Chemical analysis Knowledge Organiser

Pure and impure

Pure substances contain a single element, or compound that is not mixed with another substance. They have specific melting and boiling temperatures. Impure substances contain more than one type of element or compound in a mixture. These have a range of melting and boiling temperatures. **Formulations** are mixtures that have been designed as a useful product. They are made by mixing components in specific proportions. They include fuels, cleaning agents, paints, medicines, alloys, fertilisers and foods.

Chromatography

Each component within

the substance moves a different distance up the

paper. The distance it

moves depends on how soluble it is in the solvent.

If it travels far it is very

soluble, if it does not it is

less soluble. If a substance

than the substance is pure.

produces only one spot,

Paper - the

stationary phase.

Solvent front - the top

of where the solvent

travels up the paper.

The substances

to be tested are

. pencil line. We draw

the line in pencil

because pen would

dissolve and travel

placed on the

up the paper.

Chromatography can be used to separate different components in a mixture. Chromatography involves a stationary and a mobile phase. Separation depends on the distribution of substances between the phases. The **R**_f value is a ratio of the

distance moved by a compound to the distance moved by the solvent. distance moved by substance

distance moved by solvent

 $R_f =$

Solvent - the mobile phase. The top of the solvent must be below the pencil line or the substances to be tested will dissolve away from the paper.

Different compounds have different R_f values in different solvents and at different temperatures. R_f values for particular substances can be used to identify a substance. Rf values are always between 0 and 1.

resting gases

Common gases can be identified using the following tests:

Gas	Test	Observations	
Hydrogen	Hold a lit splint near gas	Squeaky pop sound	
Oxygen	Hold a glowing splint near gas	Splint re-lights	
Carbon dioxide	Bubble gas through limewater	Limewater turns milky	
Chlorine	Hold piece of damp litmus near gas	Bleaches litmus white	
Key terms	Chromatography flam mobile phase prec	ne emission spectrosc cipitate pure Rf v	

Testing for ions (Separates only)

Metal ions always have a positive charge. Sodium hydroxide solution can be used to identify some metal ions.

Cation	What you do					
Aluminium Al ³⁺	On slow addition of NaOH solution, $\ensuremath{\textbf{white precipitate}}$ forms, that dissolves in excess NaOH					
Calcium Ca ²⁺	On addition of excess NaOH solution, white preadissolve	cipitate forms that does not				
Magnesium Mg ²⁺	On addition of excess NaOH solution, white preadissolve	cipitate forms that does not				
Copper(II) Cu²+	Formation of a blue precipitate					
Iron(II) Fe ²⁺	Formation of a green precipitate					
Iron(II) Fe ³⁺	Formation of a brown precipitate					
Anion	Test	Positive result				

Anion	Test	Positive result
Carbonate CO32-	Add dilute acid	CO ₂ formed – milky limewater
Chloride Cl ⁻	Add silver nitrate solution in presence of nitric acid	White precipitate formed
Bromide Br ⁻	Add silver nitrate solution in presence of nitric acid	Cream precipitate formed
Iodide I-	Add silver nitrate solution in presence of nitric acid	Yellow precipitate formed
Sulfate SO42-	Add barium chloride solution in presence of hydrochloric acid	White precipitate formed

Flame tests Metal Flame colour Flame tests Lithium Crimson can be used to identify Sodium Yellow some metal ions as they Potassium Lilac produce distinctive Calcium Orange-red colours. Copper Green

flame test

solvent

Instrumental methods

Elements and compounds can be detected and identified using instrumental methods. These are rapid, accurate and sensitive,

Flame emission spec

Flame emission spectroscopy is a instrumental method used to analyse metal ions in solutions. The sample is put into the flame, light is given out and passed through a spectroscope. The line spectrum produced can be analysed to identify metal ions and measure their concentrations.

formulation impure instrumental analysis solvent front

stationary phase

The Earth's Atmosphere Knowledge Organiser

The Earth's changing atmosphere					Gree	nhou	se ef	fect
Period	Proportions of gases	Evidence		Greenhouse gases s	uch as			Earth's surface is heated by the sun and radiates
~ 4.6 billion years to 2.7 billion years ago	CO_2 - Released by volcanoes. Biggest component of the atmosphere. O_2 - Very little oxygen present N_2 - Released by volcanoes H_2O - Released by volcanoes. Existed as vapour -Earth too hot. Ammonia and methane may also have been present.	Very limited evidence. Comparisons made to other planets with an atmosphere rich in CO ₂		water vapour absord radiation from the s maintain the temper Earth. During the d Sun warms the earth surface, whilst at nig earth cools and relea heat back into the atmosphere. Some o	the and b ature on ay, the n's ght the ases the f the	Har energy fr the sun pass through the atmosphere	orm	y is ack the heat back out towards space most heat is trapped by greenhouse gases and contained in the atmosphere
~ 2.7 billion years to 200 million years	 2.7 billion years to 200 million years ago CO₂ - Begins to reduce. Water condenses to form oceans, which CO₂ dissolves in. Algae start to photosynthesise using CO₂. CO₂ precipitates in the oceans as carbonates to form rocks CO₂ taken in by plants and animals. Trapped as fossil fuels for millions of years O₂ - Increases due to evolving plants releasing during photosynthesis N₂ - Continues to increase through volcanic release H₁O₂ - Decreases as the Earth coals 	Still limited. Look at processes such as		heat becomes trappe In the last 200 year greenhouse gases th farming.	ed - this is th s, human activ rough burning	e Gree vities ho of fos	nhouse e ave led t sil duels	effect. to an increase in the release of , deforestation and cattle
		photo- synthesis to		\mathbf{L}			Glo	obal climate chanae
ago		make theories.		Global wa A vast amount of p evidence demonstra increase in the rele greenhouse gases c increase in the aver temperature.	eer-reviewed ates that an case of causes an rage global		Global weathe This is Climate on the change ice cap events	warming leads to changes in the er patterns across the globe. known as global climate change. e change has numerous effects planet: Rising sea levels, s in the amount of rainfall, polar s melting and extreme weather
	condensing to form seas and oceans					Pollut	tants	
~ 200 million	CO ₂ - about 0.04%. O ₂ - about 21%	Ice core evidence.		Pollutant	Or	rigin		Effect
years	N_2^2 - about 78%	Global measure- ments.		со	Incomplete	combus	tion	Colour/odourless toxic gas
ago until	H2U - Very little overall. Collects in clouds.		measure- ments.		Particulates	Incomplete	combus	tion
the present	A small proportion of other gases			SO ₂	Sulfur impu	rities		Acid rain/respiratory issues
day				Nitrogen oxides	Heating of r	nitroger	n in air	Acid rain/respiratory issues

Key terms Acid rain atmosphere carbon footprint global climate change global dimming global warming particulate greenhouse gas pollutant

Earth's Resources

We use Earth's resources to provide us with warmth, fuel, shelter, food, and transport. These can be **natural** (timber, fuel) or **synthetic** resources made by scientists. When choosing resources, it is important to consider **sustainable development**.

Resources can also be categorised as **finite** or **renewable**. Finite resources such as fossil fuels will run out. Wood is a renewable resource, as trees can be grown to replace any that are cut down.

Water

What is in it? How is potable water made?				
Just water molecules				
Water molecules, low harmful microbes	level of salts, safe levels of			
Water molecules, high levels of salts, high levels of harmful microbes. Desalination is the process to turn salt water into potable water, either through distillation or reverse osmosis .				
Water molecules, low level of salts, often high levels of harmful microbes. To produce potable water, fresh water is passed through filters to remove larger objects before being sterilised to kill microbes with ozone, chlorine or UV light.				
Metal extraction (HT)				
Metals can be extracted from their ores by reduction or electrolysis. Phytomining and bioleaching are two alternative methods to extract from low grade ores.				
Phytomining: Grow plants near ore \rightarrow burn plants \rightarrow collect ash containing metal compound \rightarrow process ash by electrolysis or displacementBioleaching: Grow plants near ore \rightarrow bacteria produce leachate containing metal compound \rightarrow process leachate by electrolysis or displacement				
	What is in it? IJust water moleculesWater molecules, lowharmful microbesWater molecules, highharmful microbes. Desalt water into potabledistillation or reverseWater molecules, lowof harmful microbes.Water molecules, lowof harmful microbes.water is passed throuobjects before beingozone, chlorine or UVMetal extrbe extracted from theg and bioleaching are theand bioleaching are themetal compound \rightarrow h by electrolysis or			

Anaerobic

Sedimentation

Aerobic

Screening

term

Waste water treatment

Human activities produce lots of waste water as **sewage**, agricultural and industrial waste



LCA

that have limited supplies.

product, it can be: added

reused or recycled. Items can be **reused** (used again

for a similar purpose) or

resources and requires

less energy than creating

Potable

Sustainable development

recycled (conserves

new materials.

Finite

Distillation

Sewage

to landfill, incinerated,

When finished with a

at the whole life of a product and assessing its impact on the environment. It is broken down into four categories. Some parts are objective - the amount of water used or waste produced, whilst others are judgements - such as the polluting effect.



Phytomining

Bioleaching

Using Resources 02 - Separates only Knowledge Organiser

Corrosion

Corrosion occurs when materials react with other substances within the environment and wear away. **Rusting** is an example of corrosion, caused when iron reacts with oxygen and water. **Corrosion** can be **prevented** using either **physical barriers** such as paint or grease, or through electroplating. **Sacrificial protection** is where a more reactive substance is introduced. This will react with the environment rather than the main material.

Alloys						
Alloy	Properties	Uses				
Bronze - Cu/Sn	Resistant to corrosion	Statues, decorative items				
Brass - Cu/Zn	Hard	Musical instruments, ornaments, home fittings				
Stainless steel - Fe/Cr/Ni	Both resistant to corrosion and hard	Cutlery, pipes				

Ceramics								
Ceramic	Properties	Uses						
Clay	Hard, brittle, resistant to corrosion, easy to shape	Pots, plumbing, crockery						
Borosilic ate glass	High melting point	Oven and lab glassware						
Soda- lime glass	Transparent	Glass objects used everyday						
Key terms	Alloy reinfo	ceramic co rce rusting						

Polymers

There are many types of polymers. The properties depend on their monomer composition and the processing conditions.

Low density poly(ethene)	High density poly(ethene)
These are formed from the addition polymerisation of ethene under high pressure. The polymer chains have many branches and prevent the polymers from packing, causing the low density.	These are formed from the addition polymerisation of ether utilising a catalsyt at 50°C. The straight polymer chains pack together, causing the high density.
D poly(ethene) or LDPE	polymer chains
Thermosoftening polymers	Thermosetting polymers
The chains are not linked together, and soften when heat is applied.	The chains have strong links and do not soften/melt when heated chains fixed together by
chains are relatively easy to separate	strong covalent bonds - this is called cross-linking
	III

thermosoftening

polymer

thermosetting

Using Resources 03 - Separates only Knowledge Organiser

Haber process

The **Haber Process** is used to produce ammonia which is a key component form the production of fertilisers.

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

The reaction is reversible

terms

Stage 1: H2 and N2 gases are pumped into the compressor through pipes.

Stage 2: The gases are compressed to ~ atm.

Stage 3: The gases are pumped into a tank containing catalytic iron beads at 450 ° C. Some of the hydrogen and nitrogen react to form ammonia in the reversible reaction stated above.

Stage 4: Any unreacted hydrogen and nitrogen, alongside any ammonia pass into a cooling tank. The ammonia is liquified and extracted.

Stage 5: The unreacted hydrogen and nitrogen are recycled and pumped back into the system.



Conditions

The conditions used for the Haber process are deemed a compromise, balancing cost, yield and rate of reaction.

