograms (kg)

Newton per kilogram (N/kg)

Newton (N)

Kilogram metre per second (Kg m/s)

Joules (J)

Metre per second (m/s)

Second (s)

How fast someone reacts

Dropping the ruler test or computer based test.

Typical reaction time = 0.2 – 0.6s.

Car's mass ~1000Kg, single decker bus ~10,000Kg, loaded lorry ~30,000Kg

Distance travelled whilst the driver reacts

Distance travelled whilst the car is stopped by the brakes

Total thinking and braking distances

An alert driver has a reaction time of 1s.

Speed affects both thinking and braking distances.

Drivers reaction times

Drinking alcohol, taking drugs, tired.

Braking distances

Weather conditions, worn brakes or tyres, road surface, size of braking force.

Work done by braking force, reduces kinetic energy

Kinetic energy decreases, temperature of brakes increases due to frictional forces.



Science: Motion and Forces



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Each Kg

Gravitational field strength

$W = m \times g$
Weight =

Weight
Mass

Core Practical

Force =
 $F = m \times a$

Conservation of momentum

$F = (mv - mu) \div t$
Is a vector.
Momentum =
 $p = m \times v$

Crumple zones
Changes in momentum

Car travelling around a bend
Satellite orbiting the Earth

Orbit
Axis
Centripetal force
Velocity
acting upon the object.

Centripetal force

Changing velocity

HIGHER ONLY

Inertia

HIGHER ONLY

Newton's Laws and Momentum

Newton's first Law

Newton's second Law

Newton's third Law

Momentum

Inertial mass

HIGHER ONLY

An object travelling in a circle at a constant speed,

Force		
Contact force		
Non-contact force		

Resultant force		

An arrow can be used to show vectors

Object moves

Free body diagram

Weight	
Mass	
Gravitational field strength	
Force	
Acceleration	
Momentum	
Velocity	
Time	

EDEXCEL
TOPIC 2 -
MOTION AND FORCES (part 2)

Forces
Contact and Resultant forces

Reactions and stopping

Measuring reaction times

Car's mass
single decker bus
loaded lorry

PHYSICS ONLY

Speed increases

Speed increases

Speed increases

Factors affecting stopping distances

If speed doubles,

Work done to bring a vehicle to rest =

Thinking distance	
Braking distance	
Stopping distance	

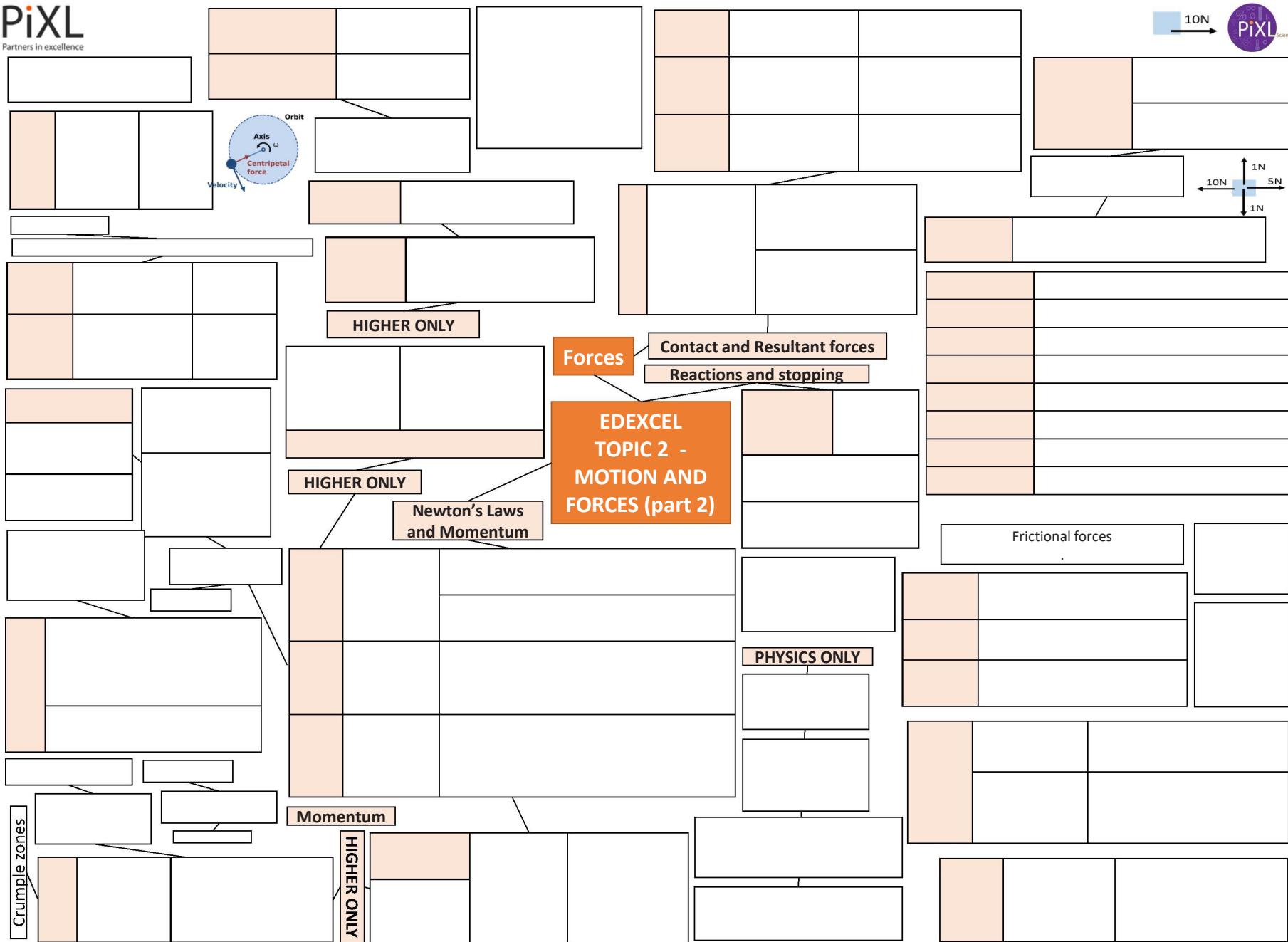
Braking and kinetic energy		



Science: Motion and Forces



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History





History - Background to the Nazis coming to power



Terms of the Treaty of Versailles

Blame: Germany got blamed for starting WWI (Article 231 or the War Guilt Clause)

Reparations: Germany was forced to pay £6.6 billion in compensation at the end of the war

Army: Germany's army was reduced from 3 million to 100,000. They were not allowed any tanks, planes or U-boats. They were only allowed 6 battleships and the Rhineland was demilitarised.

Territory: Germany lost 10% of its territory including: Alsace-Lorraine, West Prussia and Posen, Eupen and Malmedy, North Schleswig. Germany also lost its overseas colonies and was forbidden to unite (Anschluss) with Austria.

ANGER: Germany was angry at the treaty as they thought it would bankrupt Germany and weaken so much they would be easy to invade. They also believed that they were not responsible for starting the war and that German people would now be under the control of foreign powers.

Who were the Nazis?

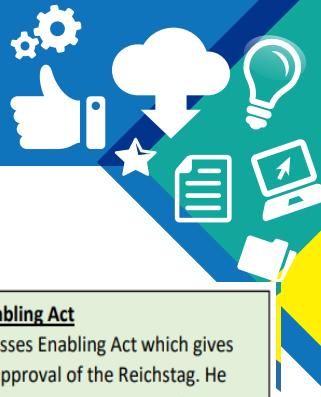
The Nazis (National Socialist German Workers Party – NSDAP) was originally created by a man called Anton Drexler just after WWI. Originally Hitler was sent to spy on this new party, but ended up joining and later became its leader. The Nazis were anti-Semitic, and wanted to destroy the Treaty of Versailles and make Germany a great power again. The Nazis had their own private army called the SA (Sturm Abteilung – Storm Troopers).

Why were the Nazis popular?

