Hartford
Church of England
High School

CARITAS ET VERITAS

Year 9

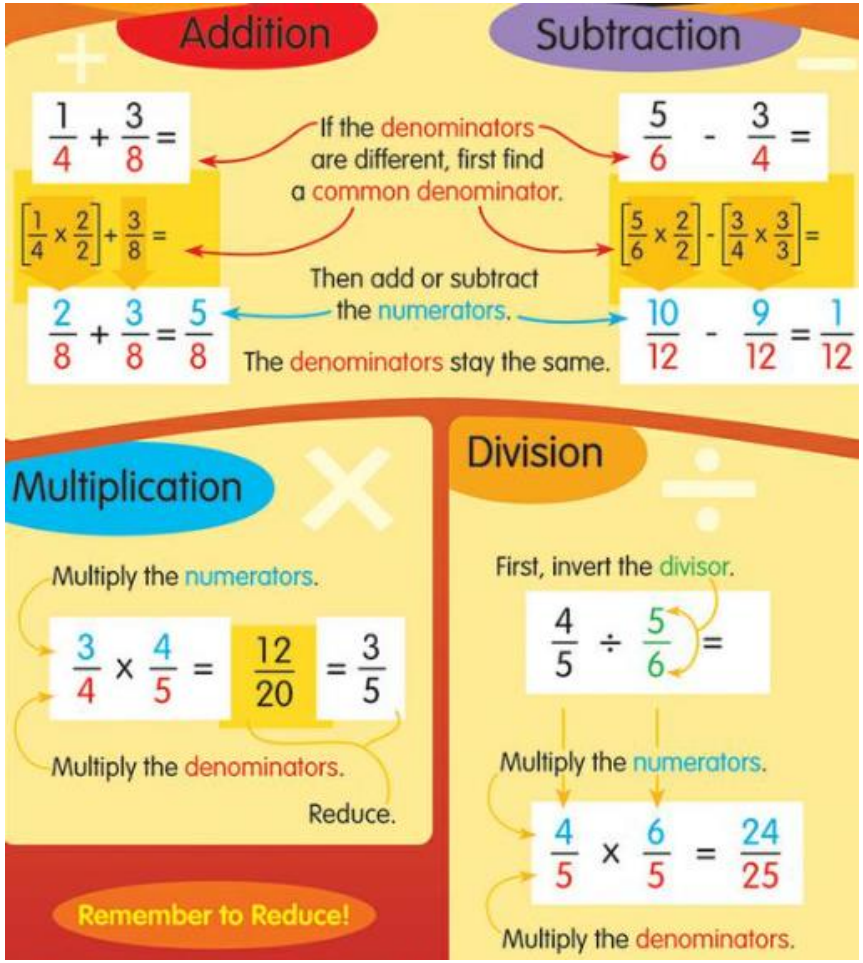
Knowledge Organiser

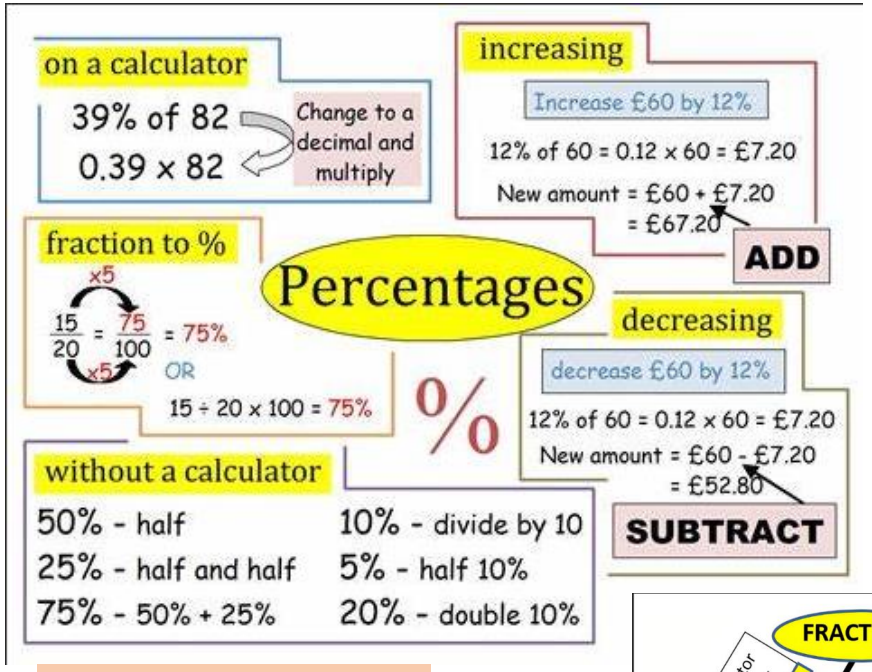
Contents

Maths

Maths

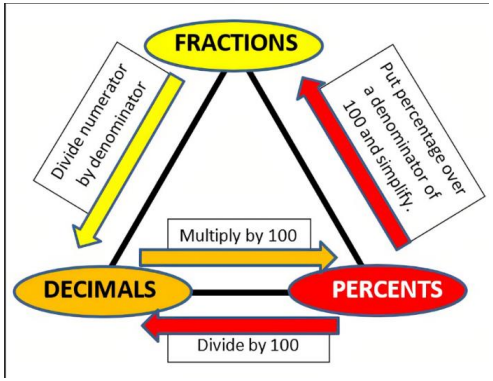
Fractions:





FDP conversions:

Decimal	Percentage	Fraction
0.5	50%	$\frac{1}{2}$
0.25	25%	$\frac{1}{4}$
0.75	75%	$\frac{3}{4}$




English

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English

Political Speech Writing HT2

Persuasive Technique	Definition	Example
Rhetorical question	A question asked in order to prompt further thought or to make a point rather than to get an answer.	If not me, then who? If not now, then when?
Allusion	A reference to another literary, artistic, historical, or musical work.	We must act as our own 'Inspector' in Priestley's famous play, and demand honesty, integrity and truth from those around us.
Satire	The use of humour, irony or hyperbole to expose and criticise people's weaknesses or vices, particularly in the context of contemporary topics.	It looked like society might just be capable of holding itself together. Until a five-year-old boy drove through the playground in an open-top Audi sports car. I watched Audi boy's parents as they walked behind their careering horror of a son, carefully checking he wasn't crashing into strangers' ankles but apparently oblivious to the trail of howling victims left in their wake
Simile	A descriptive technique that compares one thing with another, usually using 'as' or 'like'.	He is as determinedly dishonest as a politician attempting to cover his latest immoral decision.
Emotive language	Words/ phrases deliberately used to evoke a powerful feeling from the reader i.e. sympathy, anger.	I find the notion that I am not worthy of voting for my country's next leader because of my age, both demeaning and deeply insulting.
Statistic	A fact that is supported by numerical data.	The Trussell Trust's foodbank network distributed 1,332,952 three day emergency food supplies to people in crisis, a 13% increase on the previous year. 484,026 of these went to children.
Flattery	Deliberately complimenting the reader.	The very fact that you are reading this article suggests that you are compassionate and understanding of the plight of your fellow man.
Hyperbole	Deliberately exaggerated language.	He was so obnoxious; I was hoping he would be arrested on the spot and given a very long prison sentence purely for not saying please or thank you.
Humour	Describing a surprising or unexpected reaction to an event/ person/ object to create amusement	My brother may look angelic but do not be fooled by his toddler aesthetic: he is a tiny-but very real-psychopath.
Irony/ sarcasm	When the literal meaning and the intended meaning are the opposite, typically for humorous or emphatic effect.	There is nothing I enjoy more than being chastised by a group of people who have
Listing	When the writer includes several words/ phrases/ ideas, one after the other.	We ought be challenging the status quo, demanding more and not settling for easy answers.
Personification	Describing an inanimate object as having human feelings.	If we are not careful, prejudice will become our leader and it will dictate our actions and thoughts.
Eye-witness quotation/ expert quotation	Direct speech from a person who witnessed an event/ direct speech from someone who has an in-depth understanding of the topic.	The British Nursing Association said the move was "hugely concerning" and a stark example of the "extreme workforce pressure" at NHS emergency services, which are facing rising demand while recruitment and retention of nurses gets harder.