Temperature	Pressure	Catalyst
Temperature of ~450°C The forward reaction is exothermic, hence a lower temperature would be favoured to increase the yield of ammonia, howeber the rate of reaction would be very slow.	Pressure of ~200 atm There are less product gas molecules than reactants, hence a higher pressure would be favoured to increase the yield and the rate of reaction, however it is expensive to stabilise high pressures.	An iron catalyst Catalysts have no impact on the yield of ammonia, however they will incrase the rate of the forward reaction. Iron is a n effective catalyst for the Haber process.

Fertilisers

Fertilisers are produced to increase the amount of food obtained from crop. NPK fertilisers are formulations consisting of nitrogen, phosphorus and potassium.

	Laboratory	Industrial
Equipment	Simple glassware needed	Large expensive and complex
Reactant concentration	Low concentration - less heat given off	High concentration – lots of heat given off. Highly exothermic.
Separation of product	Crystallisation – very slow process	Heat given off is used to evaporate water from the reactant mixture to produce concentrated ammonia nitrate.

Haber process

NPK fertiliser

P12: Waves Knowledge Organiser

The properties of waves

All waves, no matter what kind, transfer energy without the movement of matter. Waves can be mechanical, such as sound, waves on water, spring oscillations an earthquakes. These all require a medium to travel through, solid liquid or gas. Electromagnetic waves such as light, radio and microwaves can all travel through a vacuum.

There are 2 types of wave; transvers waves and longitudinal waves. We can show these on a stretched slinky spring:

If the spring is shaken side to side or up and down, this produces a perpendicular oscillation. The movement is at right angles to the direction the waves travel. We call this kind of wave a transverse wave.

Examples of transverse waves are waves on water and electromagnetic waves.



Move your hand in and out and you produce an oscillation that is parallel to the movement of the wave. We call this a longitudinal wave, examples of which are sound and certain types of seismic (earthquake) waves.



Longitudinal waves travel as a series of squashes called compressions and stretches called rarefactions.

The wave equation

You must be able to use the wave equation, and rearrange if necessary.

- V => Velocity of the wave in m/s
- f => Frequency in Hertz (Hz)
- A => Wavelength in metres (m)



From the triangle: $V = f \times \lambda$, $f = V \div \lambda$ $\lambda = V \div f$



The wavelength of a wave is the distance between two like points on that wave, such as crest to crest, a trough to a trough or, in the case of longitudinal waves, compression to compression.

The amplitude of a wave is the distance between the rest point and the point of maximum displacement. Frequency is the number of waves that pass per second

Required practicals

A ripple tank can be used to project an image of water waves. A paddle vibrates to make ripples on the surface of the water. A photograph showing the waves and a ruler allows you measure the wavelength. A slow motion video clip will allow for waves to be counted per second and the speed calculated using the wave equation.





If a vibration generator is linked to a weighted string, the wavelength of the waves produced can be measured:

 λ = length of sting x 2 / number of half waves.

As the frequency is the independent variable, the speed can again be calculated.

Key	Transverse	Longitudinal	W	avelength Frequency	Amplitude	2
terms	Compression	Rarefaction	Crest	Trough	Perpendicular	Parallel

P12: Waves 2 Knowledge Organiser

HIGHER

Reflection of waves

We can investigate the wave property of reflection using a ripple tank. Waves on water will reflect off a barrier.



You can see from this photograph that the wavelength of the incident waves is the same as that of the reflected waves. This is because during reflection, neither the speed of the waves, nor their frequency changes

The waves reflect off the barrier at the same angle to the normal as they approach

LAW OF REFELCTION: angle of incidence = angle of reflection

HIGHER

Refraction of waves

We can also investigate the wave property of **refraction** using a ripple tank. Waves on water refract when they move into **shallower water**.

As the waves enter the shallower water they are slowed down in the same way as light waves are slowed down when they enter glass. If they approach along the **normal line** (perpendicular to the boundary) the waves reduce in speed and wavelength.

As we can consider each wave to be made up of **wavelets**, crossing a boundary at an angle will change the direction of the wave as wavelets which hit the boundary first will slow down first. So the waves direction is altered - refraction.

At a boundary, waves may be transmitted, reflected refracted or absorbed.



Sound Waves

Sound is caused by vibration. If you look as a working loudspeaker you can see it moving. Sound can travel in solids liquids and gases but cannot travel through a vacuum - no one in space can hear you scream!

We can measure the speed of sound by timing how long it takes for a sound to be made and then **echo back** to the observer.

TRIPLE



Ultrasound

Ultrasound is frequencies in excess of 20,000Hz - too high for human hearing to detect. It can be used to detect the boundaries deep within a material such as flaws in materials or the bones of an unborn child.

The distance to the boundary can be calculated by:

Distance to boundary_(m) = $\frac{1}{2}$ x speed of sound through medium_(m/s) x time taken_(s)



Seismic waves



Seismic waves travel out from the epicentre of an earthquake: Primary waves - the initial tremors which are **longitudinal**. Secondary waves - slower moving **transverse** waves.

school wal

Long waves - last to arrive and only travel through the crust.

As transverse S-waves cannot pass through a liquid a **shadow zone** tells us the outer core is liquid.

By monitoring the passage of the P-waves through the Earth we have mapped the structure of the Earth as it **refracts the longitudinal waves** at medium boundaries.

Key	Reflection	Refraction	Normal	Wavelet	Inc	idence	2
terms	Transmitted	Absorbed	Vacuum	Crust	Mantle	Core	

Hormonal Control Knowledge Organiser



brain central nervous system coordination centre effectors homeostasis involuntary neurones receptors reflex action spinal cord stimulus synapse

Hormonal Control Knowledge Organiser

Hormones in human reproduction

During puberty, reproductive hormones cause the secondary sex characteristics to develop:

Oestrogen		Te	Testosterone		
•	Main female reproductive hormone	•	Main male reproductive hormone		
•	Produced in the ovary	•	Produced by the testes		
•	At puberty, eggs begin to mature and one is released every 28 days	•	Stimulates sperm production		

Several hormones are involved in the menstrual cycle. Their functions are given in the table, and their levels vary as shown in the figures

Hormone	Released by	Function
Follicle stimulating hormone (FSH)	Pituitary gland	 Causes eggs to mature in the ovaries Stimulates ovaries to produce oestrogen
Luteinising hormone (LH)	Pituitary gland	 Stimulates the release of mature eggs from the ovaries (ovulation)
Oestrogen	ovaries	 Causes lining of uterus wall to thicken Inhibits release of FSH Stimulates release of LH
Progesterone	ovaries	 Maintains thick uterus lining Inhibits release of FSH and LH



Higher Tier Only: Treating infertility with hormones

Hormones are used in modern reproductive technologies to treating infertility.

FSH and LH can be given as a drug to treat infertility, or in vitro fertilisation (IVF) treatment may be used.

IVF treatment

- 1. Mother given FSH and LH to stimulate the maturation of several eggs
- 2. Eggs collected from the mother and fertilised by sperm from the father in a laboratory
- 3. Fertilised eggs develop into embryos
- One or two embryos are inserted into the mother's uterus (womb) when the embryos are still tiny balls of cells.





Contraception

Fertility can be controlled by a variety of hormonal and non-hormonal methods of contraception.

Hormonal contraception

- Oral contraceptives contain hormones to inhibit FSH production so no eggs mature
- Injection, implant, skin patch or intrauterine device (IUD) slowly release
- progesterone to inhibit maturation and release of eggs; can last months or years

Non-hormonal contraception

- Barrier methods, for example, condoms and diaphragms prevent sperm reaching the egg
- Copper IUD prevents the implantation of an embryo
- Surgical methods of male and female sterilisation
- Spermicidal agents kill or disable sperm
- Abstaining from intercourse when an egg may be in the oviduct

has some disadvantages: It is emotionally and physically stressful It has a low success rate It can lead to

Fertility treatment

multiple births, which are a high risk to both the babies and the mother.

			Key Ideas					
Good and Evil Intentions 重	Sometimes people act in a way where the intention is good but the ac person lies to their friend about something to avoid upsetting them – I and Evil entions - We should take strength from suffering: - Jesus suffered for humans to be saved: 'For Christ also suffered once		ction itself could be considered to be bad or evil e.g., a - to avoid upset. erance, character and hope' re for sins'		Christian responses to good and evil intentions and actions - Evil actions goes against God's teachings in the Bible - God forgives sins. Jesus atoned for all sins - Jesus set an example of showing compassion: 'Jove thy neighbour'	AQA Religious Studies A Theme E: Religion, Crime and Punishment		
	- Poverty – Christians support food bank		Attitudes to law breal	<u>kers</u>	Different types o	f crime		Key Words
	 Upbringing – parents should teach their chi Addiction - Christians recognise that addicts 	ldren right from wrong may resort to stealing	- The law should be res - Offenders must be pu law according to the se	spected unished by the priousness of	1. Hate Crimes 'Love thy neighb God created all h	our' uman beinas in his image	Community Service	Working in the community to pay back for a criminal act
Reasons for	in order to purchase the drugs their body cra exists to protect the rights and security of all - Greed - The Ten Commandment forbid envi	ves, however the law citizens y and it is envy that	the crime - Christians believe that sin and so wrong woo	at whilst we all	st we all 2. Theft		Corporal Punishment	Using physical pain as a punishment
	often causes greed. 'You shall not covet' - Hatred - Jesus taught people to love everyb - Opposition to unjust law - Some Christians	ody, even enemies may agree with this but	those who struggle in crimes - Christianity is based o	life and commit on the idea of	Golden Rule: 'Do 3. Murder	to others what you want them to do to you'	Crime	An action which is against the law and incurs a punishment
•	only if no violence is involved and nobody is Retribution	harmed Deterrence	reformation – that we and can be saved.	are all sinners	Only God has the 'You shall not mu Reformatio	right and authority to take life Irder' In	Death Penalty	A form of punishment where the offender is killed for their crime
Three Aims of	- 'Life for life, eye for an eye, tooth for tooth' -Most agree with deterring people from commonstructured in the support punishments that cause physical or offender - Most Christians prefer other aims which -Most agree with deterring people from commonstructured in the support punishments that cause physical or offender			nitting crimes bu r mental harm to	t do - All sinners o the - Gives a se <i>and if he re</i>	can be saved cond chance. 'If your brother sins, rebuke him, pents forgive him.'	Deterrence	The likely punishment should put people off committing crime
Punishment	are less harmful and more positive: 'Do not take revengebut leave for God's wrath' - The offenders themselves might be deterred from reoffending			sus was dying on the cross, he told the criminal <i>'…today you will be with me in paradise</i> '	Forgiveness	To show mercy and pardon someone for what they've dor wrong		
ାର	<u>Prison</u> FOR - Provides society with protection AGAINST - Isolates but doesn't reform	2. Corpo FOR - che AGAINST	ral punishment eap way of punishing effe – Creates a society in wh	ectively nich violence is n	3. Community FOR - G ives the ot AGAINST - The	/ Service be offenders the opportunity of making amends eir freedom isn't taken away and punishment is	Hate Crime	A crime motivated by hatred e.g. racism, homophobia
Treatment of	Christian view - Education programmes so inmates can lear	n worthwhile Christian	view	raged	minimal Christian viev	V	Poverty	Not having enough money to be able to live a comfortable life
	 skills in prison - Jesus taught 'pray for those that persecute' and - Gives - Gives - Gives - Gives - Gives - Content of the charge their ways once - Content of the charge th		- Gives a chan to society in a - 'Blessed are	res a chance for the criminal to reform and to contribute ociety in a positive way ressed are the merciful, for they will be shown mercy'	Prison	A place where criminals are sent to withdraw their freedor as punishment		
Forgiveness	 Forgive others regardless of what they have done. In return God will forgive you When Jesus was crucified, he forgave those who sentenced him to death and crucified him saying: 'Father forgive them, for they know not what they do'. The Lord's Prayer – 'Forgive us our sins, as we forgive those who sin against us' 				Punishment	Something negative done to criminals by the state		
	- The Parable of The Unforgiving Servant – 'T	his is how my heavenly	y Father will treat each o	of you unless you	ı forgive your bro	ther or sister from your heart'	Reformation	To try and reform criminals
Death Penalty	For - Retribution, gives justice to the criminal and for tooth' - It is used as a punishment in the Old Testan	d victims family: 'Life fo nent : 'Whoever sheds h	or life, eye for eye, tooth numan blood, by	Against - Jesus spoke ag - Jesus taught th - It is against sa	ainst an 'eye for a nat forgiveness is nctity of life – onl	an eye' and said 'turn the other cheek' important y God has the right to take life and is playing Goc	Retribution	The punishment should make the criminal pay for what they
	<i>humans shall their blood be shed'</i> Sanctity of life – if you commit murder you should have your life taken away as life is sacred			en Commandment s- 'You shall not murder'		have done wrong		