Many Germans thought that the new government (Weimar) which was set up after Germany's defeat in WWI had 'stabbed' Germany in the back. The Nazis said they would make Germany strong again. Many rich people supported the Nazis as they were strong on Communism. The Nazis also promised the people of Germany jobs. This was particularly important during the Great Depression when unemployment reached over 6 million in Germany.



History - How did Hitler become the Leader of Germany?



How did Hitler become Dictator in 1934?



Results

- The Nazis arrest over 4000 communists and ban the communist party.
 - They shut down political opponents meetings and newspapers, whilst thousands are sent to concentration camps
 - This reduces Nazi political opposition.

This gave Hitler more power because

This led to

Hitler persuaded Hindenburg to sign 'The Reichstag Decree', also called the Emergency Decree, which gave Hitler many powers.

1. The laws allow the Nazi controlled police to arrest anyone suspected of opposing the government, ban meetings, close newspapers and hold people without trial.
 2. **Germany had now become a police state**

1. The Reichstag Fire

On February 27th 1933, the Reichstag (German parliament) was burnt down with a communist Van Der Lubbe arrested at the scene (There are rumours the Nazis did it.) As Hitler had been warning of a communist plot to overthrow the government, the fire was the 'proof' he needed to show that communists want to destroy Germany.

The March 1933 Election

In the March 1933 election, the Nazis get their best ever result (44%) However, it still failed to give the Nazis an overall majority.

This persuaded Hitler to pass the Enabling Act, as he wanted to end democracy.

3. The Night of the Long Knives, 1934

Hitler begins to fear from threats in his own party, the SA (Brownshirts) The SA are a force of 3 million men under ex soldier Ernst Röhm. They were originally used to intimidate Nazi opposition and were important in Hitler coming to power in 1933. Hitler believed Röhm wants to overthrow him, whilst the army despised the power the SA had and Himmler and the SS hated Röhm and wanted to replace the SA with the SS. In 1934, after encouragement from the Army and SS, Hitler orders the arrest of SA 'traitors'

On the night of 30th June 1934, the SS arrest 400 SA leaders, some are imprisoned and others are executed including Ernst Rohm. Hitler also uses the opportunity to take out old political opponents, such as exchancellor Von Papen. Hitler had now eradicated all threats within his party, the army were now more supportive and it showed Hitler agreed to murder to keep power.

2. The Enabling Act

On 23rd March 1933, the Reichstag passes Enabling Act which gives Hitler power to pass any law without approval of the Reichstag. He immediately begins to use these powers to gain more control over Germany.

May 1933, Trade Unions banned

The banning of Trade Unions removed workers rights and brings them under his control.

July 1933, Political parties banned

Hitler bans all political parties except the Nazis, the leaders of the other parties are imprisoned. This gives Hitler total control. Democracy is over.

Results

Hitler has been given complete power over the government and laws, which effectively makes Germany a dictatorship under Hitler. **The Enabling Act ends all democracy in Germany**

4. The Death of Hindenburg

On 2nd August 1934, President Hindenburg dies. Within hours, Hitler combines the role of President with Chancellor to create a new title 'Führer of the Third Reich'. He also forced the army to swear an unconditional oath of loyalty and obedience to him. This brought them under Hitler's control.

Hitler is now the complete ruler of Germany



History - Life in Nazi Germany



Workers

Hitler had promised 'Arbeit und Brot' work and bread. The National Labour Service was set up for 18-25 year olds. Public Work Scheme built the autobahns, schools and hospitals. Rearmament also provided jobs and conscription for 18-25 year olds was introduced in 1935. Jews were sacked and women did not count in the figures. Hjalmar Schacht was given the job of getting Germany ready for war with the Four Year Plan. This created jobs in steel, textiles and shipbuilding. Farmers were seen as vital and were supported. The DAF replaced trade unions and ran the Beauty of Labour (SDA) to improve working conditions and the Strength through Joy (KDF) with rewards (including saving for a VW beetle) to control workers.

Young people

Schools were controlled by the Nazis. All teachers had to be Nazis and others were sacked. Textbooks and history were rewritten. They were indoctrinated (brainwashed) to think a certain way which included hatred of the Jews. Eugenics (race studies) was taught and there was a real emphasis on PE. Outside school were youth groups that were compulsory to join. For boys the 'Little Fellows' 6-10, 'Young folk' 10-14 and then the Hitler Youth. This included how to march, fight and keep fit. Girls - 'Young girls 10-14 and League of German Girls 14-17 keeping fit, preparing for motherhood. 7,287,470 members. Some youth groups resisted including the White Rose, Swing Youth and Edelweiss Pirates.

Women

'The world of women is a smaller one. For her world is her husband, her family, her children and her house.' The Nazis had a clear idea of the role of women - Kinder, Kirche, Küche (children, church, cooking). They wanted to increase the population and go back to traditional values e.g. wearing heels or trousers was 'unladylike'. Professional women were sacked but marriage loans were given to married couples of 1000 marks. For each child they kept 250 and this was linked to the Mutterkreuz (Mothercross). Bronze - 4 children silver - 6 and gold - 8. Lebensborn were also set up for women to give a child to the Reich - 8000 births came from here. Gertrud Scholtz-Klink was the figurehead of the Women's League which gave advice. The birth rate rose from 970, 000 in 1933 to 1, 413, 000 in 1939 however during the war the women were needed to help with the war effort.

Christians

There were 20 million Catholics and 40 million Protestants. Some Nazi ideas matched Christian ideas e.g. marriage, family, moral values and fear of Communism. In 1933 Hitler signed the Concordat with the Pope but Hitler soon broke this and the Catholics were harassed. Archbishop Galen criticised Hitler and euthanasia, he was put under house arrest. Some Protestants supported Nazi ideas and Hitler appointed Ludwig Müller as Reich Bishop. Other Protestants formed the Confessional Church led by Pastor Martin Niemöller who criticised the Nazis. 800 pastors were arrested and he was sent to a camp.

Jews and undesirables

Hitler believed in a pure Aryan master race of strong tall, blond haired, blue eyed Germans. Jews, gypsies, homosexuals, disabled were classed as undesirable. As soon as Hitler came to power they began passing laws to drive out Jews including sacking lawyers and teachers. The Nuremberg Laws 1935 took away more rights and dissolved marriages. November 1938 - Kristallnacht (Night of Broken Glass) saw synagogues burned, shop windows smashed, Jews beaten, arrested and 100 killed. 20 000 were sent to concentration camps. Many Jews left but were in countries occupied by the Germans in WW2 including Holland. Once the war started the Nazis used ghettos, execution squads (Einsatzgruppen) and camps. At the Wannsee Conference a Final Solution was planned including 6 extermination camps including Auschwitz where 1.1 million died. There was an uprising in the Warsaw Ghetto and Treblinka in 1943 but both put down. Around 6 million Jews were killed.

WW2 1939 - 1945

The start of the war was positive with many victories and luxury goods from the conquered countries. This changed after they invaded the USSR in 1941 including battles like Stalingrad and by 1944 Germany was facing a defeat. By November 1939 there was food and clothing rationing e.g. one egg per week. There were many ersatz (substitute) products. Hot water was rationed to two days per week. 1942 - Total War, everything was focussed on making weapons and growing food for soldiers. Factories were open longer, women were brought in and 7 million foreign workers as slave labour. British bombing had a real impact from 1942 disrupting water, electric, transport and there were many unexploded bombs.

KEY VOCABULARY/TERMS - Tier 3

Anti-Semitism (discrimination against Jews), rearmament, conscription, Four Year Plan, self-sufficient, DAF, SDA, KDF, Volkswagen, rationed, Total War, refugee, indoctrinate, eugenics, Swing Youth, Edelweiss Pirates, Kinder, Kirche, Küche, Lebensborn, Mutterkreuz, euthanasia, pacifist, persecute, Aryan, master race, death camp, ghetto, Nuremberg Laws, Kristallnacht, Final Solution, Einsatzgruppen, Holocaust.