Key Term	Definition
Capitalism	An economic and political system in which a country's trade and industry are controlled by private owners for profit, rather than by the state.
Socialism	A political and economic system which promotes public ownership of trade and industry, usually controlled and regulated by the government
Right-Wing	A more traditional, conservative form of politics. Right-wing politics are generally characterised by support for the view that certain social orders and hierarchies are inevitable, natural, normal, or desirable
Left-Wing	Left-wing politics is the support of social equality and egalitarianism, often in opposition to social hierarchy.
Democracy	A system of government decided by the entire population or a majority of eligible citizens, usually through elected representatives.
Political Party	A group of people who share political ideas and work together to achieve power at local or national level, e.g. The Conservatives or The Labour Party
Parliament	Elected representatives of the public who meet and debate to pass new laws. In the UK this is made up of The House of Commons, the House of Lords, and the Monarch.

Connecting words/ phrases: between sentences

However….
Consequently….
Moreover….
Additionally…
That last word is crucial because…
As much as…
Except, of course….
This is especially true of…
Significantly…
Likewise…
From this, it is clear that…
Evidently…
Ultimately….
Yes, you did hear….

Connecting phrases: between paragraphs

Building on the latter idea….
Whilst this idea is important, it is also crucial that we consider….
Furthermore, we must acknowledge….
Not only…….but also….
Additionally, it is vital that we do not overlook….
Let's also reflect on the notion that….
Whilst it is widely accepted that…
It does not stop there. I would implore you to also consider…
Let me bring your attention to….
You might think that….
You may have detected….

An Effective Introduction Might Include…..

An analogy i.e. outlining a scenario that is comparable to the topic you will be exploring.
A 'confession' i.e. a surprising/ personal statement.
A description of the first time you became aware of the issue.
A description of a place/ person that is relevant to the topic.
A consideration of the of 'personal' impact and then the 'societal' impact of the topic.
A quotation that links to your topic.

Science

Science: SC1-2 States of Matter & Methods of Seperating

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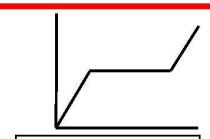
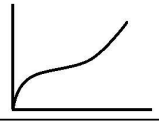


Melting point of a pure substance



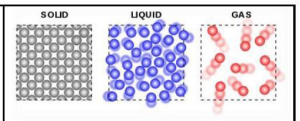
Melting point of an impure substance

Pure substances	***A pure substances 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.

Pure substances

EDEXCEL TOPIC SC1-2: STATES OF MATTER

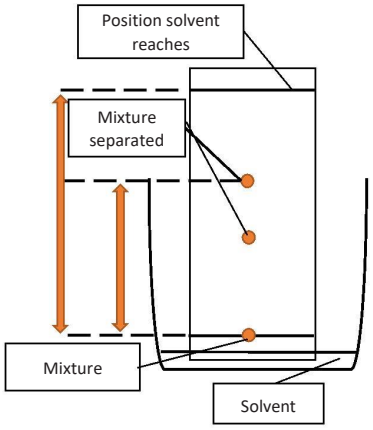
States of matter

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

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.**

Method of separating substances



Chromatography

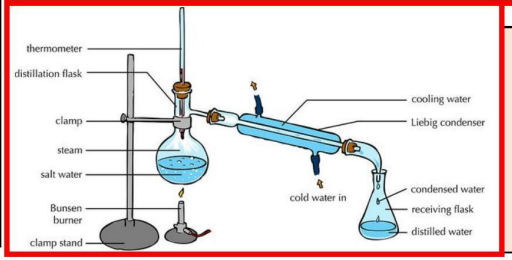
Chromatography	***Can be used to separate mixtures and help identify substances.***	Involves a mobile phase (e.g. water or ethanol) and a stationary phase (e.g. chromatography paper).
R_f values	***The ratio of the distance moved by a compound to the distance moved by solvent.***	$R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$
Pure substances	***The compounds in a mixture separate into different spots.***	This depends on the solvent used. A pure substance will produce a single spot in all solvents whereas an impure substance will produce multiple spots.

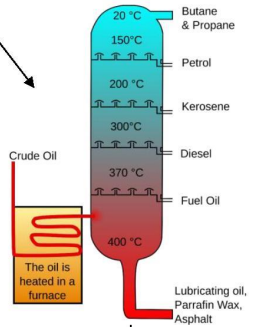
Fractional distillation

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.
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	***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.

Science: SC1-2 States of Matter & Methods of Seperating

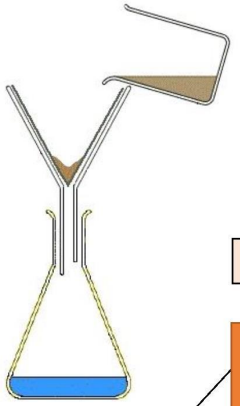
EDEXCEL TOPIC SC1-2: STATES OF MATTER

Methods of separating substances

Filtration

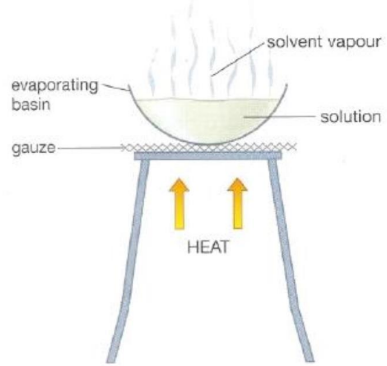
Filtration	*This technique separates substances that are insoluble in a solvent from those that are soluble*	An example is sand in water; the sand will collect in the filter paper and the water will move through the it.

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.



Crystallisation

Crystallisation	*This technique separates a soluble substance from a solvent by evaporation*	An example is the crystallisation of sodium chloride from a salt solution.



Purifying substances

Potable water

Sterilising agents include chlorine, ozone and UV light.

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.

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*	1. Choosing appropriate source of fresh water 2. Sedimentation 3. Passing the water through filter beds 4. Chlorination

Waste water treatment

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.

Science: SP1 Motion

Hartford Church of England High School

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

Wind	5 – 20 m/s

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

Speed is rarely constant.

Average speed = distance ÷ time

s = d ÷ t

Acceleration is negative, object is decelerating

Acceleration is positive, object is accelerating

a = (v – u) ÷ 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

$v^2 – u^2 = 2 X a X$ 뀨

(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

Acceleration in free fall = 10m/s^2

Equations

Measuring Motion

EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Describing Motion

Scalar and vector quantities

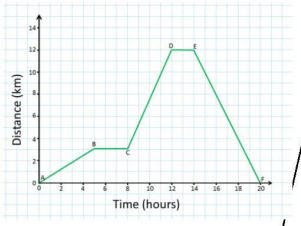
Speed	How fast an object moves	The speed of a car is 30m/s. A car moves forward with a velocity of 30m/s.
Velocity	Speed + direction	
Distance	How far	The table is 1m long.
Displacement	Distance + direction	The beach is 1km due east of the town.

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.

Core Practical
Determine the speed of objects
Using light gates

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)

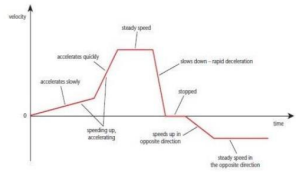
Motion Graphs



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	



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

Calculate acceleration	Use the gradient gradient = vertical ÷ horizontal

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 = ½ base X height

Science: Forces & Motion

Wind	5 – 20 m/s

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$v^2 - u^2 = 2 \times a \times$ 뀍

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Equations

Measuring Motion

Core Practical

Determine the speed of objects
Using light gates

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Velocity	Metre/second (m/s)

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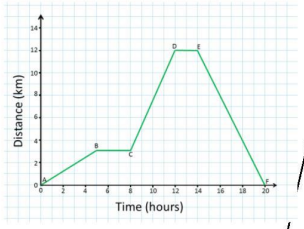
EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Motion Graphs



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Science: Forces & Motion

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EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Describing Motion

Scalar and vector quantities

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.

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.

Speed is rarely constant.