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EDUQAS, Component 3 Interpreting Theatre - 'I Love You Mum'

Original Staging Conditions

- "I Love You, Mum I Promise I Won't Die" was first performed by the Oasis Youth Theatre at the BRIT School in Croydon on 29th March 2016.
- It was performed on an end-on stage.
- The staging of the original production was minimalistic, consisting of a number of white Perspex blocks, which were lit in different colours. These were moved by the cast to suggest different locations or highlight significant moments.
- The chair that all the students signed remained covered until they actually spoke about it. Props were minimalistic but chosen for their significant impact.
- Lighting and projections played a pivotal role in this production and were used in a number of ways. Projections were used to suggest locations and to highlight the symbolism of the location. Images and footage of Daniel and his friends were used to highlight significant moments in his life, but they also reminded the audience that this play was based on actual events.
- A variety of coloured lights, effects, strobes and distorted images were used to create both the location and atmosphere of the rave. Act Two opened with an image of Daniel's funeral, projections were used to specify locations. Effective use was made of projections in helping to show the flashbacks of events leading up to Daniel's death.
- The music was also highly significant in helping to create atmosphere.
- The chorus' costume consisted of black trousers and polo shirts with the logo of the Daniel Spargo-Mabbs Foundation. All named characters, wore contemporary clothes to suggest their characters. A blue hoodie on a stand was used to symbolize Daniel and was worn by members of the chorus when they multi-roled as Dan.

<u>Keywords</u>	
Verbatim Theatre	A form of theatre which is based on real events and uses the exact words of real people.
Abstract	A piece of drama that is created in an un-naturalistic way.
Physical Theatre	A form of theatre in which you use your body to create objects/settings on stage.
Docudrama	A genre that features dramatized enactments of actual events
Theatre in Education	Where a drama piece is created to educate children or young people about real life situations or scenarios. This is used to help them think about their actions and decisions.
Narration	A narrator is like a storyteller informing the audience about the plot. This means that it becomes non-naturalistic because the audience are aware throughout that a story is being told and the fourth wall is broken.
Multi-role	When an actor takes on more than one role in a production.

Name

Clace

Historical Context

I Love You, Mum - I Promise I Won't Die is a verbatim play told through the words of Daniel Spargo-Mabbs' family and friends. It tells the story of 16-year-old Daniel, who died after taking MDMA on a night out with friends. The title of the play uses Dan's last words to his mother before he left the house and are both haunting and poignant. The play is similar in its themes to Wheeller's other works, however the words of Dan's family and friends are crafted into the text, which makes it eloquent, moving and memorable.

Elements of Movement

Posture and Stance	The position in which a character holds their body - when standing or sitting. A very confident character may dominate the space, with a very upright posture
Pace of Movement	For example; does a character move quickly or slowly? A queen might enter moving slowly, highlighting to the audience their status and power. The pace of a character's movement will change according to the scene and intention.
Gait	A person's manner of walking will form part of their characterization.
Quality of Movement	For example; a performer playing the role of a victim might move with very light movement to indicate they are trying to avoid attention, whereas a more aggressive character might move with very heavy, definite movement.
Gestures	The way people communicate with their hands or other parts of their body.
Body Language	This may be the way the message is conveyed to an audience, or it may add an added layer to the words that are spoken.
Facial Expression	When an actor uses the face is used to express how the character is feeling and to convey an emotional state.
Eye contact	The state in which two people look into each other's eyes. This could be used to establish status, control and passion
Proxemics	How the space is used on stage to establish relationships and mood
Levels	By using levels it can make a scene look visually interesting, but the positioning of characters on different levels can also suggest social status and create atmosphere

<u>Synopsis</u>

It tells the true story of Dan, a popular 16-year-old schoolboy from South London, who attended an illegal rave in January 2014, took MDMA (ecstasy) and tragically died as a result of taking a lethal dose. The play tells the story of what happened to Dan, his family and friends, using their own words.

Key Themes in "I Love You Mum"

- Parent/child relationship
 - Friendship
- Peer pressure
- Consequences of taking drugs

Vocal Skills

Tone, expression, tempo, pitch, pace, projection, volume, pause, accent, emphasis, articulation, inflection, phrasing, subtext, emotional range.

Approaching a piece of script Who is the character? - What type of person are they? What happens to them in the production and does this change them in any way? Vocal skills – How am I going to become the character vocally? Physicality – How am I going to become the character physically in the way I sit/stand/move? Relationships – What is my character's relationships to other people in the production and how am I going to show this?

Rehearsal techniques

Design skills – from an actor's perspective to a designers perspective.

Communicating a role as an actor.

Technical aspects – lighting, sound, costume/make up.

Character positioning.

Use of vocal and movement skills

Mood

P13: Electromagnetic waves Knowledge Organiser

A Family of waves

Radio waves, microwaves, infra red, visible light, ultraviolet, x-rays and gamma waves are all part of the electromagnetic spectrum. These are electric and magnetic disturbances that can transmit energy from a source to an absorber

FM-Waves All properties:

- magnetic components at right angles to each other
- Travel through a vacuum
- Speed of 3 x 10⁸m/s in a vacuum
- May **reflect** off smooth surfaces
- May refract when slowed down by a medium other than free space

Waves from different parts of the spectrum have different wavelengths. Radio waves may have a wavelength of over 100,000m. Whereas gamma rays may be as short as 10⁻¹²m.

The shorter the wavelength (the higher the frequency) the greater their energy and penetration capacity the waves have.

Shorter wavelengths like gamma, x-ray and ultraviolet are also more likely to cause ionisation.

Some EM-waves are emitted by electrons when they move down energy level.

Gamma rays are emitted by emitted due to changes in the nucleus of an unstable atom.

exhibit the same

- Transverse waves (electric and



Speed of EM-waves

As all EM-wave travel at the same speed (the speed of light!!) we can link this to the wave speed equation

- V => Velocity of the wave in m/s
- **f** => **Frequency** in Hertz (Hz)
- A => Wavelength in metres (m)
- V = 300,000,000 m/s



For example, a microwave with a wave length of 8cm:

f = 300,000,000 = 3.75 x 10⁹Hz or 3750MHz $V = 3 \times 10^8 \text{ m/s}$ ∧ = 0.08m 0.08

Visible light



The visible spectrum is only a very narrow band of the wider EMspectrum. Wavelengths of 400nm for violet to 700nm for red light

Remember ROYGBIV Richard of York gave battle in vain

Dangers of Ionising EM waves

So gamma, x-ray and ultraviolet can cause problems if their energy is deposited inside a living cell. Gamma rays can kill cells. As with all ionising radiation, damage to the DNA could cause the cell to divide out of control - cancer



Key	Alternating	Reflection	Refraction	Wavelength	Frequency	2
terms	Transverse	Spectrum	Radiation dos	se Wavelength	Amplitude	

P13: Electromagnetic waves 2 Knowledge Organiser

Looking at the entire spectrum							
Type of wave	Radio waves	Microwaves	Infrared	Visible light	Ultraviolet	X-rays	Gamma rays
Average wavelength	10 ³ m	10 ⁻² m	10⁻⁵m	5 ⁻⁷ m	10 ⁻⁸ m	10 ⁻¹⁰ m	10 ⁻¹² m
Uses	Used for radio and television signals as they can travel long distance in the air. Also used for Wi-Fi and Bluetooth as they will bend round objects so a line of sight is not needed. HT: Radio waves produced by oscillations in an electric circuit linked to a transmitter may create an alternating current in a receiver aerial of the same frequency.	Used in radar, satellite and mobile communications as they can pass easily through the Earth's atmosphere but tend not to spread out as much as radio (though their range is not as long.) Used in cooking food as they can penetrate the food and vibrate water and fat molecules within causing a heating effect in the food only, not the oven.	Used for heating and cooking as can transfer energy quickly to food etc. The Sun heats the planet through the transmission of infra red radiation. As all hot objects emit infrared, sensors to detect them can be used in alarm systems and thermal imaging cameras. Dull black surfaces are the best emitters and absorbers of infra red.	Visible light as its name suggests is used for our vision, the narrow band of EM frequencies that the human eye can detect. Are increasingly used in communication as the shorter wavelengths allow for the carriage of more information. Visible light is used in optic fibre communications. A light beam reflects off the inside of transparent / thin fibre of glass	Has an effect on the pigmentation in human skin so used in sun beds, but is also responsible for the synthesis of vitamin D in our bodies. Fluorescent lights use a coating that absorbs UV and emits visible light. UV is also used to detect forged notes, and fluorescent dyes and inks (which also absorb the UV and emit light.) Popular in night clubs	Use primarily for diagnostic imaging , mainly of the body as the rays pass easily through soft tissue but are absorbed by denser material such as bone. For this reason airport security screening also uses x-rays to see inside luggage. X-rays have become invaluable to the art world by detecting forged painting detection	As it passes easily through skin, gamma rays are used in radiation therapy to kill cancer cells. Several beams are focussed on the tumour to kill the cancer but not the surrounding tissue. Gamma rays are also used in the sterilisation of equipment and food as the rays will kill bacteria. Irradiated food also has a longer shelf life.
Hazards	Can penetrate the body and cause a heating effect.	Like radio, can have a heating effect on the body.	Can cause damage to skin – burns.	Excessive amounts can cause damage to the retina.	Can damage skin cells causing aging and risk of cancer	Ionising radiation. Can kill cells, cause mutation - cancer	Ionising radiation. Can kill cells, cause mutation - cancer
			INCREASIN	NG FREQUENCY			

INCREASING WAVELENGTH

Key

terms

Absorption Mutation

Emission Sensors Penetration Fluorescent g Irradiation Atmosphere

Ionising

P15: Electromagnetism 1 Knowledge Organiser y11 physics



Magnets and magnetic materials

A magnet is a an object that produces a **magnetic field**, an area where other magnetic materials experience a non contact force as a result. There are 3 main magnetic materials - **Iron**, **Nickel** and **Cobalt** as well as alloys containing them. We call such materials, **ferromagnetic**, as in the presence of a magnetic field the material becomes magnetised. We say the magnetism is **induced**.

There are two easy ways of determining the shape of a magnetic field.

One is to use **iron filings**. As they are made of iron,. Magnetism is induced in the pieces of iron which then line up along the magnetic lines of flux.

The second method is to use a **plotting compass**. The needle is magnetised so also lines up on the **lines of flux** and pints in the direction of the magnetism



Magnets always have a **north seeking** and a **south seeking** pole. The magnetic lines of flux always **point from north to south**. The closer the lines of flux are the stronger the magnetic field. Magnets are strongest at the two poles.



Like poles repel whereas unlike poles attract. We can see what effect this has on the lines of flux here.

The 2 like poles on the left show the lines of seem to avoid contact with the other magnet. Whereas with the unlike poles, lines of flux point from north to south

Magnetic field lines never cross.