History - Nazi Germany



Key individuals

Heinrich Himmler - Head of the SS.
Joseph Goebbels - Minister of Enlightenment and Propaganda.
Leni Riefenstahl - film maker Triumph of the Will.
August Landmesser - Jewish family, photographed refusing to do the Nazi salute.
Hans and Sophie Scholl - leaders of the White Rose resistance group. Executed in 1943.
Colonel Claus von Stauffenberg - part of the July Bomb Plot.

Key dates

1925	SS (Schutzstaffel) or black shirts set up
1936	Berlin Olympics used as propaganda
1943	Hans and Sophie Scholl executed
1944	Failed July Bomb Plot

Propaganda

From the word 'propagate' meaning to spread information and ideas. Joseph Goebbels was in charge of persuading Germans to believe Nazi ideas.

Key messages were repeated including

- blaming the Jews for problems
- criticising the Treaty of Versailles
- make Germany great again

Methods Newspapers - only showed Nazis doing good things. Negative sources about Jews. Newspapers were censored and shut down.

Mass rallies - huge parades and rallies. Special arenas were built that could hold half a million people. They had choirs, bands and listened to speeches. Hitler was an engaging public speaker that could whip up an audience into a frenzy.

Films - were controlled with Nazis shown in a good way and their 'enemies' in a bad way. Leni Riefenstahl filmed the Olympics and made other films.

Radio - cheap radios were used to put across Nazi messages with loudspeakers in the streets.

Books - were censored and book burning rallies burnt Jewish, Communist and other unapproved authors.

Terror

The police state was organised and used terror to keep people in control. All police forces were under the control of Himmler as Head of the SS.

The SS - were originally Hitler's bodyguards and were the most feared organisation in the country. They included the Waffen SS and the Death's Head Units that ran the concentration and death camps.

The regular police and law courts - ignored crimes committed by the Nazis and they had all the top jobs. New laws meant the death penalty could be given for telling an anti-Hitler joke, having sex with a Jew or listening to foreign radio.

The Gestapo - the secret police. They spied on people they thought might be a threat tapping phones and opening mail. They could arrest, torture and imprison without a trial. They had a network of informers, encouraged children to inform on parents and teachers.

Rewards

The problem of unemployment was dealt with making many people happy. Beauty of Labour movement - improved working conditions. Strength Through Joy organised leisure activities including choirs, camps, cheap holidays and cinema tickets. Workers could save up for their own VW Beetle although nobody ever received one. The Mutterkreuz - reward for women who had 4 children - bronze, 6 - silver or 8 - gold. This was linked to the 100 mark marriage loan which you kept 250 marks for each child you had.

Resistance and opposition

Many Germans were uncomfortable with what the Nazis were doing and moaned or grumbled but even this could be dangerous. Some used passive resistance refusing to do as they were told. Others were more openly defiant such as youth groups including the Swing Movement, Edelweiss Pirates and the White Rose. The Kreisau Circle also tried to eliminate Hitler. They failed and were executed.

KEY VOCABULARY/ TERMS - Tier 3

Concentration camps, SS - Schutzstaffel, Gestapo, Propaganda, censorship, newspapers, radio, rallies, films, resistance, opposition, White Rose, Swing Movement, Edelweiss Pirates, assassinate.



History - Nazi Germany



Research:

How did the Communists react to the Reichstag Fire?

Who was Marinus Van Der Lubbe and what was his story?

How did Hitler manage to convince the Reichstag to give away their influence?

Why was Ernst Rohm a threat to Hitler?

What are trade unions and why are they important in a modern society?

Why did European powers not intervene during Hitler's consolidation of power?

Geography

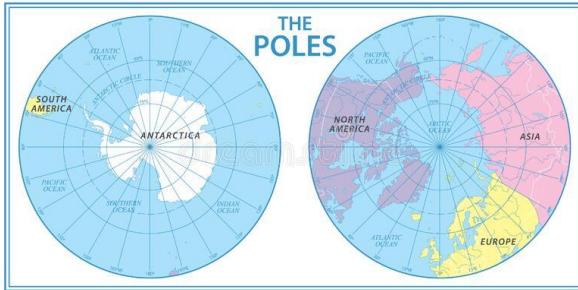




Geography - Polar Regions



Where are the Polar regions

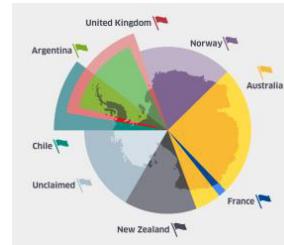
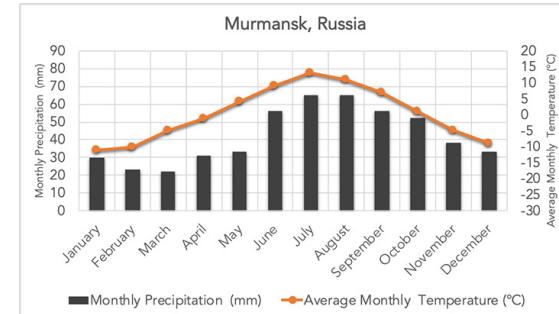
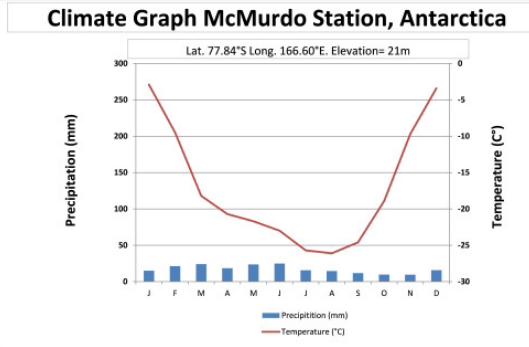


Antarctic Treaty

Countries that sign the treaty agree:

1. To make Antarctica a natural reserve that is devoted to **peace** and **science**
2. To allow scientists freedom to work
3. To **share** scientific knowledge
4. To set aside any territorial claims
5. To ban nuclear explosions and the disposal of radioactive waste
6. To make sure all visits to Antarctica comply with the treaty
7. To ban all commercial mining until at least 2048.
8. To ensure all waste is disposed of without damaging the environment
9. To **protect** all Antarctic animals and plants.

Climate in the Polar regions

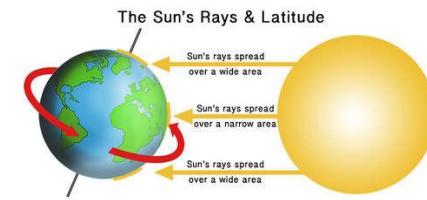


KEY Vocabulary

Indigenous, Arctic, Antarctica, biome, adaptation, climate change, permafrost, endangered, culture, nomadic, trade, erosion, migration, fossil fuels, icecap, treaty, conflict.

Challenges of Tourism in Antarctica

Most people only stay on land for a few hours	✓	Invasive species can be brought onto land as seeds stuck to the soles of shoes	✗	Cruise ships can leak oil and damage the marine environment	✗
Tourists can become champions of Antarctica	✓	Tourists can't visit all year due to the harsh winter climate so this limits numbers	✓	Fragile plants can get trampled	✗
Nesting birds can be disturbed	✗	Tourists and visitors get to appreciate the beauty of the last great wilderness	✗	Erosion of paths where most tourists walk	✗
Waste created by visitors has to be dealt with	✗	Antarctica has no native residents so tourists can speak up for Antarctica	✓	Small boats can disturb the resting sites of seals off shore	✗





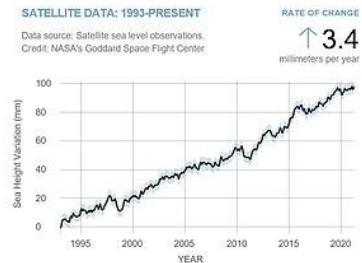
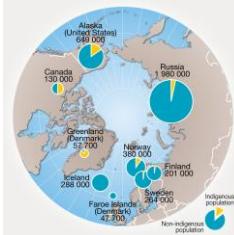
Geography - Polar Regions



- What are the issues with ICE MELTING: ANTARCTICA
- Temperatures in Antarctica are rising
- Ice sheets have broken off
- Glaciers in some places are melting
- Global sea levels are rising
- Not all of Antarctica is melting
- The majority of Antarctica remains frozen

The people of the Arctic

Over 4 million people call the Arctic home with well over 30 different languages spoken. The original inhabitants of the Arctic region are known as indigenous people and there are many different cultures in many of the Arctic nations.