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

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

	5 – 20 m/s

Measuring Motion

Average speed = distance ÷ time

s = d ÷ t

Equations

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

a = (v – u) ÷ t

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

Acceleration is positive, object is accelerating

Acceleration is negative, object is decelerating

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

$v^2 - u^2 = 2 \times a \times$ 뀨

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

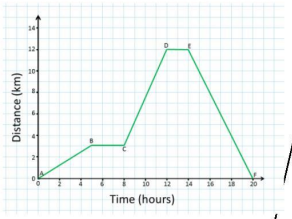
	Estimate how long it takes the object to stop and then use the acceleration equation

Acceleration in free fall = 10m/s^2

	Determine the speed of objects
	Using light gates

	Metre/second (m/s)
	Metre (m)
	Second (s)
	Ampere (A)
	Kelvin (K)
	Metres/second squared (m/s^2)
	Metre/second (m/s)

Motion Graphs



Distance-time graphs

Distance-time graph	*Shows how far an object moves along a straight line*
	Use the gradient of graph
	Graph line flat
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	If the graph is a straight line, the speed along the line is equal to the gradient of the line	Gradient = vertical ÷ horizontal
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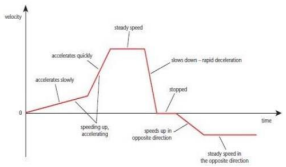
Velocity-time graphs



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

	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 = ½ base X height

Science: Forces & Motion

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EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Describing Motion

Scalar and vector quantities

Speed		
Velocity		
Distance		
Displacement		

Scalar	
Vector	

Measuring Motion

Car in town	
Car on motorway	
Train	
Sound in air	
Wind	

Walking	
Running	
Cycling	

Speed

Average speed

$s = d \div t$

Equations

Acceleration is negative,

Acceleration is positive,

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

Acceleration	

$v^2 - u^2 = 2 \times a \times$ 뀌

Uniform acceleration	

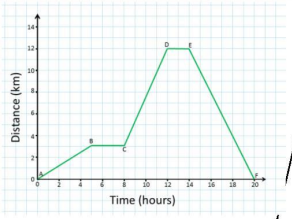
Estimating Acceleration

Acceleration in free fall = $10 m/s^2$

Core Practical

Speed	
Distance	
Time	
Current	
Temperature	
Acceleration	
Velocity	

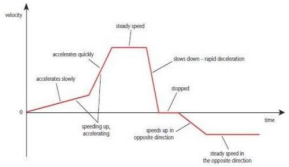
Motion Graphs



Distance-time graphs

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

Calculating speed from d-t graph		Gradient =



Velocity-time graphs

Velocity-time graph	*Shows how fast an object moves*
Gradient of graph	
Graph line flat	
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Positive diagonal line	
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Graph line curves	

Calculate acceleration	

Calculating distance travelled from v-t graph		

Science: Forces & Motion

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EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Measuring Motion

Describing Motion

Scalar and vector quantities

Equations

Acceleration

Acceleration

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

$v^2 - u^2 = 2 \times a \times$ 뭐

$s = d \div t$

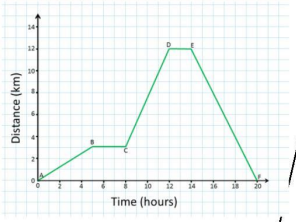
Average speed

Acceleration in free fall = $10 m/s^2$

Core Practical

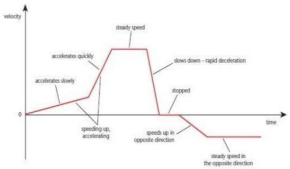
Motion Graphs

Distance-time graphs



Distance-time graph	*Shows how far an object moves along a straight line*

Velocity-time graphs



Velocity-time graph	*Shows how fast an object moves*

Science: Forces & Motion

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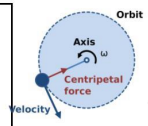
EDEXCEL TOPIC 2 - MOTION AND FORCES (part 2)

Forces

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.

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.



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

W = m X g

Weight = mass X gravitational field strength

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

Each Kg has a gravitational pull of 9.8N.

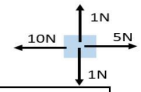
Gravitational field strength	Gravity exerted around an object.	Earth's gfs = 9.8N/kg.

Force	*Push or pull*	Stretch, squash, turn.
Contact force	*Exerted between two objects when they touch*	Friction, air resistance, tension.
Non-contact force	*Exerted between two objects without touching*	Gravity, electrostatic forces, magnetic forces.

10N

An arrow can be used to show vectors	*Length of arrow = magnitude of vector*
	Direction of arrow = direction of vector

Object moves left with a force of 5N.



Free body diagram	*Show magnitude and direction of all forces upon an object*

Resultant force	*The overall effect of all of the forces acting upon an object*
	Two forces acting in the same direction are added.
	Two forces acting in the opposite direction are taken away.

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.	

Frictional forces decelerate a moving object and bring it to rest.

. An alert driver has a reaction time of 1s.

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*

Speed affects both thinking and braking distances.

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

PHYSICS ONLY

Speed increases so does stopping distance.

Speed increases thinking distance also increases at the same rate.

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

Factors affecting stopping distances	Drivers reaction times	Drinking alcohol, taking drugs, tired.
	Braking distances	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.

Newton's Laws and Momentum

HIGHER ONLY

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

Newton's first Law	*Balanced forces*	When the resultant force on an 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.

Force = mass X acceleration.

F = m X a

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.

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.

Momentum

F = (mv – mu) ÷ t

Is a vector.

Force = change in momentum ÷ time.

Momentum = mass X velocity

p = m X v

Changes in momentum	*Force is applied to stop momentum*	**If momentum changes slowly, the force applied is small so less damage.**

Crumple zones

HIGHER ONLY

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

Science: Forces & Motion

Hartford Church of England High School

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EDEXCEL TOPIC 2 - MOTION AND FORCES (part 2)

Forces

- Each Kg has a gravitational pull of 9.8N.
- Gravity exerted around an object. | Earth's gfs = 9.8N/kg.
- W = m X g
- Weight = mass X gravitational field strength
- *Force acting upon an object due to gravity* | Newton (N)
- *How much matter* | Kilograms (Kg)

Contact and Resistant forces

- *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.

Reactions and stopping

- *How fast someone reacts*
- Dropping the ruler test or computer based test.
- Typical reaction time = 0.2 – 0.6s.
- Frictional forces decelerate a moving object and bring it to rest.
- . An alert driver has a reaction time of 1s.
- *Distance travelled whilst the driver reacts*
- *Distance travelled whilst the car is stopped by the brakes*
- *Total thinking and braking distances*
- 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.

Newton's Laws and Momentum

- Constant speed, direction changes.
- Constant speed, direction changes.
- There must be a resultant force acting upon the object.
- 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.
- *This force acts towards the centre of the circle*
- *Objects in a circular motion, change direction but keep a constant speed*
- *The overall effect of all of the forces acting upon an object*
- Two forces acting in the same direction are added.
- Two forces acting in the opposite direction are taken away.
- Object moves left with a force of 5N.
- *Length of arrow = magnitude of vector*
- *Direction of arrow = direction of vector*
- *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)*

HIGHER ONLY

- *When objects continue in the same state of motion* | Speed or direction only changes if a resultant force acts on the object
- *Balanced forces* | When the resultant force on an still object = 0, the object is stationary. / When the resultant force on a moving object = 0, the object is at a constant speed.
- *Unbalanced forces* | When the resultant force is greater than 0, the object accelerates. It could speed up, slow down or change direction.
- *Equal and opposite forces* | When two objects interact the forces exerted are equal and in an opposite direction.

PHYSICS ONLY

- Car's mass ~1000Kg, single decker bus ~10,000Kg, loaded lorry ~30,000Kg
- Speed increases so does stopping distance.
- Speed increases thinking distance also increases at the same rate.
- 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

Momentum

- Investigate force, mass and acceleration
- Vary mass added to trolley.
- Acceleration is proportional to resultant force.
- Acceleration is inversely proportional to mass.
- Force = mass X acceleration.
- F = m X a
- Frictional forces decelerate a moving object and bring it to rest.
- *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) ÷ t
- Is a vector.
- Force = change in momentum ÷ time.
- Momentum = mass X velocity
- p = m X v
- Crumple zones
- *Force is applied to stop momentum* | **If momentum changes slowly, the force applied is small so less damage.**

HIGHER ONLY

- Inertial mass = force ÷ 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.