Electromagnetism

When an electric current flows through a conductor it generates a magnetic field around the conductor. However, there are no poles in this field, the shape of the field is that of **concentric circles**. The magnetic field is **stronger** the **closer** you get to the wire, and we can increase the strength still further by **increasing the current** in the conductor.

The direction of the magnetic field can be worked out using the **right hand grip rule**: If you grip the wire in your right hand and point your **thumb** in the direction of the **current**, (+ to -), you **fingers** curl round in the direction of the **field**.



Solenoids

A solenoid is a coil of wire carrying an electric current. This creates multiple fields which interact to produce a field similar to a **bar magnet**. As before we can increase the field using a greater current, but increasing the turns of the coil will also effect a greater field. Placing a magnetic material within the coil induces a field in the material, adding to the magnetism an electromagnet.

Unlike permanent magnets, electromagnets **can be turned on and off** and their strength adjusted by changing the current.

The Earth's magnetic field

As a compass, when not near a magnet or current carrying wire, will point North, we have evidence for the magnetic core of the Earth - Iron and Nickel.

But as the north pole of a magnet points north when suspended, the **magnetic poles** of the Earth **must be reversed** compared to the geographic names.

Key
terms

Attraction Repulsion Magnetic field

Induced magnetism Solenoid Curre

netism Permanent magnetism Current Field strength

P15: Electromagnetism 2 Knowledge Organiser

HIGHER

produced.

terms

The motor effect

When a current carrying conductor is placed in a magnetic field it may experience a force due to the interaction between the field produced by the current in the wire and the magnetic field it is placed in.

The size of the **force** will depend upon the **current** in the wire, the **length** of the wire in the field, and the **magnetic flux density** - a measure of the strength of the magnetic field:

Tesla

$$\mathbf{F}_{(N)} = \mathbf{B}_{(T)} \times \mathbf{I}_{(A)} \times \mathbf{L}_{(m)}$$

Flemings left hand rule can be used to determine the direction of the force

The direction of the motion is at **right angles to both the field** (first finger) **and the current** (second finger.)

Just remember $-\frac{F.B.I.}{F.B.I.}$ for your thumb first finger and second fingers.

Force (F) Magnetic field (B) Current (I)

T -> Tesla

HIGHER

Electric motors

If the current carrying conductor is wound into a **coil** and allowed to **pivot** the motor effect will produce a **rotary motion** thanks to opposing **moments** on the coil - one pushing the coil up, one down. This happens because the current is flowing in **opposite directions** on either ide of the coil. s

A **commutator** keeps the coil spinning by reversing the current and therefore the forces

every half a turn. You can make a motor move faster by increasing the current, the turns on the coil or the strength of the magnetic field

HIGHER

Loudspeakers

Alternating

A loudspeaker makes use of the motor effect too. A coil of wire in the field of a permanent magnet is fixed to a **lightweight cone**.

Current in the coil makes the cone move **forwards** for one current direction **and back** for current in the opposite direction. This causes the cone to create **pressure variations in the air** with a frequency the same as the **frequency** of the **alternation of current** in the coil.

Field strength



TRIPLE Uses	- Scrap crane	TRIPLE Uses - Doorbe	II TRIPLE Uses - Circuit breaker
Being able to switch on an off, a scrap yard crane car quickly be attached to a vehicle by the touch of a button. Such cranes have large powerful electromagnets so their lifting capability is high.	d s	When the switch is pressed, current flows in the coil causing an electromagnet to generate a magnetic field which pulls the hammer to strike. But the hammer is part of the circuit so as it moves it breaks the circuit again.	An switch in series with an electromagnet. A spring keeps the switch closed until the current is so high that the contacts are parted by the electro magnet. Used in place of traditional fuses.
Key	Flux density	Commutator Moments Pr	ressure Frequency

Circuit breaker



P15: Electromagnetism 3 Knowledge Organiser

The generator effect

When a conductor and/or magnetic field are moved in such a way as to cut through lines of magnetic flux a potential difference is induced in the conductor. If the conductor is part of a complete circuit a current will flow.

The size of the current will depend upon the length of the wire in the field, the magnetic flux density and the speed at which the conductor cuts through the lines of flux. If the direction of the relative movement reverses, so too does the current induced.





Of course, increasing the length of the conductor in the magnetic field lends itself to coiling up the wire into a solenoid. Moving a bar magnet in or out of the coil causes the wire to again cut through the flux. Move it faster, use a stronger magnet or increase the turns on the coil and the effect is increased. Reverse the movement and the induced current is reversed.

TRIPLE

Key

terms

TRIPLE

Microphones

Like a loudspeaker, a **microphone** is a coil of wire in the field of a permanent magnet fixed to a lightweight cone or **diaphragm**.

Sound waves cause the diaphragm to **vibrate** moving the coil in and out of the magnetic field, so cutting the flux. The current produced **alternates** with the **same frequency** as the sound.

Induction



Flux cutting

Step up transformer

TRIPLE Alternate

Alternators and dynamos

If a coil is turned in a magnetic field so it is **cutting through the flux** and is connected via **slip rings** to a circuit, an **alternating current** is induced. As the coil goes past the vertical position the motion of each side of the coil relative to the magnetic field is **reversed**, so reversing the current.

The maximum potential difference is induced at the point of greatest rate of flux cutting - the horizontal position. Turn the coil faster and there is an increase in induced P.D, and an increase in frequency of the signal.



A dynamo has **a split ring commutator** so produces current that only flows in **one direction**, although the size of that current still varies with the rate the coil cuts through the magnetic field.



TRIPLE

Diaphragm

Step down transformer

Transformers

National Grid

Transformers are devices used to change the size of an alternating current or **potential difference**. As the field produced by one coil **changes** with the alternating current, it **induces** a current in the secondary coil. The **power in both coils is the same** but with less turns on the secondary coil, the voltage will be reduced by the same ratio - a **step down transformer**. If you have more turns on the secondary coil, the voltage is **stepped up**. Extensively used in **the National Grid** to save energy on transmission.

Frequency



Slip rings

Power

GCSE ART, O	CRAFT & DESIGN	Key Terms	
Assessment O	bjectives	Abstract	Abstract art seeks to break away from traditional representation of physical objects. It explores the relationships of forms and colours
401	Understanding of historical and contemporary	Aesthetics	Aesthetics is the branch of philosophy that is concerned with the nature of beauty and taste
AUI	visual elements of Arts, Crafts and Design.	Aperture	The opening through which light passes to expose sensitized material or a sensor.
Contextual	Elements to demonstrate your understanding.	Composition	Composition is the placement or arrangement of visual elements in a work of art.
AO2	Using a range of materials, techniques and processes to explore and develop ideas and	Contemporary Art	Embraces late 20th century contemporary art movements in painting, sculpture and architecture, as well as new media such as installation art, (including sound), conceptualism and video art.
Experiment	Intentions as your work progresses. This may be in both 2D and 3D.	Contrast	Contrast is the scale of difference between dark and light areas in images.
AO3	Develop and record ideas through drawing and annotation towards a personalized outcome. Link all work to AO1 and AO2 as your project progresses.	Depth of Field	The distance in front of the point of focus and the distance beyond that is acceptably sharp.
		Exposure	The amount of light that is allowed to reach the image sensor which is controlled by the shutter speed and aperture setting.
Ideas		Form	Form is the aesthetics of recording in 2 and 3D
	Create and present a personalized outcome,	Line	Lines can be horizontal, vertical, or diagonal, straight or curved, thick or thin.
AO4	realizing your intentions.	Macro Photography	Photography producing photographs of small items larger than life size
Presenting an Outcome		Modernism	Modernism is the term given to the succession of styles and movements in art and architecture which dominated Western culture from 19th Century up until the 1960's.
	Worth 60% of your overall grade. Contains	Photograph	A drawing with light
Coursework Portfolio	project work evidencing the four assessment	Primary source	Your own photographs/ drawings based on real objects
	objectives above.	Sculpture	To make or represent (a form) by carving, casting, or other shaping techniques.
	Worth 40% of your overall grade. Contains	Secondary source	Images form the internet, books or magazines
Exam Portfolio	exam work evidencing the four assessment	Texture	Texture is the perceived surface quality of a work of art.
	objectives above.	Tone	This could be a shade or how dark or light a colour appears

SMSC: Creative Thinkers

Timeline of Art Movements





Y10 R035 TOPIC AREA 2: Factors influencing health and wellbeing

Factos influencing health and wellbeing

Lifestyle choices – include: alcohol, diet, exercise, unprotected sex, smoking and self help. Health – Physical and mental health. This may include: illness, stress, anxiety and genetics. Education and socio-economic – this may include: disposable income, employment, literacy, qualifications, culture. Access to health services – Location, opening times, local resources, availability. This may include access to counselling, GP, clinics, pharmacy, wellbeing groups.

Coursework Task Marked out of 60

Task 1b: Produce information on the health promotion campaign you will deliver. Include:

Who the target audience is.

• An explanation of factors that could influence their health and wellbeing

• An explanation of the barriers to leading a healthy lifestyle

• An explanation of the benefits of following the advice of the campaign (PIES)

Barriers to a healthy lifestyle?

What prevents people being healthy? Advertising/Media (promoting unhealthy products on TV and social Media). Peer pressure.

Lack of support (friends and family, role models and health professionals).

Cost (expense of gym membership, healthy foods, treatment/holistic therapies)

Benefits to leading a healthy lifestyle

Physical: stronger immune system, improved mobility

Intellectual: improved concentration, focus, memory

Emotional: happier, better management of feelings

Social: interaction with others

Leading a healthy lifestyle

What can individuals do to be healthy?

- Making healthy choices (no smoking, use sun protection, safe sex)
- Healthy eating and drinking (balanced diet, moderation)
- Hygiene (personal hygiene, environment)
- Mental health (mental stimulation, coping strategies, good sleep
- Physical activity (regular exercise)

Grading criteria (18 marks)

You must provide a:

Comprehensive explanation of the factors that could influence the health and wellbeing of the target audience.

Comprehensive explanation of the barriers to leading a healthy Lifestyle.

Comprehensive explanation of the benefits of following the advice of the health promotion campaign on the chosen target audience in terms of PIES.

Y10 R035 TOPIC AREA 3 & 4: Plan create and evaluate the campaign

Planning the campaign	Coursework Task Marked out of 60	Planning the campaign
Think about: What you want to change/improve/educate about Aims related to PIES Timescales (planning time, delivery time) Resources needed (materials, equipment, additional help) Safety considerations (minimising risks if demonstrating something, sensitivity to the audience, responsibility for protecting the rights of individuals) Communication to be used during delivery Appropriateness to individuals	Task 2: produce a plan for the health promotion campaign. Task 3: deliver the health promotion campaign that you have planned Task 4: evaluate your performance when you delivered your health promotion campaign	How will you engage the audience? Method to be used to engage target audience (target audience, such as: activity, film, quiz, demonstration). Feedback methods (such as: asking questions, questionnaires, witness testim ony).
Delivering the campaign	Evaluating your performance	Grading criteria (18 marks)
Delivering the campaign Introduce the campaign - welcome - settle the individuals/audience Deliver the content as appropriate to the campaign - communicate clearly - provide support - supervise - encourage participation/further action	Evaluating your performance How to evaluate our own performance Use feedback Self reflect Review strengths and weaknesses of: Your planning Your communication skills How you engaged individuals - Suggest improvements What you would do differently and why	Grading criteria (18 marks) You must provide a: Comprehensive plan for a health promotion Campaign. (12 marks) Deliver a comprehensive campaign (12 marks) Comprehensive evaluation of strengths and weaknesses of: • planning • communication skills • engaging individuals.