- Apart from the Greenland icecap the Arctic is frozen ocean.
- Ocean temperatures rarely fall below -2°C which makes it on the whole warmer than Antarctica
- There are 8 countries which have land and a share of Arctic: Norway, Sweden, Finland, Russia, USA (Alaska), Denmark (Greenland), Canada and Iceland.
- Across these 8 countries indigenous people make up about 10% of the 4 million people that live there.
- Out of these 4 million inhabitants in the Arctic, 2 million are Russian

Rising global temperatures are having a catastrophic effect in the Arctic. Recent years have seen such high temperatures that there have been a number of serious fires

Issue for the indigenous people of the Arctic:

- Ice is thinning making hunting hazardous
- Migration of caribou is changing
- Animals have less meat
- Competition with oil companies

❖ Russia's Plans for the Arctic

- ❖ Russia has the longest coastline of all the Arctic nations. As the ice melts it opens up tremendous possibilities for Russia.
- ❖ Currently their major coastline is frozen for 6 months of the year so as the ice melts this reveals their coastline and potential new trade routes, shipping ports and oil exploration are possible.
- ❖ Russia have already laid claim to the seabed under the ice at the North pole by planting a flag on the sea bed

Questions to consider:

- Can the traditional life of the indigenous people survive?
- Will future generations respect the Antarctic treaty?
- Will Russia push ahead with plans to develop their Arctic coast?

Careers: Antarctica scientist/researcher £50-80,000 per year
Engineer working in the Arctic £65,000 per year

Ambitious Vocabulary:
Extensive, Flourish,
exploit, undermine,
consensus



Religious Studies





Religious Studies - Existence of God and Revelation



Key Words			
Atheist	Someone who does not believe a God exists	Omnipotent	God's nature as all-powerful
Benevolent	God's nature as all-loving and all-good	Omniscient	God's nature as all-knowing and aware of all that has happened past, present, future
Faith	A commitment to God and religion that goes beyond proof	Personal	God's nature as merciful, compassionate and something humans can relate to
General Revelation	God making themselves known through ordinary experiences open to all	Proof	Evidence that shows something is true or existent
Immanent	God's nature as present in and involved in the world	Special Revelation	God making themselves known through extraordinary experiences
Impersonal	God's nature as non-human, unknowable and mysterious	Theist	Someone who believes in a God or Gods
Miracle	A remarkable event that cannot be explained by science alone	Transcendent	God's nature as beyond our understanding, existing outside the universe

Key Ideas		
Design Argument 	<p>The Design Argument argues that God must exist because the world around us is so intricate and well-designed that there must be an intelligent creator behind it. William Paley puts this forward in his Watchmaker's Argument that says if you found a watch in the grass you would not assume its intricate mechanism had come about by accident, you would assume someone had created it. The same applies for the world around us.</p> <p>☒ Atheists argue that nature and science are responsible for the world around us and that much of the so-called design is the result of chance and natural selection.</p>	
First Cause Argument 	<p>The First Cause Argument was put forward by Thomas Aquinas and it argues that there has to be an uncaused cause that made everything else happen and that must be God. It argues that nothing moves without first being pushed and that God is the only possible being that can exist with no cause as God is eternal (never beginning, never ending).</p> <p>☒ Atheists argue that by this logic God must have a cause or that if God is eternal then the universe itself could be eternal as well.</p>	
Argument from Miracles 	<p>The Argument from Miracles argues that miracles (a remarkable event seemingly only explained by God's actions) prove that God exists. They argue that these events (like Jesus walking on water or people coming back from the dead) cannot be explained by science and that they must be the result of God's intervention.</p> <p>☒ Atheists argue that miracles are not more than happy coincidences and that they can be explained either by science or people being delusional or lying.</p>	
Special and General Revelation 	<p>Special Revelation This is a form of revelation where God reveals themselves through remarkable experiences usually only open to one or a small group of people. These could be visions (seeing Mary, God or Jesus), dreams, miracles or hearing God's call directly. In the Bible Saul experiences a vision of Jesus on the Road to Damascus and this causes him to believe in God, change his name, and preach the Gospel.</p> <p>General Revelation This is a form of revelation where God reveals themselves through ordinary experiences which are open to all people to experience. This could be through nature where God's creation is revealed in the intricacy of the human eye or the beauty of the Grand Canyon. It could be through scripture, God reveals much information about themselves in the Bible.</p>	
Nature of God 	<p>Omnipotent, Omniscent, Benevolent According to the Bible and Christian teachings, God is omnipotent (all-powerful), omniscent (all-knowing) and benevolent (all-loving).</p> <p>Personal vs Impersonal Different Christians have different views on God with some seeing them as personal and some as impersonal. A personal God has human characteristics and Christians can form a relationship with them through prayer. An impersonal God is mysterious and unknowable and has no human characteristics. More like an idea or a force than a human being.</p> <p>Problem of Suffering This however leads to the Problem of Suffering. If God is all-powerful and all-loving why does so much suffering exist in the world? Some people see this as an argument against God's existence.</p>	<p>Transcendent vs Immanent They also disagree about God's place in the world. A transcendent God exists beyond and outside of life on earth and is not limited by the laws of physics or the rules of time and space. An immanent God is active and involved in life on earth and can play a role in events that happen here. This could be through the Holy Spirit answering prayers for example.</p>

Spanish





Spanish



Gente

Me Presento	
Me llamo	My name is
Soy inglés/a	I am English
Tengo catorce años	I am 14 years old
Vivo en el norte de Inglaterra	
El Pelo	
Tengo / Tiene el pelo negro	I have / He / she has.....hair black
rubio	blonde
marrón	brown
gris	grey
pelirrojo	ginger
rizado	curly
largo	long
corto	short
liso	straight
Los Ojos	
Tengo / Tiene los ojos marrones	I have / He / she has....eyes brown
grises	grey
verdes	green
castaños	hazel
azules	blue
Personalidad	
(No) Soy ambicioso/a	I am / I am not ambitious
generoso/a	generous
tonto/a	silly
gracioso/a	funny
aburrido/a	boring
Mi Cara	
(No) Llevo gafas	I wear / I don't wear glasses
(No) Tengo bigote	I have / I don't have a moustache
(No) Tengo barba	I have / I don't have a beard

Mi Aspecto Físico	
(No) Soy / Es alto/a	I am / I am not / He / she is tall
bajo/a	short
delgado/a	thin
gordo/a	Fat
fea/a	ugly
guapo/a	good looking
bonito/a	pretty
Mis Opiniones	
Me chifla la moda	I really like fashion
No aguento el arte	I can't stand art
Me apasionan los deportes	I'm passionate about sports
Me interesan los libros	I am interested in books
Me encanta la ropa	I love clothes
Razones	
porque /ya que/ dado que es (son)	because it is (they are)
divertido/a/os/as	fun
entretenido/a/os/as	entertaining
aburrido/a/os/as	boring
peligroso/a/os/as	dangerous
interesante / s	interesting
útil / es	useful
inútil / es	useless
guay / s	cool
emocionante / s	exciting
inolvidable / s	unforgettable
Mi Familia	
Mi madre / madrastra	My mum / stepmum
Mi padre / padastro	My dad / stepdad
Mi hermano / hermanastro	My brother / stepbrother
Mi hermana / hermanastr	My sister / stepsister
Mi abuelo / abuela	My grandad / grandma
Mi tío / mi tí	My uncle / aunty
Mi primo / mi prima	My cousin (m) / My cousin (f)
Mi / Mis - Tu / Tus - Su / Sus	My - Your - His / Her