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EDEXCEL TOPIC 2 - MOTION AND FORCES (part 2)

Forces

- Each Kg
- Gravitational field strength
- W = m X g
- Weight =
- Weight
- Mass
- Car travelling around a bend
- Satellite orbiting the Earth
- acting upon the object.
- An object travelling in a circle at a constant speed,
- Centripetal force
- Changing velocity
- HIGHER ONLY
- Inertia
- Force
- Contact force
- Non-contact force
- Resultant force
- 10N
- An arrow can be used to show vectors
- Object moves
- 1N, 10N, 5N, 1N
- Free body diagram
- Weight
- Mass
- Gravitational field strength
- Force
- Acceleration
- Momentum
- Velocity
- Time

Contact and Resultant forces

Reactions and stopping

- Measuring reaction times
- Frictional forces decelerate
- An alert driver
- Thinking distance
- Braking distance
- Stopping distance
- Speed affects
- Factors affecting stopping distances
- Braking and kinetic energy

Core Practical

- .

HIGHER ONLY

Newton's Laws and Momentum

- Force =
- F = m X a
- Newton's first Law
- Newton's second Law
- Newton's third Law
- Car's mass single decker bus loaded lorry
- PHYSICS ONLY
- Speed increases
- Speed increases
- If speed doubles,
- Work done to bring a vehicle to rest =
- Conservation of momentum
- F = (mv – mu) ÷ t
- Is a vector.
- Momentum =
- p = m X v
- Momentum
- Force = =
- Crumple zones
- Changes in momentum
- HIGHER ONLY
- Inertial mass

Science: Forces & Motion

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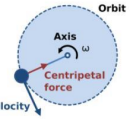
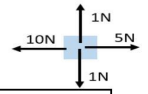
10N





HIGHER ONLY

Forces

Contact and Resultant forces

Reactions and stopping

EDEXCEL TOPIC 2 - MOTION AND FORCES (part 2)

HIGHER ONLY

Newton's Laws and Momentum

Frictional forces
.

PHYSICS ONLY

Momentum

Crumple zones

HIGHER ONLY

History

History - World War II

Key Events in World War 2

September 1st 1939	Germany invades Poland.
September 3rd 1939	Britain and France declare war on Germany (Start of WW2).
January, 1940	Rationing introduced across the UK.
May – June, 1940	Dunkirk evacuated and France surrenders to Germany. Germany uses blitzkrieg to take over much of Western Europe.
July, 1940	Germany launches air attacks on Great Britain (The Battle of Britain and the Blitz begin) Germany, Italy and Japan sign the Tripartite Pact creating the axis alliance.
December 7th 1941	The Japanese attack the US navy in Pearl Harbour. The next day, the USA enters the war fighting with the allies
June 6th 1944	D-day and the Normandy invasion. Allied forces invade France and push back the Germans.
April 30th 1945	Adolf Hitler commits suicide
May 7th 1945	Germany surrenders and Victory in Europe is declared the next day.
August 1945	Atomic bombs dropped on Hiroshima and Nagaski, Japan by the USA killing approximately 226,000 people.
September 2nd 1945	Japan surrenders signalling the end of WW2
July 1954	Rationing ends in the UK

Leaders

United Kingdom	Germany
	
Born: 30th Nov 1874 Died: 24th Jan 1965	Born: 20th April 1889 Died: 30th April 1945
"I am easily satisfied with the very best." **Winston Churchill**	"Strength lies not in defence but in attack." **Adolf Hitler**

Countries involved in WW2

Allies	Axis
USA, Britain, France, USSR, Australia, Belgium, Brazil, Canada, China, Denmark, Greece, Netherlands, New Zealand, Norway, Poland, Czechoslovakia, Yugoslavia, India, South Africa	Germany, Italy, Japan, Hungary, Romania, Bulgaria, Finland

Key Vocabulary

Allies	Countries which fought on Britain's side.	Axis	Countries which fought on Germany's side.
Evacuee	Someone who was evacuated. Moved from a dangerous place to be safer.	Nazi	Member of a fascist German political party. They came to power in 1933.
Black out	Ensuring no lights were visible after dark so buildings can't be spotted.	Blitz	Aerial bombings on the UK, mainly cities including London, by Germany.
Rationing	The controlled distribution of limited resources such as food and clothing.	Holocaust	Mass murder of Jewish people and other groups by the Nazis.
Air raid shelter	A building to protect people from bombs. Made from corrugated iron usually found in people's gardens.	Fascism	Right wing political view associated with not allowing apposition and total control by a dictator.
Trenches	A long narrow ditch used for troops to shelter from enemy attack.	Blitzkrieg	Translates to 'lightning war'. Germany's quick strike invasion of Western Europe.

			
Enigma, machine used by Nazis to communicate	Children being evacuated out of London	Swastika, the Nazi party symbol	Supermarine Spitfire Mk 1, British fighter plane

History - World War II

Research:

Why was Northwich important during WWII? See if you can come up with at least THREE reasons.

Explain what the German Enigma machines were and why Alan Turing and his work was important to Britain's final victory

Explain who the Home Guard were

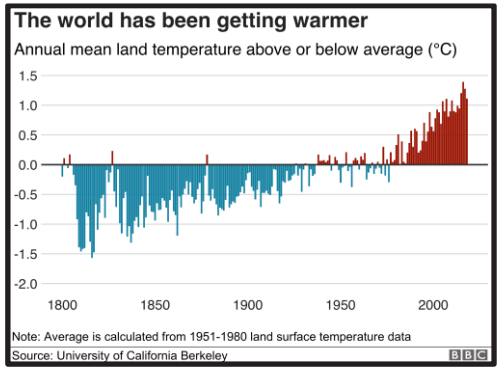
Research a member of your family who fought in the war and create a factfile about them

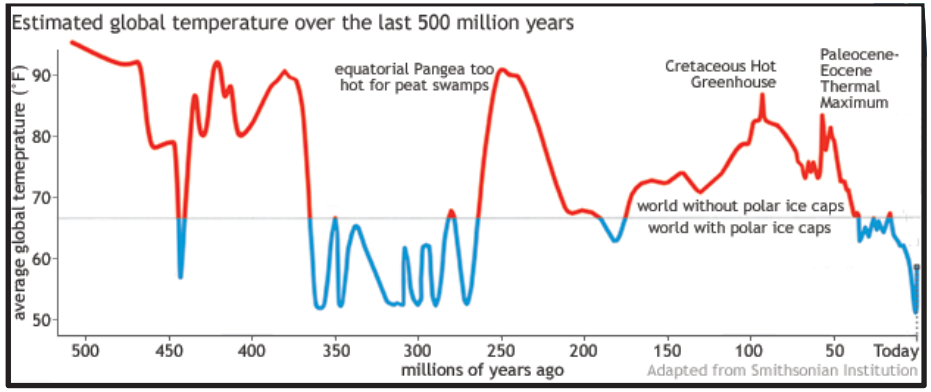

Geography

Geography - Climate Change

KEY VOCABULARY

Adaptation
Alternative energy
Atmosphere
Axial tilt
Carbon capture and storage (CCS)
Carbon dioxide
Carbon sinks
Climate change
Eccentricity
Enhanced greenhouse effect
Fossil fuel
Global warming
Greenhouse effect
Greenhouse gas
Ice cores
Milankovitch cycle
Mitigation
Nitrous oxide
Precession
Quaternary period
Renewable energy
Solar flare
Solar radiation
Sunspots
Volcanic eruption





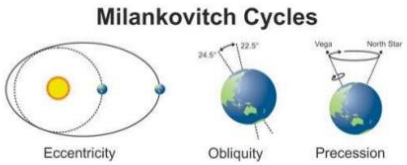
Evidence for past changes in climate:

- Ice cores
- Ocean sediments
- Rising sea levels
- Shrinking glaciers
- Shrinking sea ice