Elizabeth – Key topic 2

Plots and Revolts

The Revolt of the Northern Earls, 1569 – Many in the North of England had remained loyal to Catholicism and many Catholic lords felt threatened by Elizabeth's 'new men' who gained influence at court. The Earls of Northumberland and Westmorland hatched a plan:

- 1) The Earls would raise rebel forces and take control of Durham
- March south to join the Duke of Norfolk whilst the Spanish land troops in Hartlepool
- 3) Norfolk and rebels would seize London, overthrow Elizabeth marry Mary Queen of Scots and take the throne whilst the Spanish dealt with any resistance.

However, Elizabeth heard of the plan and acted quickly. She seized Norfolk and arrested him. The rebels took Durham, but when they moved south, they lacked support. The Spanish never landed, and Elizabeth had raised an army of 14,000 men to crush the rebellion. In addition, she had moved Mary to ensure she did not escape.

450 rebels were executed on Elizabeth's orders. Westmorland escaped, but Northumberland was executed, and his head put on a spike. Norfolk, however, was released. She also hesitated with Mary and refused to execute her, frustrating the Privy council. **The Papal Bull** – Due to the execution of Catholics the Pope issued the Papal Bull, excommunicated Elizabeth from the Church. This made things more difficult for Catholics and they were unsure whether to follow the Pope or the Queen. Casting doubt over their loyalty.

<u>The Ridolfi Plot 1571</u>

Roberto Ridolfi, an Italian banker was one of the Pope's spies in England. He arranged for the murder of Elizabeth and to launch a Spanish invasion to take England and put Mary on the throne of England and to marry Norfolk.

Ridolfi had a signed letter from Norfolk declaring he was Catholic and would lead the rebellion if Phillip offered support. Phillip prepared 10,000 men, however William Cecil uncovered the plot and accused Norfolk of treason. Parliament called for Norfolk and Mary to be executed, Norfolk was but Mary was saved

by Elizabeth. The Plot coming so soon after the Papal reinforced the threat of Mary and the Catholics and also highlighted the threat

coming from Spain.

The Throckmorton Plot – 1583 This plot planned for the French Duke of Guise (Mary's cousin) to invade England, overthrow Elizabeth, free Mary and make England Catholic with the support of Spain. The Pope approved this plan. However, Elizabeths' spymaster, Francis Walsingham, uncovered the plot and Throckmorton was executed. It was significant as it highlighted the Catholic threat and showed the French and Spanish were willing to work together

The Babington Plot – 1586

against England.

The Babington Plot was like the

Throckmorton Plot as the Duke of Guise would invade England and put Mary on the throne with the support of Spain and the Pope. However, Mary was being watched and the plot was uncovered. This led to mass arrests of Catholics and Elizabeth finally gave the order to execute Mary. **The Execution of Mary 1587**– The execution removed the threat of Mary, but also gave Phillip one more reason to invade England.

Relations with Spain

Francis Drake – Drake was an English merchant who traded in the New World. However, he was also seen as a pirate. In 1570-71 Drake had captured numerous Spanish ships and their cargoes in the West Indies. In 1572, Elizabeth hired Drake as a privateer (flying a neutral flag and attacking enemy ships) and she got a lot of money back from Drakes attacks, for example he brought back £40,000 of Spanish silver from Panama. This was risky as it could provoke conflict with Spain.

In 1577 Elizabeth sent Drake to the New World where he was ordered to attack Spanish colonies. His voyage became famous as from 1577-80 Drake became the first Englishman to circumnavigate the world. He also brought back a great sum of money and Elizabeth knighted him for his efforts, which angered Phillip even more. Continuation of the Dutch Revolt - Due to England's isolation, Elizabeth was under pressure to act in the Netherlands, as a free Netherlands may provide a useful protestant alliance. She was reluctant to help as she wanted to avoid war and initially hope to apply pressure on the Spanish by: -Helping Dutch protestants -attacking Spanish colonies (by privateers) - Pursuing a friendship with France and encouraging others to help the Dutch. By 1570, Elizabeth offered an alliance to the French heir, the Duke of Alencon, through marriage. She hoped to alarm the Spanish enough to give up the Netherlands. When they didn't, she encouraged the Duke to help the Dutch fight the Spanish, which was risky as the French could potentially take the Netherlands for themselves. Spanish Fury and the Pacification of Ghent

 – 1576 – By 1576 the Spanish government in the Netherlands was bankrupt and their troops remained unpaid, leading to mutiny. Spain's forces in the Netherlands ran rampant through Dutch provinces and **sacked Antwerp in 1576**. This was known as the **Spanish Fury**. Dutch Catholics and Protestants came together against Spain, drawing up the **Pacification of Ghent**, which demanded:

 All Spanish troops to be expelled from Netherlands

Restoration of political autonomy
 End to religious persecution.

Elizabeth also sent a £100,000 loan to the rebels and to send an army force to the country to help ensure the pacification was carried out. In 1577, Phillip's brother, Don Juan, arrived and agreed to the terms. Six months after agreeing terms, Phillip sent an army to attack the Dutch. Elizabeth responded by sending a mercenary, John Casimir, and 6000 troops to help the Dutch. This meant Elizabeth was not officially sending an army to fight Spain and they were not officially at war; however, it backfired when the mercenary's devastated Catholic churches and the Dutch Catholics made peace with Spain. Elizabeth was urged to intervene directly, but Elizabeth hesitated and the French, led by the Duke of Alencon, came to fight. By 1579, the situation had changed and the Duke of Parma (who had replaced Don Juan, was far more effective. 1580-84 – Elizabeth had agreed to help the Duke of Alencon by giving him £70,000. However, Spanish power increased in 1580 when they gained Portugal and all its empire and naval forces, which alarmed Elizabeth. Furthermore, the Duke of Alencon died in 1584 followed a month later by the leader of the Dutch Protestant rebels, William of Orange. Finally, by the end of 1584, the French signed the treaty of Joinville with Phillip of Spain, agreeing to fight Protestantism together. Elizabeth's worse nightmare had come true.

Outbreak of war with Spain

Elizabeth, in response to the Treaty of Joinville in 1584, decided she needed to take direct action. In 1585, Elizabeth promised military support to the Dutch Protestants by signing the Treaty Of Nonsuch, this effectively put England and Spain at war. England would finance an army of 7,400 troops under Robert Dudley. In addition, Drake was sent to raid the New World. However, Elizabeth did not have great success in the Neverlands as firstly, Dudley accepted the title of Governor General of the Netherlands, which made it appear like Elizabeth was deposing Phillip. Secondly, English forces struggled to slow the advance of the Duke of Parma. They did take forts in Zutphen, but this was then handed back by an English captain who then defected to the Spanish. In addition, Sir William Stanley, governor of Deventer, also went over to the Spanish and gave up the town – the Dutch started to lose faith with England and Dudley. Dudley was then called back to England, but he did stop the Dule of Parma capturing the port of Ostend, which proved important in the Spanish Armada. Drake Singes the King of Spain's Beard -

Drake Singes the King of Spain's Beard – Drake caused great disruption to the Armada when he attacked the fleet whilst it was in port at Cadiz – he destroyed 30 ships as well as a great deal of the fleet's provisions then attacked the coast of Portugal and the Azores. This delayed the Armada by a year and gave the English more time to prepare.



The Spanish Armada

Phillip had decided in 1585 to launch an invasion of England. This was down to many factors: -Religion – Phillip wanted to destroy Protestantism and Elizabeth's excommunication in 1571 gave him the green light to do this. Politics – Treaties of Joinville and Nonsuch -Provocation (Drakes attacks in the New World and Elizabeth's involvement in the Dutch Revolt -Circumstances (Parma's success in Netherlands had given him confidence) Phillip's strategy – With 130 ships, 2431 guns and around 30,000 men this was the largest fleet Europe had ever seen. The Duke of Medina-Sidonia was ordered to sail along the English channel, pick up Parma in Netherlands and together they would transport troops to Kent and Parma would march on London depose Elizabeth and install a Catholic Government

The journey of the Armada

How did the Armada fail?

English ship design – John Hawkins had advised Elizabeth to invest in new war ships. This led to the new ships, known as galleons, which were built to be faster and more manoeuvrable. The idea of these ships was to quickly reload and allow the English to fire more cannon balls at the Spanish and with more speed. However, there was only 24 English Galleons in 1588.

Spanish supplies - The Armada was not well supplied; Drake's raid had destroyed much of the Spanish provisions and new barrels made were poorly designed and bad weather spoiled much of the food. In addition, Medina Sidonia indicated that the Armada lacked cannon balls.

Planning and Communication - The plan was to join Medina Sidonia with Parma however:

- The Duke did not get control of Ostend, a Deep-Sea port in the Netherlands, which meant the Armada would have to anchor in the open sea.

2 - Communication was unreliable, and it took a week for word to reach each other.

English tactics - The Armada was spotted in the English Channel on 29th July 1588. They exchanged fire off the Isle of Wight on 2-4 August where the English fired as many as six times more cannon balls than the Spanish and from further away. This meant the English had a clear advantage.

The Battle of Gravelines, 8 August 1588 - on the 6th August, the English sent fireships amongst the Spanish fleet anchoring in the Channel - whilst this did little damage, it did scatter the Armada and when it regrouped the English engaged. Medina Sidonia had to fight without Parma's ships and were not ready. The more mobile and faster English ships defeated the Armada which was then scattered by the winds. The Spanish ships would be wrecked trying to get home whilst being smashed against the Scottish and Irish isles.



1. Armada sets sail for England. 2. The Armada is sighted and beacons are lit along the English coast.



5. Strong storms/wind push the Spanish fleet towards Gravelines where 'The Battle of Gravelines' takes place. The English inflict heavy damage here.

6. The wind/ storm forces the Spanish fleet north and the English turn back.

An overview of the Armada



3. The Armada sails through the English Channel - little damage inflicted. 4. The Armada anchors near Calais and the English send in fireships. The Armada panics and scatter out of their crescent formation.



7. The Armada sails home but has to go around Scotland and Ireland - and many ships are wrecked. 8. The Spanish fleet arrives back home but most ships are lost.





they scattered'. Again, reinforcing the notion that God clearly favoured the Protestants. Furthermore, this encouraged the Dutch to continue fighting the Spanish. This led to the strengthening of the Anglo-Dutch alliance. This also showed the strength of the English Navy and gave them confidence to trade and explore more widely in the seas. The defeat of the Armada would lead to a decline in Spanish power.



Galleon – Faster and more manoeuvrable than heir Spanish counterpart.



Medals handed out in the aftermath of the Armada

Phillip to Blame?

It has been suggested that Phillip ignored much advice from his commanders before it sailed, whereas Elizabeth left key decisions to her commanders, Drake and Lord Seymour.

Consequences

The English





Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.

Significance of Water

Resources such as food, energy and water are what is needed for basic human development.

FOOD	WATER	ENERGY
Without enough nutritious food, people can become malnourished . This can make them ill . This can prevent people working or receiving education.	People need a supply of clean and safe water for drinking, cooking and washing. Water is also needed for food, clothes and other products.	A good supply of energy is needed for a basic standard of living. People need light and heat for cooking or to stay warm. It is also needed for industry.

Demand outstripping supply

The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations

1. Population Growth

- Currently the global population is 7.3 billion.
- Global population has risen exponentially this century.
- Global population is expected to reach 9 billion by 2050. With more people, the
- demand for food, water, energy, jobs and space will increase.



3. Changing Technology and Employment

- The demand for resources has driven the need for new technology to reach or gain more resources.
- More people in the secondary and tertiary industry has increased the demand for resources required for electronics and robotics.



Food in the UK

Growing Demand

- The UK imports about 40% of its food. This increases people's carbon footprint.
- There is growing demand for greater choice of exotic foods needed all year round.
- Foods from abroad are more affordable.
- Many food types are unsuitable to be grown in the UK.

Agribusiness

Farming is being treated like a large industrial business. This is increasing food production. + Intensive faming maximises the amount of food produced. + Using machinery which increases the farms efficiency.

- Only employs a small number of workers.