Descripciones	
simpático/a/os/as	nice
antipático/a/os/as	nasty
vago/a/os/as	lazy
tonto/a/os/as	silly
gracioso/a/os/as	funny
hablador(es)/habladora(s)	chatty
amable(s)	kind
guay(s)	cool
inteligente(s)	intelligent
deportista(s)	sporty
más ...adjective.....que	More...adjective...than
menos ...adjective.....que	Less...adjective....than
tan ...adjective.....como	As...adjective...as
No es ni.....ni.....	He/she is neither....nor.....
No tiene ni.....ni.....	He/she neither hasnor.....
Relaciones	
Me llevo bien con	I get on well with
Me cae bien con	I get on well with
Me llevo mal con	I get on badly with
Me divierto con	I have fun with
Me peleo con	I fight with
Discuto con	I argue with
Modelos a Seguir	
Admiro a	I admire
Mi ídolo es	My idol is
Mi inspiración es ...	My inspiration is
X es un buen modelo a seguir	X is a good role model
¿Por qué?	
porque...	because
lucha contra el racismo	He/she fights against racism
ayuda a los pobres	He /she helps the poor
tiene mucho talento	He / she has a lot of talent
me escucha	He/she listens to me
me da buenos consejos	He /s he give me good advice



Spanish



Present Tense (actions completed in the present)		
Infinitive (verb)	Take of the ending (AR/ER/IR)	Add the endings (I, YOU, HE/SHE, WE)
ESTUDIAR	ESTUDI COM VIV	ESTUDIO / COMO / VIVO (I STUDY / EAT / LIVE)
COMER		ESTUDIAS / COMES / VIVES (YOU STUDY / EAT / LIVE)
VIVIR		ESTUDIA / COME / VIVE (HE OR SHE STUDIES / EATS / LIVES)
		ESTUDIAMOS / COMEMOS / VIVIMOS (WE STUDY / EAT / LIVE)

Preterite tense (actions completed in the past)		
Infinitive (verb)	Take of the ending (AR/ER/IR)	Add the following endings 'I' form (É/Í) 'We' form (AMOS/IMOS)
VISITAR	VISIT	VISITÉ (I VISITED) VISITAMOS (WE VISITED)
COMER	COM	COMÍ (I ATE) COMIMOS (WE ATE)
BEBER	BEB	BEBÍ (I DRANK) BEBIMOS (WE DRANK)

Future Tense (actions that are going to happen)		
English	Spanish	Example
I AM GOING TO	VOY A + INF.	VOY A ESTUDIAR / COMER / VIVIR
YOU ARE GOING TO	VAS A + INF.	VAS A ESTUDIAR / COMER / VIVIR
HE OR SHE IS GOING TO	VA A + INF.	VA A ESTUDIAR / COMER / VIVIR
I WOULD LIKE TO	ME GUSTARÍA + INF.	ME GUSTARÍA ESTUDIAR / COMER / VIVIR

YEAR 9 GRAMMAR MAT

Definite Articles (used to indicate that a noun is a noun (the))	
EL	THE
LA	THE
LOS	THE
LAS	THE

Indefinite Articles (used to indicate that a noun is a noun (a, some))	
UN	A
UNA	A
UNOS	SOME
UNAS	SOME

Opinions (used to state preferences)			
ME GUSTA	I LIKE (singular)	ME GUSTAN	I LIKE (plural)
ME ENCANTA	I LOVE (singular)	ME ENCANTAN	I LOVE (plural)
ODIO	I HATE	ME CHIFLA/N	I REALLY LOVE
DETESTO	I HATE	NO AGUANTO	I CAN'T STAND
PREFIERO	I PREFER	DIRÍA QUE	I WOULD SAY THAT

Adjectival Agreement (Adjectival agreement means that the adjective 'agrees' with the noun it's describing in gender and number)	
El gatO viejO	The old cat
La chicA simpáticA	The nice girl
Los ojos negrOS	The black eyes
Las aulAS modernAS	The modern classrooms

French





French



Les gens

Je me présente	
Je m'appelle	My name is
J'ai quatorze ans	I am English
J'ai quatorze ans	I am 14 years old
J'habite dans le nord de l'Angleterre	
Les cheveux	
J'ai / Il/elle a les cheveux	I have / He / she has.....hair
noirs	black
blonds	blonde
marron/bruns	brown
gris	grey
roux	ginger
frisés	curly
longs	long
courts	short
raides	straight
Les yeux	
J'ai/Il/elle a les yeux	I have / He / she has.....eyes
marron	brown
gris	grey
verts	green
noisette	hazel
bleus	blue
Personnalité	
Je suis/je ne suis pas	I am / I am not
ambitieux/euse	ambitious
généreux/euse	generous
bête	silly
amusant/e	funny
ennuyeux/euse	boring
Mon visage	
Je porte/je ne porte pas de lunettes	I wear / I don't wear glasses
J'ai une moustache	I have a moustache
J'ai une barbe	I have a beard

Mon apparence physique	
Je suis/Je ne suis pas/Il/Elle est ..	I am / I am not / He / she is
grand(e)	tall
petit(e)	short
mince	thin
gros/grosse	fat
laid(e)	ugly
beau/belle	good looking
joli(e)	pretty
Mes Opinions	
J'aime beaucoup la mode	I really like fashion
Je ne supporte pas l'art	I can't stand art
Je me passionne pour les sports	I'm passionate about sports
Je m'intéresse aux livres	I am interested in books
J'adore les vêtements	I love clothes
Raisons	
parce que /car/ étant donné que	because
amusant(e)(s)	fun
divertissant(e)(s)	entertaining
ennuyeux/ennuyeuse(s)	boring
dangereux/dangereuse(s)	dangerous
intéressant(e)(s)	interesting
utile(s)	useful
inutile(s)	useless
cool(s)	cool
passionnant(e)(s)	exciting
inoubliable(s)	unforgettable
Ma famille	
Ma mère / belle-mère	My mum / stepmum
Mon père / beau-père	My dad / stepdad
Mon frère/demi-frère	My brother / stepbrother
Ma soeur / demi-soeur	My sister/ stepsister
Mon grand-père /ma grand-mère	My grandad / grandma
Mon oncle / ma tante	My uncle / aunty
Mon cousin/ ma cousine	My cousin (m) / My cousin (f)
Mon/ Ma/Mes/ Ton / Ta / Tes /Son/Sa/Ses	My / Your / His/Her
Descriptions	
sympathique(s)	nice
méchant(e)(s)	nasty
paresseux/euse(s)	lazy
bête(s)	silly
amusant(e)(s)	funny
bavard(e)(s)	chatty
gentil(s)/gentille(s)	kind
cool(s)	cool
intelligent(e)(s)	intelligent
sportif(s)/sportive(s)	sporty
plus ...adjective....que	More...adjective...than
moins ...adjective....que	Less...adjective....than
aussi ...adjective....que	As...adjective...as
Il/elle n' est ni.....ni.....	He/she is neither....nor.....
Il/elle n'a ni.....ni.....	He/she neither hasnor.....
Relations	
Je m'entends bien avec	I get on well with
J'ai de bons rapports avec	I get on well with
Je m'entends mal avec	I get on badly with
Je m'amuse avec	I have fun with
Je me bats avec	I fight with
Je me dispute avec	I argue with
Des modèles	
J'admire	I admire
Mon idole est	My idol is
Mon inspiration est	My inspiration is
¿Pourquoi?	
parce que/qu'...	because
Il/elle lutte contre le racisme	He/she fights against racism
Il/elle aide les pauvres	He /she helps the poor
Il/elle a beaucoup de talent	He / she has a lot of talent
Il/elle m'écoute	He/she listens to me
il/elle me donne de bons conseils	He /she give me good advice



French



Present Tense of regular verbs (actions completed in the present)