Human causes of climate change

Carbon dioxide	Burning fossil fuels	Car exhausts	Deforestation and burning trees
Nitrous oxide	Sewage treatment	Car exhausts	Electricity production
Methane	Farm livestock	Rice farming	Rotting rubbish in landfill

Milankovitch Cycle



Natural causes of climate change are:

- The Milankovitch cycles
- Solar activity: sunspots, solar flares average 11 year cycle
- Volcanic activity: Ash blocks sun, Sulphur dioxide mixes with water =sulphuric acid = reflects sun= volcanic winter

Geography - Climate Change: Management (adaptation and mitigation)

Mitigating against climate change means reducing the impacts of climate change

You need to be able to:
- **Describe the methods**
- **Explain how they will work**
- **Evaluate their effectiveness**

Adapting to climate change means accepting that things will change and finding ways to alter what we do

Alternative energy sources:
- Solar, wind,
- hydroelectric.
- Nuclear

Burring fossil fuels produces greenhouse gases so reducing their use is important in reducing greenhouse gas emissions

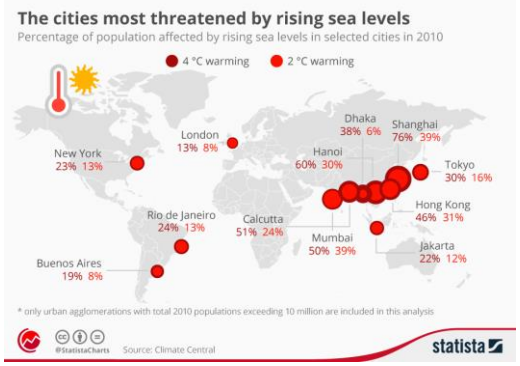
What are the global impacts of climate change?
- Lower crop yields
- Increased risks of drought and floods
- Increased heat related diseases
- Stronger tropical storms
- Increased desertification
- Wildlife extinction and changing migration
- Rising sea levels coastal flooding

Many changes will have to happen in <u>Agriculture</u>:
- Introduce drought resistant plants
- Use new irrigation systems
- Introduce water harvesting
- Plant trees for shade
- Change when you plant and sow seeds

Carbon capture:
Filtering carbon out of the air, diluting it in water and injecting it into the ground so it is locked away

Planting trees: Trees absorb CO2. The more we plant the more CO2 is locked away

Can you identify social, economic and environmental impacts?



Managing <u>water supply</u> will become increasingly important:
Harvesting water off glaciers in the summer and storing it so it freezes in winter ready to provide regular water supply in the summer as the ice melts

International agreements:
2005 in Kyoto
2009 in Copenhagen
2015 in Paris
2021 in Glasgow

Managing <u>rising sea levels</u>:
In the Maldives they have
- Built sea walls
- Houses on stilts
- Build artificial islands
- Restore coastal mangrove


Religious
Studies

Religious Studies - Existance 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 	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. ☒ 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**.	
First Cause Argument 	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) ☒ 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.	
Argument from Miracles 	The **Argument from Miracl**es 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. ☒ 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**.	
Special and General Revelation 	**<u>Special Revelation</u>** 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	**<u>General Revelation</u>** 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.
Nature of God 	**<u>Omnipotent, Omniscient, Benevolent</u>** According to the Bible and Christian teachings, God is **omnipotent** (all-powerful), **omniscient** (all-knowing) and **benevolent** (all-loving).	**<u>Problem of Suffering</u>** 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.
	<u>Personal vs Impersonal</u> 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.	**<u>Transcendent vs Immanent</u>** 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.


Spanish

Hartford Church of England High School

Spanish

La Tecnología y Mis Opciones

Las Aplicaciones	
Me gusta usar	I like to use
Prefiero usar	I prefer to use
Mi aplicación favorita es	My favourite app is
TikTok/Instagram/Whatsapp Facebook/Spotify/You tube	

¿Por qué?	
Porque puedo…	Because I can…
Ya que se puede….	Because you can…
Dado que me chifla….	Because I really love…

Actividades	
subir videos	(to) upload videos
ver videos	(to) watch videos
descargar música	(to) download music
contactar a la familia	(to) contact family
escuchar música	(to) listen to music
compartir fotos	(to) share photos
pasar el tiempo	(to) pass the time
buscar información	(to) look for information
organizar salidas con amigos	(to) organise outings with friends

Adjetivos	
muy práctico/a	very practical
bastante popular	quite popular
fácil a usar	easy to use
un poco útil	a bit useful
gratis	free
muy rápido/a	very fast
a veces informativo/a	sometimes informative
entretenido/a	entertaining
peligroso/a	dangerous
adictivo/a	addictive
te engancha	it gets you hooked
una pérdida de tiempo	a waste of time
amplio/a	wide ranging/reaching

Las Ventajas / Las Desventajas	
Las redes sociales	Social networks/media
Las ventajas son que	The advantages are that
Las desventajas son que	The disadvantages are that
Lo bueno es que	The good thing is that
Lo malo es que	The bad thing is that

Mi Ordenador	
En mi móvil	**On my mobile**
En mi ordenador/computadora	**On my computer**
En mi portátil	**On my laptop**
En mi Ipad	**On my Ipad**
Descargo música	I download music
Chateo	I chat
Hago mis deberes	I do my homework
Compro regalos	I buy gifts/presents
Veo DVDs	I watch DVDs
Uso Facebook/Uso Twitter	I use Facebook / Twitter
Navego por internet	I surf the Internet
Juego con los videojuegos	I play videogames
Leo y escribo correos	I read and write emails
Comparto fotos	I share photos
Subo videos	I upload videos

Ayer	
En linea ayer	**Online yesterday**
Descargué música	I downloaded music
Chateé	I chatted
Hice mis deberes	I did my homework
Compré regalos	I bought gifts/presents
Vi DVDs	I watched DVDs
Usé Facebook/ Twitter	I used Facebook / Twitter
Navegué por internet	I surfed the Internet
Jugué con los videojuegos	I played videogames
Leí y escribí correos	I read and wrote emails
Comparté fotos	I shared photos
Subí videos	I uploaded videos

Mis Estudios	
Mi asignatura favorita es	My favourite subject is
Soy fuerte en	I am strong in
Soy débil en	I am weak in
Saco buenas notas en	I get good grades in
Apruebo mis exámenes en	I pass my exams in
Suspendo mis exámenes en	I fail my exams in

Personalidades	
Soy comprensivo/a	I am understanding
Soy creativo/a	I am creative
Soy trabajador/a	I am hardworking
Soy hablador/a	I am chatty
Soy paciente	I am patient
Soy fuerte	I am strong

Trabajos	
Trabajo como camarero/a	**I work as** a waiter/waitress
Trabajo de doctor/a	**I work as** a doctor
bombero/a	Fireman/woman
cocinero/a	Chef
cartero/a	Postman/woman
profesor/a - maestro/a	Teacher
conductor/a	Driver
peluquero/a	Hairdresser
abogado/a	Lawyer
ingeniero/a	Engineer

Planes del Futuro	
Cuando sea mayor	When I am older
Cuando termine mis exámenes	When I finish my exams
Cuando tenga veinte años	When I am 20 years old
En el futuro	In the future
voy a ir a la universidad	**I am going** to go to university
me gustaría buscar un empleo	**I would like** to find a job
trabajar como voluntario	to work as a volunteer
comprar una casa	to buy a house
comprar un coche	to buy a car
aprender a conducir	to learn to drive
casarme	to get married
tener hijos	to have children
ser azafata	to be an air steward
vivir en España	to live in Spain

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Spanish

YEAR 9 GRAMMAR MAT

Present Tense (actions completed in the present)		
Infinitive (verb)	**Take of the ending (AR/ER/IR)**	**Add the endings (I, YOU, HE/SHE, WE)**
ESTUDI**AR**	ESTUDI	ESTUDI**O** / COM**O** / VIV**O** (I STUDY / EAT / LIVE)
COM**ER**	COM	ESTUDI**AS** / COM**ES** / VIV**ES** (YOU STUDY / EAT / LIVE)
		ESTUDI**A / COME / VIVE** (HE OR SHE STUDIES / EATS / LIVES)
VIV**IR**	VIV	ESTUDI**AMOS** / COM**EMOS** / VIV**IMOS** (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)**
VISIT**AR**	VISIT	VISIT**É** (I VISITED) VISIT**AMOS** (WE VISITED)
COM**ER**	COM	COM**Í** (I ATE) COM**IMOS** (WE ATE)
BEB**ER**	BEB	BEB**Í** (I DRANK) BEB**IMOS** (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