- Chemicals used on farms damages the habitats and wildlife.

Unit 2c

energy for industry. The Challenge of LICs and NEEs want similar lifestyles to HICs, therefore they will need to consume more resources.

Development means more water is required for food production as diets improve.

2. Economic Development 🖉

As LICs and NEEs develop

further, they require more

Resource Reliance Graph

Consumption - The act of using up resources or purchasing goods and produce.

Carry Capacity – A maximum number of species that can be supported.

Resource consumption exceeds Earth's ability to provide!

75% of the UK's oil and gas has been used up. Coal consumption has

Growing Demand

The UK consumes less

energy than compared to

the 1970s despite a smaller

population. This is due to

the decline of industry.

Changes in Energy Mix

declined. UK has become too dependent on imported energy.



to our carbon footprint.

+ Supports families in LICs.

contribute to local services.

own food.

popularity.

own food.

•

+ Taxes from farmers' incomes

- Less land for locals to grow their

- Farmers exposed to chemicals.

Organic foods that have little

healthier have been rising.

Sustainable Foods

impact on the environment and are

Local food sourcing is also rising in

Reduces emissions by only

eating food from the UK.

Buying locally sourced food

A third of people grow their

supports local shops and farms.



Water in the UK

Deficit and Surplus

The north and west have a water

The south and east have a water

deficit (more water needed than is

experiencing water stress (where

surplus (more water than is

More than half of England is

demand exceeds supply).

required).

actually available).

Foods can travel long distances The average water used per (food miles). Importing food adds household has risen by 70%. This growing demand is predicted to + Supports workers with an income increase by 5% by 2020.

> This is due to: A growing UK population.

Growing Demand

- Water-intensive appliances.
- Showers and baths taken.
- Industrial and leisure use.
- Watering greenhouses.

Pollution and Quality

Cause and effects include:

- Chemical run-off from farmland can destroy habitats and kills animals.
- Oil from boats and ships poisons wildlife.
- Untreated waste from industries creates unsafe drinking water.
- Sewage containing bacteria spreads infectious diseases.

Management

UK has strict laws that limits the amount of discharge from factories and farms.

Education campaigns to inform what can be disposed of safety. Waste water treatment plants remove dangerous elements to then be used for safe drinking. Pollution traps catch and filter pollutants.

Water stress in the UK

Water Transfer

Water transfer involves moving water through pipes from areas of surplus (Wales) to areas of deficit (London).

Opposition includes:

- Effects on land and wildlife.
- High maintenance costs. •
 - The amount of energy required to move water over long distances.

Energy in the UK (continued)

Significance of Renewables + The UK government is investing more into low carbon alternatives. Nuclear + UK government aims to meet targets for reducing emissions. + Renewable sources include wind, solar and tidal energy. Farm - Although infinite, renewables are still expensive to install. - Shale gas deposits may be Wind exploited in the near future

Exploitation New plants provide job opportunities. Problems with safety and possible harm to wildlife. Nuclear plants are expensive. Locals have low energy bills.

Reduces carbon footprint. Construction cost is high. Visual impacts on landscape. Noise from wind turbines.



from fossil fuels. By 2020, the UK aims for 15% of its energy to come from renewable sources. These renewable sources do not contribute to climate change.



Energy in the UK **Energy Mix**







Resource Management

Option 3: ENERGY

Energy security means having a reliable, uninterrupted and affordable supply of energy available. Energy insecurity can be experienced by countries with both a high and low energy consumption. Technology is increasing energy consumption.

• • •	••• •• ••
Physical	Economic 💲
 Geology determines the availability of fossil fuels. Climate variations will affect the potential use of renewable energy. Natural disasters can damage energy infrastructure. 	 Cost of extracting fossil fuels is becoming costly and difficult. Price of fossil fuels are volatile to potential political changes. Infrastructure for energy is costly, especially for LICs.
Technology	Political
 New technology is making once difficult energy sources now reachable/exploitable. 	 Conflict and turmoil in energy rich countries can affect exports. Stricter regulations over Nuclear.
Impact of Ene	rgy Insecurity
Sensitive environments	Food production
Exploration of energy resources threatens to harm sensitive areas such as the oil drilling in Alaska, USA.	Food production depends on the energy needed to power machinery and transport goods to different markets.
Energy conflict	Industry
Shortages of energy resources can lead to tensions and violence. Conflict can be caused by fear of energy insecurity.	Countries can suffer from shortfalls in energy leading to a decline in manufacturing and services.
Increasing Energy Supply	C.S. UK Fracking
<u>Non-renewables</u> Fossil Fuels - Conventional power stations can be made more efficient	Fracking is used to extract natural gas trapped in underground shale rock. It is a method considered by the UK.
with carbon capture overcoming the environmental impacts. Nuclear - Once a nuclear plant is built it can provide a cheap and long-term dependable source of energy.	Advantages Estimated to create 64,000 jobs. UK has large shale gas reserves. Is far cheaper than natural gas.
Renewables Wind, Solar, Biomass - These are examples of environmentally friendly renewable sources that can't run out but cost a lot to install.	Disadvantages May cause groundwater pollution Is a non-renewable resource. May trigger minor earthquakes.
Sustainable Energy Supply	C.S. NEE - Chambamontera
This involves balancing supply & demand. It also includes reducing waste & supporting the environment.	Chambamontera is an isolated community in the Andes of Peru. It introduced a micro-hydro to exploit water power as an energy source.
Home design - Building homes to conserve energy. i.e. roof insulation. Reduce demand - Changing attitudes towards energy used to save energy. Efficient technology - Making cars more efficient by improving engine	Benefits to the community • Provides renewable energy. • Low maintenance & running costs • Has little environmental impacts. • Using local labour and materials.

Less wood is needed to be burnt.

Businesses are developing.

•

•

design and weight. i.e. Hybrid engines.

Transport - Using public buses & bikes.

KS4 - Computer Science - 2.1 ALGORITHMS - Knowledge Organiser

		KEYWORDS		
	Algorithm	A set of step-by-step instructions needed to solve a problem.	10	Line/ a Shows
2	Trace tables	A table used to test different conditions in a program to make sure the result is correct. $\begin{array}{c ccccccccccccccccccccccccccccccccccc$	11	Input / An inpu given. I
}	Structure diagrams	A graphical way to represent a problem.	12	Proces An inst
Ļ	Pseudocode	A simplified programming language used in program design.	13	Decision A decision route ye
5	High-level programming language	A programming language that allows humans to write programs as it is closer to human language than machine languages e.g python, HTML, C+.	14	Sub pr Links o
6	Flowcharts	A diagram that represents the flow of a program.	15	Termin
,	Computational	Taking a complex problem, understanding it and	10	Marks t
,	or algorithmicdeveloping solutions. Broken down in abstractionthinkingand decomposition (see below).			
	C	OMPUTATIONAL THINKING		
Abstraction Filtering out unnecessary parts so that you can make the solut For example if you were buildir program, you don't need to know users taking part.		Filtering out unnecessary parts of the problem so that you can make the solution. For example if you were building a quiz program, you don't need to know the age of the users taking part.	16	Syntax e Program run and e message returned.
	Decompositio	n Breaking down one big problem into a number		
)		of smaller problems. For example if you were building a quiz program, you could start by generating the questions and checking the answers, then creating users and calculating scores.	17	Logic err Program but it will the expect result.

FLOWCHART SYMBOLS					
10	Line/ arrow Shows the directio	Line/ arrow Shows the direction of the flow of the program.			
11	Input/ Output An input is receive given. E.g print sco	Input/ Output An input is received from user or an output is given. E.g print score.			
12	Process An instruction or co	ommand.			
13	Decision A decision of eithe route you will follow	Decision A decision of either yes or no will decide which route you will follow.			
14	Sub program Links one program to another. Like a function.				
15	Terminal(Start / Stop) Marks the start and end of a flowchart.				
		COMMON ERRORS			
16	 Missing an opening or closing bracket Missing a quotation mark Spelling a keyword incorrectly (primt) Using capitals instead of lowercase Using = instead of == when comparing values Missing a colon at the end of a line Inconsistent indentation 				
17	 Logic errors Program will run but it will not return the expected result Using the wrong comparison operators (> instead of < or <=) Doing the wrong sum * 100 instead of 10. Printing information in the wrong order. 				

KS4 - Computer Science - 2.1 PSEUDOCODE - Knowledge Organiser

DATA Types			Comparison Operators					
1	Character (Char) 1	l single character	"M"	14	==	Equal to	IF x == "Hello":
2	Real (Float) [Decimal numbers	20.5	15	!=	Not equal to	While name != "Jane":
3	Integer (Int)		Whole numbers	13	16	>	Greater than	IF age > 18:
4	Boolean (B		True/False	Тгие	17	<	Less than	While age < 21:
-	Doolean (D			i i u c	18	>=	Greater than or equal to	IF age >= 21:
5	String (Str)	li a	etters, numbers, space and symbols.	"JK21 &!"	19	<=	Less than or equal to	IF age <= 18:
		MATHEMA	TICAL OPERATORS				LOGICAL OPERATORS	
6	+	Addition		5+5 Output 10	20	AND	All criteria must be met	IF x == "Hello" AND y == 2:
7	-	Subtraction	ו	6-5 Output 1	21	OR	At least 1 part of the criteria must be	IF y "Hello" OB y 2:
8	/	Division		6/3 Output 2	21	OK	met	11×-2 Then $0 \times y = 2$.
9	*	Multiplication	on	6*2 Output 12	22	NOT The criteria must not be met		IF x NOT "Hello":
10	MOD	Returns rem	nainder after division	16 % 3 Output 1		OTHER		
11	DIV	Returns floc quotient (in	or division integer value teger number before	13//2 Output 6	23	Random number random(random(1, 50)
		the decimal	places).	· · · · · · · · · · · ·	24	Rando	m selection from an array	chosenColour =
12	** or ^	Exponentiat	tion (Power of)	2 ** 3 Output 8	24	colours	= ["Red", "Blue", "Yellow"]	random(colours)
		CAI			25	Increme	enting (increasing)	score = score + 1
	Simple	calculations	Calculate with	DIV and MOD	26	Decrementing		score = score - 1
12	num1 = input("Input first number: ") time = input("Please input minutes: ")		27	Storing data , assigning to a variable from an input		Friend = input ("Please enter your friends name: ")		
13	total = num1 print("Total:	* 10 " + str (total))	minutes = time MO	D 60	28	Outputting a message		Print ("meesage must be in speech marks"
			print(str(nours) + "	nours and +				
			str(minutes) + " min	nutes")	29	Output	ting data assigned to a variable	print (name)

KS4 - Computer Science - 2.1 PSEUDOCODE - Knowledge Organiser

SELECTION (IF, ELIF, ELSE)			ITERATION		
30	Definition: A programming construct, where code is selected to be executed based upon a condition being met, such as an IF statement. print("Component Facts") peripheral = input("Please enter a peripheral")	34	Definition A programm number of tin until a condit WHILE loop.	ing construct, where code is be executed a set mes (count controlled) such as a FOR loop or tion is met (condition controlled) such as a	
31	<pre>if peripheral == "Keyboard" OR peripheral == "Mouse": print ("This is an input device!") elif peripheral == "Monitor" OR peripheral == "Speakers": print ("This is an output device!") else: print ("I'm not sure what type of device this is")</pre>		35 Count controlled iteration - Iterate 10 times (0-9), FOR loop 35 for i = 0 to 9 print("Code goes here!") print("Code goes here!") print("Code goes here!") next i		
32	<pre>print("Grade calculator") score=input("Enter score out of 100: ") if score >= 80: print ("Distinction Grade!") print("Top grade – well done!") elif score >= 65: print ("Merit Grade!") elif score >= 50: print ("Pass Grade!") else: print ("Fail")</pre>	36	Condition cont reply = input (" while reply != " print ("Inval reply = inpu print ("Thank y Condition cont Do	trolled iteration - WHILE loop (Please input Yes or No: ") ("Yes" AND reply != "No": lid response! Please try again") t ("Please input Yes or No: ") rou!") trolled iteration - DO loop	
	print("Component Facts") component = input("Please enter a component")		until reply =	<pre>creation of the second se</pre>	
<pre>if component == "CPU": print ("Processes data and instructions.") elif component == "RAM": print ("Stores programs and data being used.") elif component == "Hard drive": print ("Stores all of the files and programs.")</pre>	component == "CPU": print ("Processes data and instructions.") if component == "RAM":	38	Sequence	A programming construct where statements are executed one after another in order.	
	elif component == "Hard drive": print ("Stores all of the files and programs.")	39	Variable	A named location in memory that stores a value. The value <u>CAN CHANGE</u> as the program is running.	
	else: print ("Definition not available.")	40	Constant	A named location in memory that stores a value. The value <u>NEVER CHANGES</u> as the program is running.	