Infinitive (verb)	Take of the ending (ER/IR/RE)	Add the endings (I, YOU, HE/SHE, WE)
ÉTUDIER		J'ÉTUDIE / TU ÉTUDES / IL/ELLE ÉTUDIE/ON ÉTUDIE
FINIR	Add the following endings:	JE FINIS / TU FINIS/IL/ELLE FINIT/ON FINIT
ATTENDRE		J'ATTENDS/TU ATTENDS/IL/ELLE ATTEND/ON ATTEND

Past tense (actions completed in the past)

Infinitive (verb) ER, IR and RE verbs	Write J'AI first	Add the past participle
VISITER	J'AI VISITÉ (I VISITED)	NOUS AVONS/ON A VISITÉ (WE VISITED)
FINIR	J'AI FINI (I FINISHED)	NOUS AVONS/ON A FINI (WE FINISHED)
ATTENDRE	J'AI ATTENDU (I WAITED)	NOUS AVONS/ON A ATTENDU (WE WAITED)

The IMMEDIATE FUTURE (actions you are going to do soon)

Choose 1 Key Phrase	Add Any Infinitive (verb) ER/IR/RE Ending
Je vais (I am going)	ER - NAGER (to swim) JOUER (to play) DANSER (to dance)
Nous allons (We are going)	VISITER (to visit)
Je voudrais (I would like)	IR – FINIR (to finish) CHOISIR (to choose) SORTIR (to go out)
Nous voudrions (We would like)	RE – BOIRE (to drink) FAIRE (to do) PRENDRE (to take)

YEAR 9 GRAMMAR MAT

Definite Articles
(used to indicate that a noun is a noun (the))

LE	THE (m/s)
LA	THE (f/s)
LES	THE (pl)

Indefinite Articles (used to indicate that a noun is a noun (a, some))

UN (m/s)	A
UNE (f/s)	A
DES (pl)	SOME

Adjectival Agreement

(Adjectival agreement means that the adjective 'agrees' with the noun it's describing in gender and number)

Il est grand	He is tall
Elle est grande	She is tall
Ils sont grands	They are tall (males)
Elles sont grandes	They are tall (females)

The SIMPLE FUTURE (actions you WILL do)

Infinitives	Add an AI to ER and IR infinitives	
JOUER (to play)	AI	I will play (Je jouerai)
FINIR (to finish)	AI	I will finish (Je finirai)

RE verbs and irregular verbs are an exceptions to this rule.

IT





Coding in Python

File Edit Format Run Options Window Help

```
#MyMagic8Ball  
  
import random  
  
# write answers  
ans1="Go for it!"  
ans2="No way, Jose!"  
ans3="I'm not sure. Ask me again."  
ans4="Fear of the unknown is what imprisons us."  
ans5="It would be madness to do that!"  
ans6="Only you can save mankind!"  
ans7="Makes no difference to me, do or don't - whatever."  
ans8="Yes, I think on balance that is the right choice."  
  
print("Welcome to My8Ball.")  
    # get the users question  
question = input("Ask me for advice then press ENTER to shake me.\n")  
  
print("shaking ...\\n" * 4)
```



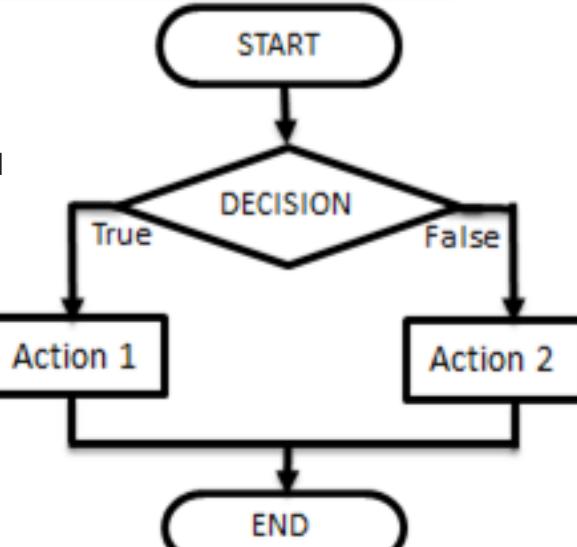
Key terms

Operator/	Definition
Exponentiation	Raises a number to a power eg: 2^{**3} OR $2^3 (=2^3)$
DIV	Gives the whole number after a division
MOD	Gives the remainder part of a division
==	Is equal to
! or <>	Is not equal to
<	Is less than
>	Is more than
>=	Is more than or equal to
<=	Is less than or equal to

Flowcharts

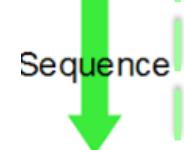
Flowcharts are methods sets of instructions/ planning represented by shapes within a diagram.

Pseudocode is fake code used a planning tool prior to developing code within a developer.



Constructs

A Sequence is when there are programming steps that are carried out one after another.



Selection is where there are different paths in your code eg: IF, ELIF, ELSE



Iteration is when there is repetition (loops) in code. This could be a WHILE loop (do something WHILE a condition is met) or a FOR loop (do something for a set number of times)



Art





ART

Portrait



Deliberate Practice

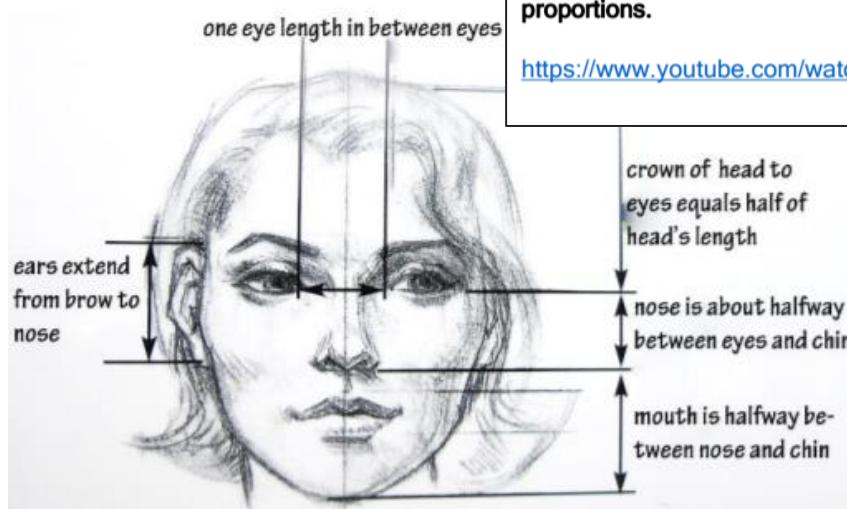
- **Artist research** – produce a google slide on an artist of your choice. Consider the style of the works, the techniques used and the way that the portrait is depicted.
- Select your preferred style and produce research page on this artist.



Key Vocabulary

Self portrait, Proportion, Iris, Symmetry, Profile, Character Expression ,Tone, Form

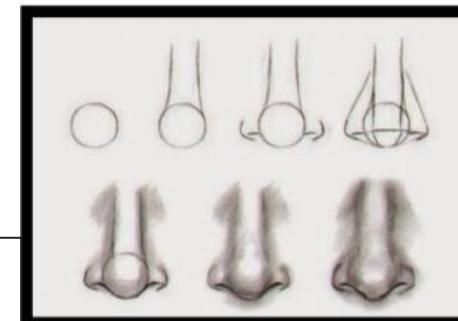
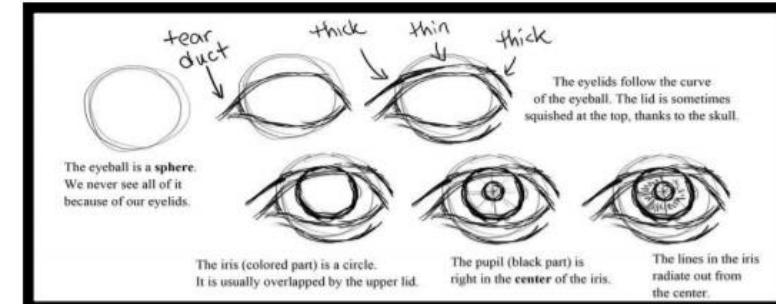
Proportion



Great You Tube Video to help you understand proportions.