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 REALY 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

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French

Mes Choix

Les Applications	
J'aime utiliser	I like to use
Je préfère utiliser	I prefer to use
Mon application préférée est …	My favourite app is

Pourquoi?	
parce que je peux	because I can…
parce qu'on peut	because you can…
parce que j'aime beaucoup	because I really love…

Activités	
télécharger des vidéos	(to) upload videos
regarder des vidéos	(to) watch videos
télécharger de la musique	(to) download music
contacter la famille	(to) contact family
écouter de la musique	(to) listen to music
partager des photos	(to) share photos
passer du temps	(to) pass the time
chercher de l'information	(to) look for information
organiser des sorties	(to) organise outings with friends

Adjectifs	
très pratique	very practical
assez populaire	quite popular
facile à utiliser	easy to use
un peu utile	a bit useful
gratuit(e)	free
très rapide	very fast
Informatif/informative	informative
divertissant(e)	entertaining
dangereux/dangereuse	dangerous
addictif/addictive	addictive
on devient accro	you become hooked/addicted
une perte de temps	a waste of time
efficace	effective

Les avantages / Les inconvénients	
Les réseaux sociaux	Social networks/media
L'avantage c'est que	The advantage is that
L'inconvénient c'est que	The disadvantage is that
Le positif c'est que	The positive thing is that
Le négatif c'est que	The negative thing is that

Mon ordinateur	
Sur mon portable	**On my mobile**
Sur mon ordinateur	**On my computer**
Sur mon ordinateur portable	**On my laptop**
Sur mon ipad	**On my Ipad**
Je télécharge de la musique	I download music
Je tchatte	I chat
Je fais mes devoirs	I do my homework
J'achète des cadeaux	I buy gifts/presents
Je regarde des DVDs	I watch DVDs
J'utilise Facebook/Twitter	I use Facebook / Twitter
Je surfe l'internet	I surf the Internet
Je joue aux jeux-vidéos	I play videogames
Je lis et écris des emails	I read and write emails
Je partage des photos	I share photos
Je télécharge des vidéos	I upload videos

Hier	
En ligne hier	**Online yesterday**
J'ai téléchargé de la musique	I downloaded music
J'ai tchatté	I chatted
J'ai fait mes devoirs	I did my homework
J'ai acheté des cadeaux	I bought gifts/presents
J'ai regardé des DVDs	I watched DVDs
J'ai utilisé Facebook/Twitter	I used Facebook / Twitter
J'ai surfé l'internet	I surfed the Internet
J'ai joué aux jeux-vidéos	I played videogames
J'ai lu et écrit des emails	I read and wrote emails
J'ai partagé des photos	I shared photos
J'ai téléchargé des vidéos	I uploaded videos

Mes études	
Ma matière préférée est	My favourite subject is
Je suis fort(e) en	I am strong in
Je suis faible en	I am weak in
J'ai de bonnes notes en	I get good grades in
Je réussis mes examens de	I pass my exams in
J'échoue à mes examens de	I fail my exams in

Personnalité	
Je suis compréhensif/ive	I am understanding
Je suis créatif/ive	I am creative
Je suis travailleur/euse	I am hardworking
Je suis bavard/e	I am chatty
Je suis patient/e	I am patient
Je suis fort/e	I am strong

Emplois	
Je travaille comme serveur/serveuse	**I work as** a waiter/waitress
Je travaille comme médecin	**I work as** a doctor
pompier/pompière	fireman/woman
chef	chef
facteur/factrice	postman/woman
professeur/professeure	teacher
chauffeur/chauffeuse	driver
coiffeur/coiffeuse	hairdresser
avocat/avocate	lawyer
ingénieur/ingénieure	engineer

Projets pour l'avenir	
Quand je serai plus âgé	When I am older
Quand je finirai mes examens	When I finish my studies
Quand j'aurai vingt ans	When I am 20 years old
À l'avenir	In the future
Je vais aller à l'université	**I am going** to go to university
Je voudrais trouver un emploi	**I would like** to find a job
traviller comme volontaire/bénévole	to work as a volunteer
acheter une maison	to buy a house
acheter une voiture	to buy a car
apprendre à conduire	to learn to drive
me marier	to get married
avoir des enfants	to have children
être steward/hôtesse de l'air	to be an air steward
	to live in Spain

Hartford Church of England High School

French

YEAR 9 GRAMMAR MAT

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)
ÉTUDI**ER**	Add the following endings:	J'ÉTUDIE / TU ÉTUDIES / IL/ELLE ÉTUDIE/ON ÉTUDIE
FINI**R**		JE FINIS / TU FINIS/IL/ELLE FINIT/ON FINIT)
ATTEND**RE**		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
VISIT**ER**	J'AI VISITÉ (I VISITED)	NOUS AVONS/ON A VISITÉ (WE VISITED)
FIN**IR**	J'AI FINI (I FINISHED)	NOUS AVONS/ON A FINI (WE FINISHED)
ATTEND**RE**	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) VISITER (to visit)
Nous allons (We are going)	**IR** – FINIR (to finish) CHOISIR (to choose) SORTIR (to go out)
Je voudrais (I would like)	**RE** – BOIRE (to drink) FAIRE (to do) PRENDRE (to take)
Nous voudrions (We would like)	

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 FUTRE (actions you WILL do)

Infinitives	Add an **AI** to ER and IR infinitives	
JOUER (to play)	**AI**	I **will** play (Je jouer**ai**)
FINIR (to finish)	**AI**	I **will** finish (Je finir**ai**)

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


IT

IT

Programming

Programming is a set of instructions a computer uses to work and run correctly and efficiently. Without Programming most technology wouldn't exist!

Python is a high level programming language

We are going to continue using an IDE to write and produce code in IT this term.

Data Types

Data Type	Definition
String	Text eg: "Hello"
Integer	Whole number eg: 32
Float/Real	Decimal number eg: 1.2
Boolean	Two values eg: true or false
Character	A single character eg: b

Debugging

If you have a syntax error look for errors in your:

- Spelling
- Punctuation
- Capitals
- Indentation
- Use of functions

Key terms

IDE	Integrated development environment
Debugging	Getting rid of an error within a programme.
Algorithm	A method of planning a programme either using Pseudocode or a flowchart.
Flowchart	A combination of shapes and arrows to demonstrate a process within a programme
Pseudocode	A planning method used to write code where both English and short script code is used. It is basically "fake code"
While Loop	A programme that repeats while the condition being tested is true.
Iteration	Where something repeats several times. This occurs within a loop.
Syntax error	The most common error in python where the programme doesn't understand the code and can therefore not run it.
Logic Error	Logic errors in a program are mistakes in the algorithm you have devised to perform the required task
Counter	Counter variable to say how many times the user attempted the question
Compiler	A compiler or interpreter to translate your program into machine code
Error diagnostics	Used to point out syntax errors
Searching	A process used in python to find a specific piece of data.
Sorting	Where you organise data in a way that allows the user to search/find information easier.

Art

Hartford Church of England High School

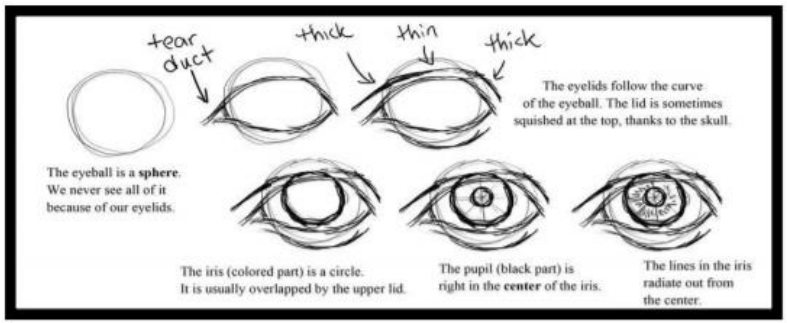
ART

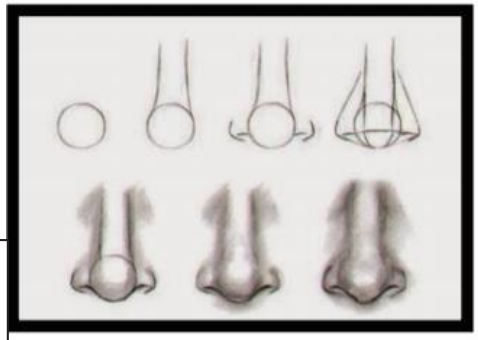
Portrait

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.