KS4 - Computer Science - 2.1 SEARCHING AND SORTING ALGORITHMS - Knowledge Organiser

	SEARCH ALGORITHMS			SORTING ALGORITHMS		
1	1 Computers need to use search algorithms to find items in a list.		8 Computers use sorting algorithms to order items in a list.			
		BINARY SEARCH			BUBBLE SORT	
2	A binary se	earch is used to look for items in an ordered list.	9	Used to s	ort unordered lists. Simple algorithm but takes a long	
3	How it works	 Find the middle item in the ordered list. If this is your item – stop the search! If not, compare the item you are looking for to the middle item, if it comes before, get rid of the second half of the list and if it comes after get rid of the first half of the list. Repeat steps 1-3 until the item is found. 	10	How it works	 Look at the first two items in the list. If they are in the right order, don't do anything. If they are not, swap them around. Move onto the next pair and repeat step 2. Repeat step 3 until you get to the end of the list. This 	
	0 1 2 3 4 5 6 7 8 9 Search 23 2 5 8 12 16 23 38 56 72 91				 respect step o unit you get to the ond of the net rine s called the first pass. Repeat steps 1-4 until there is no swaps in a pass. 	
4	Example	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			MERGE SORT	
		23 > 56 take 1 ^x half 2 5 8 12 16 23 38 56 72 91 Found 23, Return 5 0 1 2 3 4 L=5,M=5 H=6 7 8 9	11	An examp larger list	ble of a divide and conquer algorithm. Quicker sort for s than the bubble sort.	
			12	How it works	 Split the list in half. Repeat step 1 until you have only 1 item in each list. Merge pairs of lists back together and sort them into the right order as you go. 	
5	A linear se	arch is used to look for items in an unordered list.			the light order as you go.	
	How it	 Look at the first item in the list. If this is your item stop! If not, look at the next item in the list, if this is your item – 		INSERTATION SORT		
6	works	stop the search!3. Repeat steps 1 and 2 until you find the item or reach the end of the list.	13	The simp checking	lest sorting algorithm. Very quick with short lists. Quick at to make sure a list is ordered.	
7	Example	Find '20' 0 1 2 3 4 5 6 7 8 10 50 30 70 80 60 20 90 40	14	How it works	 Look at the second item in the list. Compare it to all items before it and insert it into the right place in the list. Repeat step 2 for the 3rd, 4th 5th etc items in the list. 	

KS4 - Computer Science - 2.3 PRODUCING ROBUST PROGRAMS - Knowledge Organiser

	KEYWORDS			MAINTAINABILITY		
1	Defensive design	The purpose of defensive design is to ensure that a program runs correctly and continues to run no matter what actions a user takes.	10	A well maintair understand. Th program:	ned program makes it easier for other programmers to ne following features can improve maintainability of a	
2	Anticipating misuse	Protection against user inputs or actions such as a user entering a letter instead of a number.	11	Use of sub- programs	Sub-programs can be called upon as many time as needed so the code is not repeated again and	
		Used to confirm the identity of the users before		programo	again.	
3	Authentication	they can access certain pieces of data or parts of the program. Usually done using passwords.	12	Naming	Variables and sub-programs should be appropriately named so they can be used and recognised	
1	Input validation	The testing of any data input by user		CONVENTIONS	throughout the program.	
4	input validation	The testing of any data input by user.			Used to separate different statements which allows	
5	Syntax errors	Error in the code (wrong grammar). Program will not run and errors messages will be returned.	13	Indentation	other programmers to see the flow of the program easier.	
6	Logic errors	Error in the logic. Program will run but it will not return the expected result.			Notes added to code that used to show explain the code and are ignored when the program is	

TESTING

7	Purpose of testing	 To check it performs as expected To check it meets the users' requirements To check that there are no errors To check the user understands how to use it To check for any security loopholes
8	Types of testing	 Iterative testing – carried out while the program is being developed. Final/terminal – carried out when the whole program is complete to ensure it functions as it should.
9	Suitable test data	 Normal - Sensible, normal data that the computer should be able to process. Boundary - Data that is at the upper or lower limits of what is accepted. Invalid - Data that the program does not accept. Erroneous - Data that is the wrong data type.

compiled. Written using a # followed by the 14 Comments comment. Useful for explaining the key features of a program so other programmers can understand. **EXAMPLE OF WELL MAINTAINED CODE** Sub-program 'greet' allows us to Comments explain what the line use this line of code multiple times of code is doing. in the program. def greet(name): #This function greets the person passed in as a parameter print("Hello, " + name + ". Good morning!") greet('Paul') Indentation allows us to see Naming conventions – the name which parts of the code are in 'greet' for the function is appropriate

the sub-program 'greet'.

because this is what it does.

KS4 - Computer Science - 2.4 BOOLEAN LOGIC - Knowledge Organiser

	KEYWORDS					
1	Logic Gate A logic gate is an building block of a digital circuit. Most logic gates have two inputs and one output. At any given moment, every terminal is in one of the two binary conditions 0 or 1					
2	Truth Table A table which shows outputs from a logic gate or circuit given certain inputs. The three you need to know are below.					
	_	7	5			



3. AND LOGIC GATE & TRUTH TABLE

An AND logic gate take two inputs and returns on output. Both inputs have to be 1 in order to output a 1.

Input 1	Input 2	Output
1	1	1
1	0	0
0	1	0
0	0	0

A good way to remember:

6

AND - if I went to the shop to get bread AND milk and only came back with one or the other - I have failed (0).



4. OR LOGIC GATE & TRUTH TABLE

An OR logic gate take two inputs and returns on output. At least one input has to be 1 in order for the output to be 1.

Input 1	Input 2	Output
1	1	1
1	0	1
0	1	1 _
0	0	0

A good way to remember:

OR - if I went to the shop to get bread OR milk and came back with at least one - I have succeeded (1)



5. NOT LOGIC GATE & TRUTH TABLE

A NOT logic gate takes one input and returns one output. The output of a NOT gate is always the opposite of the input.

Input	Output
1	0
0	1

A good way to remember:

NOT – the easy one to remember as it is always just the opposite.

Logic gates can also be combined to make a larger representation of different electrical systems. Your example will likely include a combined gate. The following diagram combines a AND and a NOT gate and the truth table shows the different results.



А	В	С	Q
0	0	0	1
0	1	0	1
1	0	0	1
1	1	1	0

EXAMPLE

KS4 - Computer Science - 2.5 PROGRAMMING LANGUAGES AND IDE - Knowledge Organiser

KEYWORDS						
1	Programming languages	Programming languages are used to write algorithms to make programs (software).				
2	High level programming language	Human-readable instructions that are created so that humans can use and understand them e.g Python.				
3	Low level programming language	Machine code. Machine-readable instructions are in a language that computers understand e.g binary code.				
4	Translators	Converts high-level code into machine code. Translators are interpreters or compilers.				



COMPILER VS INTERPRETER

5	Compiler	Translates the whole program into machine code before the program is run. Returns a list of errors for the entire program once compiling is complete. Once compiled, the program runs quickly, however can take a while to compile.
6	Interpreter	Translates code into machine code, instruction by instruction. Returns the first error it finds and stops. Useful for debugging. Will run slower because code is being translated as the program is running.

HIGH-LEVEL	VS LOW-I	EVEL PRO	GRAMMING	LANGUAGES

7	High- level	 Close to human language so easier to read and write. Slower to process as need to be translated to computer language first. Logic operators and functions built in (e.g arithmetic).
8	Low- level	 Can be processed quicker as it does not need to be translated. More difficult for people to read and write. Developers of major web applications and games need to know how to code in low-level in order to maximise speed and efficiency of a program.

INTEGRATED DEVELOPMENT ENVIRONMENT (IDE) TOOLS

)	An IDE is an application used to create software in different programming languages. It has different tools and functions that can assist in the development of software, for example:					
0	Editors	The main section where the code is typed into. The IDE will use auto-colour coding for strings, loops etc and auto-correct, auto-indent and auto-complete (such as closing brackets).				
1	Error diagnostics	Helps to find and fix errors in a program by showing the location of the bug and suggesting how to fix it.				
2	Run-time environment	Will run the code even if it is not designed to be run on that machine.				
3	Translators	Converts the code into machine code.				



Year 11 - iMedia - Mind Maps / Spider Diagrams - Knowledge Organiser

Purpose and who uses it (in context)

- Used by designers and project planners
 - Help with generating ideas for (answer in context)
 - To record ideas for a whole project
 - To show links between different parts and processes of a project
 - To explore further, break down and develop each of the initial ideas

Reviewing tips

- Who is the audience, client or media developer and write the review for them.
- Compare to brief and client requirements does it do what was asked for?
- Is the format suitable e.g. a mood board not good for web developer for what to put on a home page
- Balanced argument of positives and negatives
- Has the mind map been structured correctly?
 - Is there one central node?
 - Are there a suitable number of sub nodes?
 - Are sub nodes grouped together logically?
 - Have nodes been linked together with branches?
- Is the content relevant?

<u>Example</u>



Software to create

- Word Processing (Word)
- Desktop Publishing (Publisher)
- Presentation (PowerPoint)

File Types

- .docx
- .pub
- .ppt

Items included

- Central Node central idea/main theme.
- Sub nodes information linked to the node it is connected to.
- Text at each sub-node for key points, ideas, activities, requirements etc.
- Images- can also be used on sub nodes.
- Branches –lines that connect all nodes.
- Relevant content to scenario.

Creating tips

- It actually needs to be a mind map, if anything else created 0 marks.
- Content should match scenario given
- Recognisable diagram structure
- Suitable detail/annotation
- Logical sequence of nodes/sub-nodes
 - One central node
 - Nodes grouped together logically
 - Suitable number of nodes
 - Nodes linked together with branches

Year 11 - iMedia - Mood Boards - Knowledge Organiser

Purpose and who uses it (in context)

- Used by graphic designers, interior designers, industrial designers, photographers and other creative artists
 - Generate ideas & concepts for a media product
 - Create a feeling for a media product
 - Be a reference for others in a creative team to understand the look & feel to be created
 - At start of a project to:
 - generate ideas for a product
 - give a feel for the style of a product
 - Throughout a project to:
 - remind people of the style they are aiming for
 - help others in the creative team understand the feeling and styles used

Reviewing tips

- Who is the audience, client or media developer and write the review for them.
- Compare to brief and client requirements does it do what was asked for?
- Is the format suitable e.g. a mood board not good for web developer for what to put on a home page
- Balanced argument of positives & improvements (4 of each)
- Will people viewing it understand the style and feel?
- Does it include appropriate items such as images, colours, typography or textures?
- Does it mention the structure? mood boards should not be formally laid out or squashed into one corner
 - Is the content relevant?