<https://www.youtube.com/watch?v=WROSZ6803cE>

Portrait - a painting, drawing, photograph, or engraving of a person, especially one depicting only the face or head and shoulders.



Deliberate Practice- Drawing

- Practice drawing features of the face with **accuracy** Add **tone** through **blending**.
1. Draw an eye
 2. Draw a nose
 3. Draw lips

Design Technology





Design & Technology - Control



other designers and manufacturers follow, as it becomes a benchmark for other similar products. Furthermore, an iconic design is one that stands up to the test of time, remaining a good design, despite the passing of years, decades and even centuries.



ART NOUVEAU

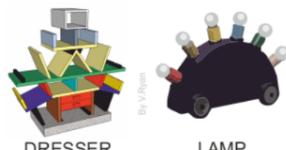
Art Nouveau was the dominant style from the 1870s to 1920s, for the rich, not the working class. It involved the use of elaborate decorative detail. Examples include wrought iron scroll work, highly skilful jewellery, prominent architecture and elaborate interior design. Art Nouveau designs were manufactured by highly skilled workers, in factories / workshops. They were either 'one off' or small batch.



THE MEMPHIS GROUP

Established in the 1980s. Composed of designers based in Italy. Memphis designers, regarded aesthetics as the most important aspect of a product, not its function. Memphis designs/products can be regarded as pieces of art or exhibition pieces, not useable, practical items.

The best known 'Memphis' designer was, Ettore Sottsass.



Ettore Sottsass led the Memphis design group. He designed products that were unusual, with bright colour schemes, producing imaginary designs for everyday objects.

His designs were controversial and unusual. This Ceramic Totem was designed by Sottsass, as part of the Memphis Group. 171cm in height. The ceramic finish is coated in polychrome glazes, producing a colourful reflective surface.

ETTORE SOTTSASS

THE BAUHAUS (GERMANY) 1919 - 1930s

A Design and Architecture School called Bauhaus was established in 1919. Its name is still regarded as a mark of quality of design. It developed into an international arts / design movement and its influence on design has been considerable.

The Bauhaus encouraged designers, to design and develop products that were stylish and aesthetically interesting and mass produced. The Bauhaus has influenced architecture, furniture design, interior and exterior design. There is even a Bauhaus font / writing style.

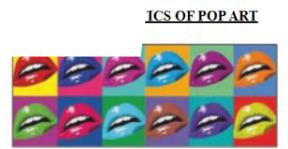
BAUHAUS

CHARACTERISTICS OF BAUHAUS DESIGNS

Bauhaus approached product design in a fresh way. They moved away from traditional skills and fashion to new ideas and ways of manufacturing on an industrial scale.

Bauhaus design characteristics

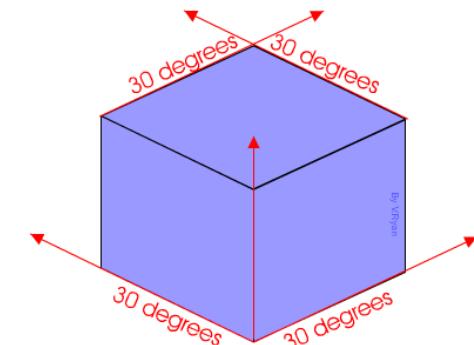
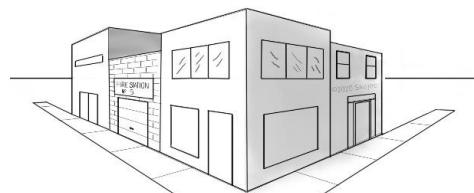
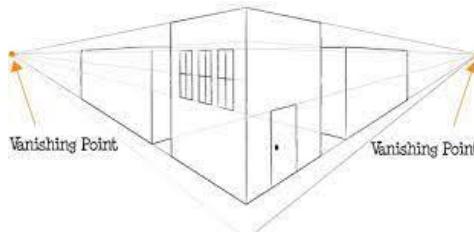
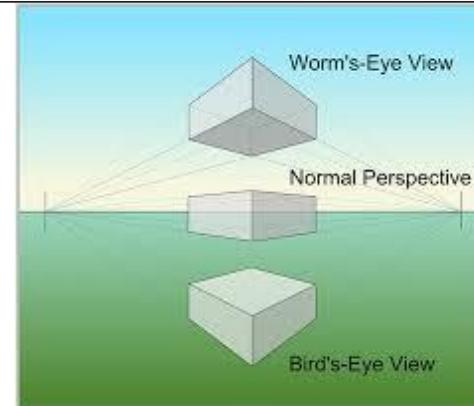
- PRODUCTS MASS PRODUCED
- NEW MATERIALS APPLIED TO PRODUCTS
- SIMPLICITY, FUNCTION AND AESTHETICS
- INNOVATIVE DESIGNS
- NEW MANUFACTURING TECHNIQUES
- AFFORDABLE PRODUCTS
- PRODUCTS FOR THE GENERAL PUBLIC



Images stand for popular culture.
The images are often consumer products - e.g. soup cans and coke bottles.

Pop Art is colourful and distinctive.
Multiple copies printed and sold to the general public.
Comic strips are popular.
Multiple images often used in art work (see above).

2 Point perspective & Isometric drawing





Design & Technology - Resistant Materials



1. CAD – Computer Aided Design

Advantages of CAD	Disadvantages of CAD
Designs can be created, saved and edited easily, saving time	CAD software is complex to learn
Designs or parts of designs can be easily copied or repeated	Software can be very expensive
Designs can be worked on by remote teams simultaneously	Compatibility issues with software
Designs can be rendered to look photo-realistic to gather public opinion in a range of finishes	Security issues - Risk of data being corrupted or hacked
CAD is very accurate	
CAD software can process complex stress testing	

2. CAM – Computer Aided Manufacturing

Advantages of CAM	Disadvantages of CAM
Quick – Speed of production can be increased.	Training is required to operate CAM.
Consistency – All parts manufactured are all the same.	High initial outlay for machines.
Accuracy – Accuracy can be greatly improved using CAM.	Production stoppage – If the machines break down, the production would stop.
Less Mistakes – There is no human error unless pre programmed.	Social issues . Areas can decline as human jobs are taken.
Cost Savings – Workforce can be reduced.	

 CAD Software

 Laser Cutter
  Robots
  Barcode Scanner
  AGV – Automated Guided Vehicle

Modelling—Key Terms:

Model—an accurate copy of a product, sometimes on a smaller scale

Mock Up—put together quickly and simply to test a design idea

Prototype—a real size, working model of a product made to demonstrate a design

Modelling materials might include: card, foam board, corrugated board, plywood, MDF, dowel, clay, plasticine, polymorph, Styrofoam, lego, mechano etc

Thermoplastics are flexible when heated, can be re-shaped, 'magic memory, good for recycling:

- High Density Polyethylene — HDPE
- Low Density polyethylene — LDPE
- Polypropylene — PP
- High Impact Polystyrene — HIPS

Thermoset Plastics are rigid, more heat resistant, once set in shape they cannot be reformed (like concrete):

- Epoxy Resin — ER
- Melamine Formaldehyde — MF
- Urea Formaldehyde — UF
- Phenol Formaldehyde — PF



Finite Resources – limited in supply and cannot be reproduced. These WILL runout e.g coal, oil, metal ores etc

Non Finite Resources – are abundant in supply and can be grown/replaced at the rate they are being used. These WILL NOT run out if managed correctly. e.g Solar, wind, bio oils, wood etc

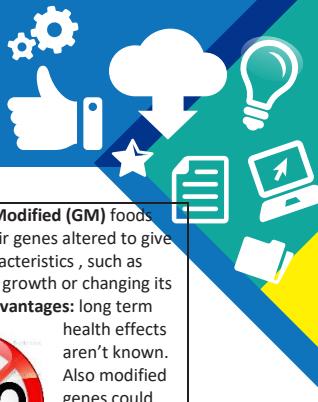


Food Technology





Food Technology



KS3 Y9 Food Tech Knowledge Organiser



Food Provenance: Where your food originally comes from

Grown Food
includes fruits & vegetables + cereals: e.g. wheat, rice etc. 2 methods of farming: **Intensive**



Organic



Reared Food
are animals raised by humans for their meat and other products:
Chickens= eggs.