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

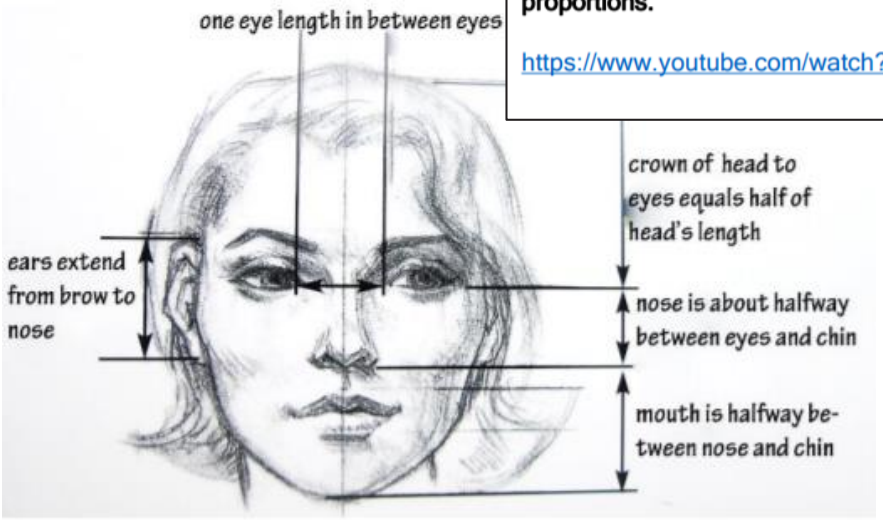




Key Vocabulary

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

Proportion



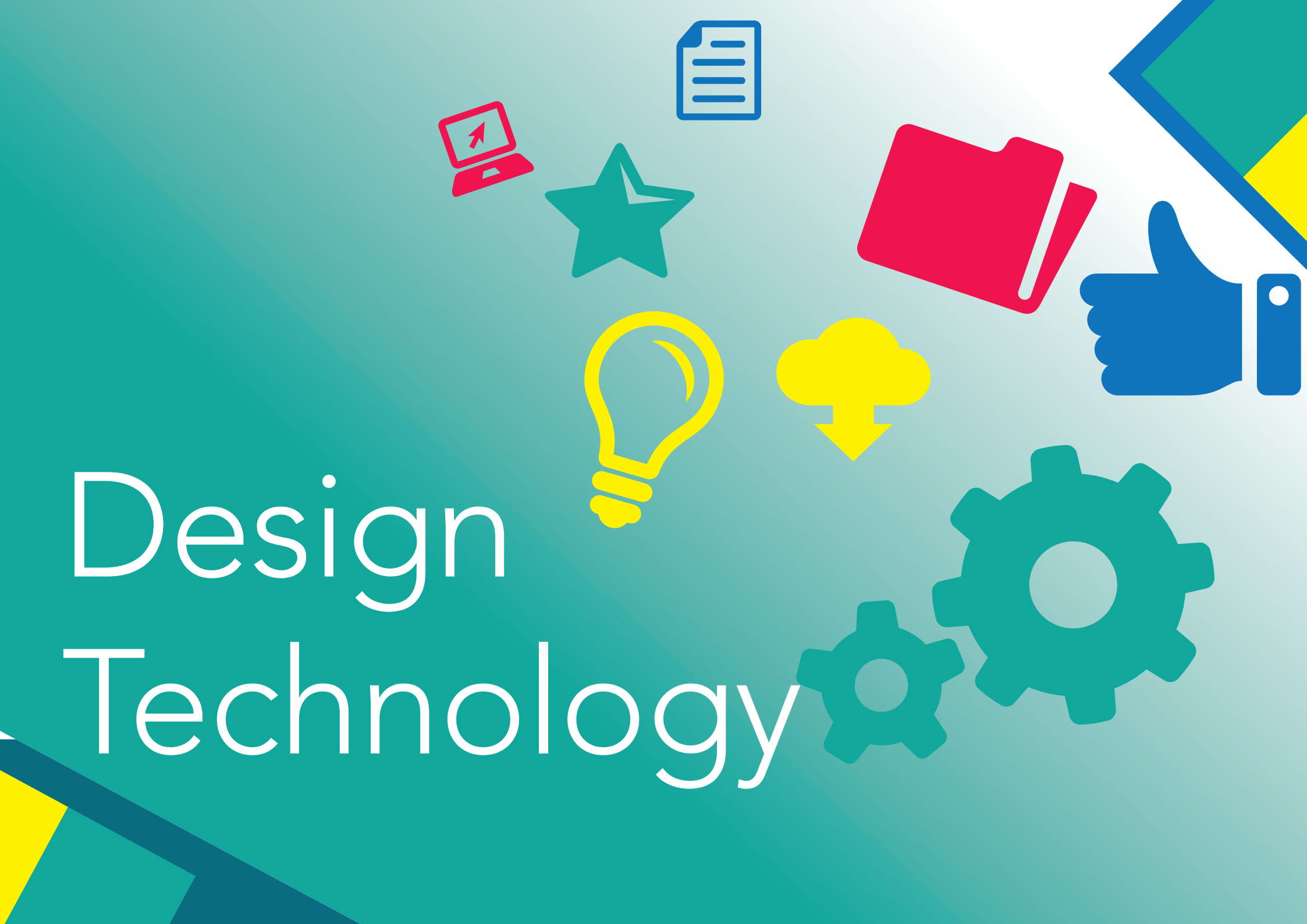
Great You Tube Video to help you understand proportions.

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

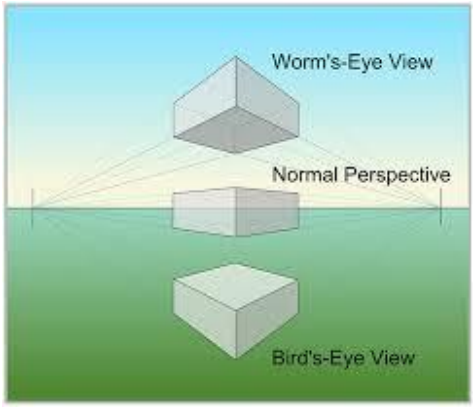
Deliberate Practice- Drawing

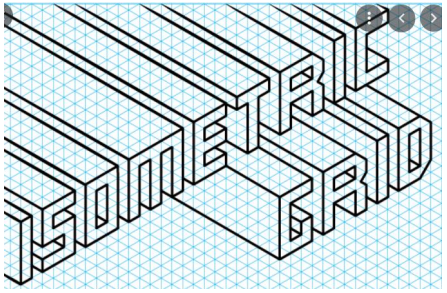
- Practice drawing features of the face with **accuracy** Add **tone** through **blending.**

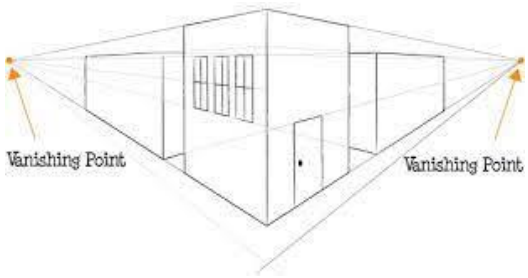
1. Draw an eye
2. Draw a nose
3. Draw lips

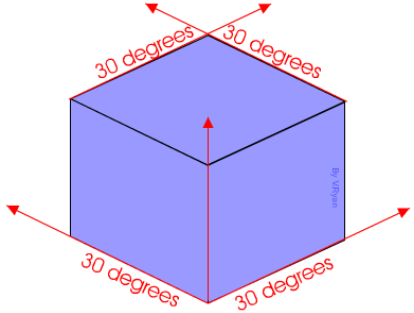

Design
Technology

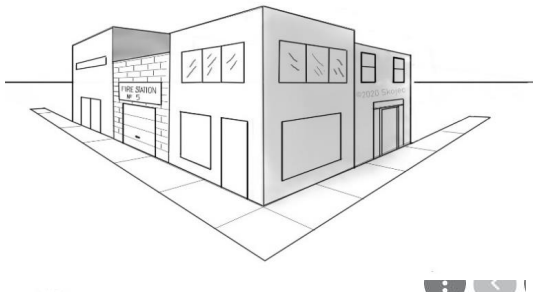
Design & Technology - Control



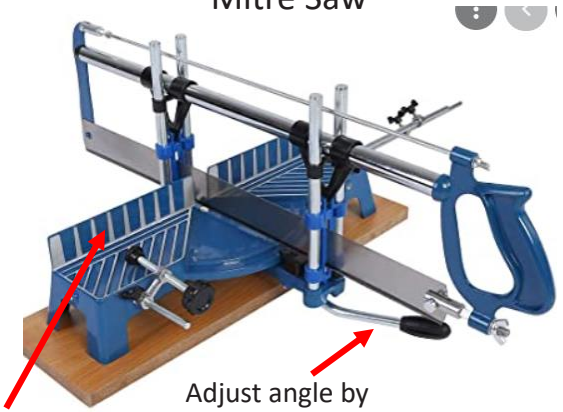








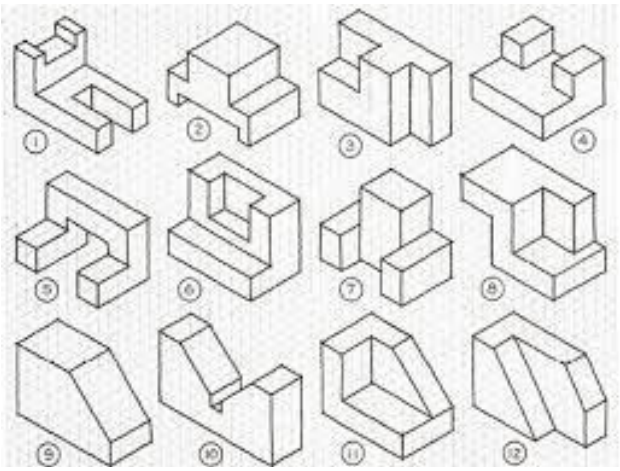
Mitre Saw



Place work against the support and hold tightly

Adjust angle by lifting the handle and rotating

Now try these



Design & Technology - Resistant Materials

2. Plastics

Acrylic		Hard wearing Shatterproof Can be coloured
Polypropylene		High impact strength Softens @ 150 C Flex without breaking
High Impact Polystyrene (HIPS)		Light but strong Widely available in sheets Used for casing for electronics
Polythene (LDPE)		Weaker & softer than HDPE Lightweight Used for carrier bags & squeezy bottles
Polythene (HDPE)		Stiff strong plastic Used for pipes & bowls Used for buckets
Urea formaldehyde		Thermoset plastic Colourless Can't be recycled High temperature resistance

fsd

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	SolidWorks 2D DESIGN
CAD software can process complex stress testing	CAD Software

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 manufactures 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.	


Laser Cutter


Robots


Barcode Scanner


AGV – Automated Guided Vehicle

THE 6 R's OF SUSTAINABILITY

Repair	Can we repair what we may throw away? How nutrients help as to repair our bodies. What can we do to repair the UK diet?
Reduce	Try to reduce our food intake. Reduce food miles and the consumption of processed foods. Reduce packaging.
Refuse	Say no to something. For example chose free range instead of battery. Refuse products high in fat/salt/sugar. Refuse foods which contain additives/fertilisers/pesticides
Rethink	Rethink and make a better choice about something. For example rethink your lifestyle in relation to diet, food miles, seasonal, local, animal cruelty and sustainability
Reuse	Reuse packaging for another purpose. Reuse leftover ingredients. This normally doesn't involve any further processing
Recycle	Reuse a product – this normally requires further processing, eg. from a coke can into another coke can!


Food
Technology

Hartford Church of England High School

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

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.

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.

YouTube

foodtech 101

See FoodTech 101 for all KS3 practicals

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

Food Ethics

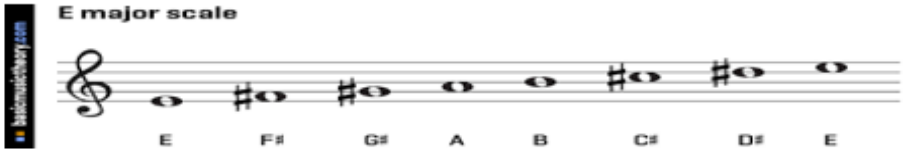
Do animals have rights, even the tasty ones?
What principles govern or determine the foods you eat?

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

Music

Music - Britpop- Topic Two

Parklife - Blur



E Esus4 E Esus4
E B E B
All the people – so many people
G G(F#) G(E) G(D)
They all go hand in hand
C C(B) C(A) C(Bb) B
Hand in hand through their Park life

NOTE OF SCALE	CHORD NAME Using notes Root, 3 and 5
1	TONIC – E chord
5	DOMINANT – B chord

Note not in the scale? No problem

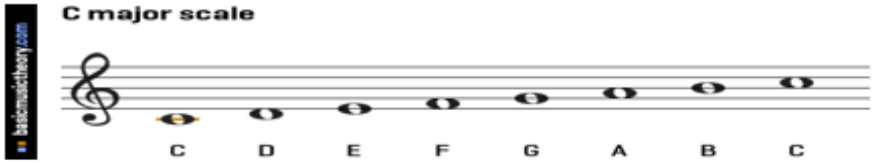
MAJOR Root +4ST, +3ST

C chord G chord

A sus4 is adding the 4th note of the scale

( ) means play the chord with the bass in brackets

Don't Look Back In Anger Oasis



C G Am E7 F G
Slip inside the eye of your mind don't you know you might find
C Am G C G Am
A better place to play You said that you'd never been
E7 F G
But all the things that you've seen slowly fade away

NOTE OF SCALE	CHORD NAME Using notes Root, 3 and 5
1	TONIC – C chord
4	SUBDOMINANT – F chord
5	DOMINANT – B chord
6	MINOR – A minor

Note not in the scale? No problem

MAJOR Root +4ST, +3ST

The above method would give you E minor but we need E major!
E7 add a flattened 7th

Music - Britpop- Topic Two

Word	Definition	In a sentence	Synonyms
Accompanies	Verb: be present	The chordal piano part accompanies the vocal line	Goes along with
Bold	Adjective: something courageous; it goes against what is expected.	I admired the fact he used his song to speak over the music about British values.	Brave
Heartfelt	Adjective: moving, resonate.	The slow tempo, impassioned vocals and increasing dynamics were heartfelt.	Genuine
Nostalgic	Adjective: remembering moments from the past	I am a huge fan of Oasis. Their nostalgic style of music reminds me of when I was a child.	Reminiscent
Repetitive	Adjective: something which repeats itself	This seems straightforward to learn due to the repetitive nature of each part.	Monotonous
Represents	Verb: amounting to	The lyrics and music video represent British stereotypes such as drinking tea, mentioning the Queen.	Depicts
Riff	Noun: a repeated musical patter	The bass riff accompanies the melodic line	Ostinato
Upbeat	Something upbeat is optimistic in nature and cheerful. It brings good energy and good vibes. Essentially, it is very lively.	The audience prefers the songs have an upbeat, fast, tempo, major tonality and a lively feel to it.	Cheerful
Uplifting	Adjective: inspiring happiness, optimism or hope	“That was the perfect song to put in that scene. The uplifting melodies really helped bring the scene to life!”	Inspiring

Drama

Drama

YEAR 9 **DRAMA** KNOWLEDGE ORGANISER	
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 Wheeller	Mark Wheeller 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: • 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.