Cows= Milk



Caught Food
applies to seafood. Wild/caught fish come from seas, rivers, & other bodies of water.



Foods from around the world

	Indian cuisine very popular in the UK
	Italians are famous for pizzas and pasta
	Chinese noodles are a favourite takeaway meal around the world
	South American foods use corn as the main ingredient
	African meals are often based around rice
	French Pastries are famous the world over.



Genetically Modified (GM) foods have had their genes altered to give it useful characteristics, such as improving its growth or changing its colour. **Disadvantages:** long term health effects aren't known. Also modified genes could affect other non GM crops. GM can't be sold everywhere. The EU restricts the import of some GM foods



See FoodTech 101 for all KS3 practicals



Food Ethics
Do animals have rights, even the tasty ones?
What principles govern or determine the foods you eat?

- Customs
- Culture
- Where you're from
- education
- travelling
- necessity

When **planning meals** for special dietary needs it is essential that you first have a good understanding of what a **balanced diet** should include. And what you should avoid.



Diet-Related Health Problems

In many cases, making a few small changes in our foods choices can have a massive effect on our long term health & well-being.



Obesity is very common. It affects roughly one in every four adults in the UK.



Coronary Heart Disease is when the arteries which supply the heart with blood narrow due to fatty deposits



Type 2 Diabetes is a disorder where blood glucose levels stay too high because the pancreas can't produce enough insulin.



Poor Diet can affect the skeleton too! Your bones & teeth can become diseased if you don't get the right amount of nutrients

Special Dietary Needs:



In **sports**, dietary needs can differ widely. Some need lots of protein to build muscle for strength, others focus more on carbs for endurance.



Diets also vary widely between different **religions**. Some eat meat, whilst for others it may be totally forbidden or need to be prepared in a particular way.



People can choose a plant based diet for different reasons. Some for health benefits, for **ethical reason**: e.g. animal right etc.



Allergies and **medical issues** can often lead to individuals requiring a special diet. E.g. coeliac's need to avoid food with gluten.

Music





Music - Beatles - Topic One



C major scale

D major scale (treble clef)

A musical staff in G major (one sharp) with a treble clef. It shows eight notes on five lines. The notes are open circles with stems pointing up. Below the staff, the corresponding letter names are written: D, E, F#, G, A, B, C#, and D.

How to work out harmonising chords

To accompany a melody you need chords.

To work out a chord you need notes 1, 3 and 5

Add 6 to find out a 6th chord

CHORDS

NOTE OF SCALE	CHORD NAME
1	TONIC
4	SUBDOMINANT
5	DOMINANT
6	Minor



INTRO HELP

EIGHT DAYS A WEEK

WORDS AND MUSIC BY
JOHN LENNON AND PAUL McCARTNEY

BRIGHTLY, WITH A SWING FEEL (♩ = 72)

A musical staff in G major with a common time signature. It features four notes: a quarter note on D, a quarter note on E, a half note on G, and another quarter note on D.

OON I NEED YOUR LOVE, BABE.. GUESS YOU KNOW IT'S TRUE,
LOVE YOU EV-'RY DAY, GIRL.. AL-WAYS ON MY MIND.

A musical staff in G major (one sharp) with a common time signature. It features four notes: a quarter note on D, a eighth note on E, a quarter note on G, and another quarter note on D.

HOPING YOU NEED MY LOVE, BABE.. JUST LIKE I NEED YOU. }
ONE THING I CAN SAY, GIRL.. LOVE YOU ALL THE TIME. }

The vocal line starts with a Bm chord, followed by a G6 chord, another Bm chord, and finally an E chord. The lyrics are: "I'm gonna be (5-10)".

D E G D₃

C D E F G



Music - Beatles - Topic One



Word	Definition	In a sentence	Synonyms
Accompany	Verb: be present at the same time	The vocals are accompanied by the chords on the lead guitar and a riff on the bass guitar.	Backing
Chord	Noun: three notes performed together at the same time	This piece of music uses the 1 st , 4 th and 5 th chords of the D Major Scale	Triad of notes
Harmonise	Verb: add notes to produce harmony	The tonic and dominant chords are used to harmonise with the melody	Integrate, blend
Instrumentation	Noun: the combination of instruments used in a piece of music	The instrumentation is typical of pop music with bass guitar, rhythm guitar, drums and vocals.	mechanisms
Manager	Noun: a person who oversees the an artist/band's diary, finances	Checking for performance dates was an issue for the manager as the band were fully booked.	Supervisor
Melody	Noun: a sequence of notes which sound pleasing to the ear	The melody is performed by the vocal line.	Tune
Producer	Noun: a role which oversees the creation of an musical work.	The producer encouraged the use of reverb in the vocal track	Assembler
Rhythm	Noun: a combination of note values which is pleasing to the ear	There is a distinct swing rhythm which is performed throughout the piece of music on all chord based instruments.	Pattern
Root	Noun: the start note of a scale or the start note of a chord	The root note of the C major chord is C. The root note of the D major scale is D.	Tonic note
Texture	Noun: the complexity of a musical composition. The word texture is used because adding different layers or elements to music creates a musical "tapestry."	The piece of music begins with a guitar and bass introduction. This builds in texture in the first verse with the addition of the drums and vocals.	Weave

Drama





Drama



TERM 1 – The Power of Theatre in Education	
Theatre in Education	Theatre in Education (TIE) originated in Britain in 1965 and has continued into the present day. TIE typically includes a Theatre Company performing in an educational setting (e.g. a school) for youth including interactive performances. The aim of TIE is to educate students through Drama, to explore important and/ or relevant issues.
Verbatim Theatre	Verbatim theatre is a form of documentary theatre that is based on the spoken words of real people. Strictly, verbatim theatre-makers use real people's words exclusively, and take this testimony from recorded interviews.
Too Much Punch For Judy	Written by Mark Wheeler in 1988, this hard-hitting verbatim play is based on a tragic drink drive accident that results in the death of the vehicle's front seat passenger, Jo. Her sister Judy, driving the car, escapes physically unhurt - but can never escape the consequences of her own reckless behaviour.
Mark Wheeler	Mark Wheeler is a writer and part time Executive Director of Arts at the Oasis Academy Lord's Hill and director of the Oasis Youth Theatre. Although his name is not well known outside of schools and colleges, he is one of the most-performed playwrights in Britain.
Dramatic Techniques	
Marking the Moment	This is a way of highlighting the most important moment in a scene in order to draw the audience's attention to its significance. There are various ways of marking the moment: <ul style="list-style-type: none">• A still image might be used. Freezing the action at a particular moment fixes it in the minds of the audience and ensures its significance is not lost.• The key moment may be repeated or played 'on a loop'.• Slow motion could be used to highlight a key moment, so that it is not lost on an audience.• Narration or a thought-track could be added as a commentary on what has just occurred.• Lighting and sound. A spotlight can be used to direct the audience's focus towards the key moment and a sound effect can also draw attention to it.
Conscience Alley	A useful technique for exploring any kind of dilemma faced by a character, providing an opportunity to analyse a decisive moment in detail. The class forms two lines facing each other. One person walks between the lines as each member of the group speaks their advice. It can be organised so that those on one side give opposing advice to those on the other. When the character reaches the end of the alley, they make their decision.
Slow Motion	During part of a performance, the action is deliberately slowed. Often this is used to focus on a particular part of the improvisation. Sometimes scenes such as fights or races are shown in slow motion to give more visual impact.
Cross Cutting	Cross-cutting is a device to move between two or more scenes staged in the space at the same time. It's important that the audience know which part of the action they should follow so one part of the action remains in still image while another scene is played out, directing the audience's focus.