<u>Example</u>



Software to create

- Image editing software (Photoshop)
- Presentation software (PowerPoint)
- Desktop publishing software (Publisher)

File Types

- .psd (Photoshop)
- .ppt (PowerPoint)
- .pub (Publisher)

<u>Uses</u>

Movies/Adverts/Animations/games

Items included

- Digital / Physical:
 - Images (photos, drawings, sketches, graphics)
 - Text (typography, font style/size/line spacing)
 - Colour swatches
 - Textures
- Video:
 - A collection of videos that give a feel
 - The pace of cuts
 - Example audio sounds
- Sound:
 - Sounds
 - Effects
- Music that give a feeling for a product

Creating tips

- It actually needs to be a mood board, if anything else created – 0 marks.
- Items included should match scenario given
- Explain how it links to the scenario
- Suitable detail/annotation
- Justification for choices as annotations needs to show a conscious decision has been made WHY you chose the image (how does it link – what's its purpose? Etc.)
- Only relevant to scenario images

Year 11 - iMedia - Scripts - Knowledge Organiser

Example

NT. SPACE STATION OPBITING JUPITER

The crew have just woken and are preparing for the

descent to the surface of Jupiter in the lander module

- SCRIPT - THE JUPITER PROJECT

twith head raised high

This will be a historic day for us.

know, we have waited years for this

Well, don't forget to take your camera!

ement - let's hope it goes well!

COMMANDER YORIN

(emiling)

Purpose and who uses it (in context)

- Used by actors, narrators, directors, film crew, sound editors, continuity experts
 - Dialogue for actors (what the actors will say)
 - Which characters are in the scene and some stage directions
 - Location information such as in a building or in a park
 - Additional information for the film crew, such as camera angles and sound effects
 - As part of a pitch to get a film or TV program produced

Software to create

• Word processing software (Word)

TLOSE UI

TLOSE UP

MID SHOT (BOTH)

File Types

.doc (Word)

Scene heading -

Character name

(indented)

Dialogue

(indented)

Shot type

lused with a

camera soript)

Uses

 Movies/plays/animations/adverts/TV shows/radio shows/speaches

Items included

• Cover:

- Title
- Scriptwriter / author
- Date
- Draft number

• Script:

- Locations
 - INT is used for interior shots
 - EXT is used for exterior shots
- Shot types
- Camera movements
- Indentation of character names and dialogue
- Character names in capitals
- Scene/stage directions i.e. what happens
- Sounds and sound effects
- Dialogue i.e. speech and how it is spoken

Creating tips

- It actually needs to be a script, if anything else created 0 marks.
- Items included should match scenario given
- Explain how it links to the scenario
- Suitable detail/annotation to justify choices
- Justification for choices as annotations needs to show a conscious decision has been made WHY you chose the image (how does it link – what's its purpose? Etc.)
- Include at least 6 relevant items such as title, scriptwriter / author, date and draft number on cover, locations, shot types, camera movements, character names in capitals

Reviewing tips

- Who is the audience, client or media developer and write the review for them.
- Compare to brief and client requirements does it do what was asked for?
- Is the format suitable e.g. a mood board not good for web developer for what to put on a home page
- Balanced argument of positives & improvements (4 of each)
- Does it include appropriate items such as title, scriptwriter / author, date and draft number on cover, locations, shot types, camera movements, character names in capitals?
- Is the content relevant?

Year 11 - iMedia - Storyboards - Knowledge Organiser

Purpose and who uses it (in context)

- Used by Creative designer, clients, production staff such as camera operators, animators, web designers or game programmers.
 - To visually show what happens in each scene or shot in a timeline
 - It shows what scenes need to be filmed or created
 - Provide visual representation of how a media project will look along a timeline
 - Provide a graphical illustration of what a sequence movements will look like
 - Provide guidance on what scenes to film or create
 - Guidance on how to edit the scenes in to a story

Reviewing tips

- Who is the audience, client or media developer and write the review for them.
- Compare to brief and client requirements does it do what was asked for?
- Is the format suitable e.g. a mood board not good for web developer for what to put on a home page
- Balanced argument of positives & improvements (4 of each)
- Does it include appropriate items such as arrows to show ٠ camera movement from one frame to another, camera movement, scene description, lighting or time of day instructions, important character movements, timings, location and sound information, camera angles & shot types? Is the content relevant?



- Presentation software (PowerPoint)
- Desktop publishing software (Publisher)

File Types

- .doc (Word)
- .ppt (PowerPoint)
- ٠ .pub (Publisher)

Uses

Film or movie, video advertisement, audiovisual sequences, multimedia presentations, animation including stop motion, comic strip

Items included

- Arrow to show camera movement from one frame to another
- Camera movement
- Scene description
- Lighting or time of day instructions
- Important character movements
- Timings

a mai

RADE

- Transitions
- Location information
- Camera angles
- Camera shot types
- Sound information such as dialogue, sound effects, ambient sound and music

Creating tips

- It actually needs to be a storyboard, if anything else created – 0 marks.
- Its not about quality of drawings stick figures are fine.
- Include scene numbers AND timings
- Include camera shots (close up, mid, long)
- Include camera angles (over shoulder, low angle, aerial)
- Include camera movement (pan, tilt, zoom or using a track and dolly)
- Include lighting (types, direction)
- Include sound (dialogue, sound effects, music)
- Include locations (indoor studio or other room, outdoor)
- Items included should match scenario given
- Only relevant to scenario content/items

Year 11 - iMedia - Visualisation Diagrams - Knowledge Organiser

Purpose and who uses it (in context)

- Used by graphic designers, interior designers, industrial designers, photographers and other creative artists
 - Show the layout of a final product
 - Show the colour scheme and font choices / typography
 - Allow a client or others in a design team to see how the final product will look before it is created

<u>Example</u>



Software to create

- Word processing software (Word)
- Presentation software (PowerPoint)
- Desktop publishing software (Publisher)
- Graphics editing software (Photoshop)

File Types

- .doc (Word)
- .ppt (PowerPoint)
- .pub (Publisher)
- .psd (Photoshop)

<u>Uses</u>

 CD/DVD/Blu-ray cover/Poster/advert/Game Scene/Comic book page layout/Web page/multimedia page layout/Magazines

Items included

- Logo
- Title
- Image
- Colours
- Font(s)
- Annotations
- Layout and positioning of elements

Creating tips

- It actually needs to be a visualisation diagram, if anything else created – 0 marks.
- Items included should match scenario given
- Explain how it links to the scenario
- Suitable detail/annotation
- Justification for choices as annotations needs to show a conscious decision has been made WHY you chose the image (how does it link – what's its purpose? Etc.)
- Only relevant to scenario content/items
- Colour scheme identified

Reviewing tips

- Who is the audience, client or media developer and write the review for them.
- Compare to brief and client requirements does it do what was asked for?
- Is the format suitable e.g. a mood board not good for web developer for what to put on a home page
- Balanced argument of positives & improvements (4 of each)
- Does it include appropriate items such as logo, title, images, colours, fonts, annotations?
- Is the content relevant?



Cummings accuses PM of lying over No 10 party



Heather Stewart	sheet."		
however, constraining that a strength that the strength of the strengt of the strength of the strength of the	An example of the second the shift of the second se		
UK sending a	anti-tank	Inquiry launched into	financies longita-barrer autority involved in the

weapons to a	Ukraine	mone over viP lane				
Dan Subbegh Refinite and incorting alling	The taichering op of holitary sep- port corresponds for formality continuers to along up to say depituments to	Devid Cress	and the state of the			
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Contexts

The Guardian is not owned by a group of shareholders like most other newspapers, for whom making a profit is imperative. Therefore, they believe that they can hold true to their core journalistic principles.

The Guardian is described as having mainstream left political values. It does not have an affiliation with any political party but does lean towards the left and has a very liberal tradition.

To help prevent the spread of the disease, the UK went into 'lockdown', where legal measures were put into place to prevent social mixing.

Forced out of Downing Street at the end of 2020 after an internal power struggle, Cummings publishes a blog, in which he reveals events and activities that took place during his time at No.10 Downing Street.

Key Terms

- Broadsheet: A text heavy newspaper format aimed at a more educated audience.
- Populist national ideology: The idea that the common people would do a better job running our country.
- Hard news: Serious news reported on in complex ways.

Media Language

Image

We see him running the dark, as if he is running

away from his responsibilities or aimlessly guided

The intertextual links with office-based TV shows

both create a sense of nostalgia for audiences on

lockdown and further villainises the PM who broke

Written Language This image has been chosen to discredit the PM.

liberal audience.

is 54.

• The headline heavily villainises Boris as an untrustworthy leader ("lying") and even infantilises him as he lies about a "party".

Target audience

• The demographic is 86% ABC1.

• The Guardian newspaper targets a

well-educated, affluent, digitally-savvy,

• 54% of The Guardian readers are male,

and the average age of the print reader

• The masthead "Guardian" connotes safety and reinforces the reliable brand identity of the newspaper as it has been reporting reliable news "for 200 years"

VALs

- Reflects the stereotypical attitudes • of middle to upper class Britain.
- left wing political values. ٠
- very liberal in its ideologies. .

Layout and Design

- The use of blue in the masthead further connotes honesty and reinforces the reliable brand identity of the newspaper as it has been reporting reliable news.
- The placement of the intertextual links to office-based TV shows above the main headline further villainises a PM who couldn't live up to the standard set by the public.

Representation

the lockdown we all followed.

us into danger.

•

Events People **Other Key Ideas** • The intertextual links to office-based TV shows The images and language have been creates a sense that Covid and lockdown has deliberately chosen to villainise the PM had a severe impact on the lives of the British and the Conservative party as people. The inclusive pronoun "we" creates a dishonourable. This representation may sense that we have become united as victims lead audiences to align their opinions with and survivors of the deadly virus. the left-wing values of the newspaper. The main headline portrays the "No. 10 party" This hapless portrayal of the PM reinforces as a great betrayal of the British people who have bravely faced Covid as a united front. a populists nationalist ideology that the people are more equipped to lead the country.



Rey rides Image: Colspan="2">Rey rides Image: Colspan="2">Rey rides Image: Colspan="2">Reg rides Image: Colspan="2">Reg rides Image: Colspan="2">Reg rides Image: Colspan="2">Colspan="2">Reg rides Image: Colspan="2">The size of colspan="2">Conservative – humans inspired by God. Six periods of time. - Liberal - interpret passages differently to fit modern society - Theistic – religion and science Image: Colspan="2">The use and abuse of the environment and pollution - The value of the world Image: Colspan="2">The use and abuse of the environment and pollution - Use of non-renewable resources: solar panels, electric to fite earth. Then God said "Let us make mankind in our image, of the earth. Then God said "Let us make mankind in our image, the world Natural resources for people to use but not abuse The use and humans in power the responsibility Dominion: Col gave humans power and authority to take charge - God created natural resources for people to use but not abuse The use and humans in power the responsibility Dominion: The power humans have over God's creation Image: Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Cols			Key Mast			AQA H	Keligious Studies A –
 - Genesis: God created the universe in six days and rested on the seventh : And God said, 'Let there Alternative view - The Big Bang - Around 13.8 billion years ago. A massive expansion of space. It has been expanding ever since - Conservative - humans inspired by God. Six periods of time. - Liberal - interpret passages differently to fit modern society - The Bible and science. - Both the Bible and science. God was the omnipotent creator of the big bang - Creation: The Bible teaches that creation belongs to God: 'The earth is the Lord's and everything in it, the world, and all who live in it' - Creation: God gave humans power and authority to take charge of the earth. Then God said "Let us make mankind in our image, of the earth. Then			Key Ideas			Thom	o B: Poligion and Life
Origins of the universe the universe exth is the Lord's and everything in it, the world, and all who the world - The big bang - A thiad Sive expanding ever since - So third is as bein expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. God was the omnipotent creator of the big bang - A thiad Sive expanding ever since - Both the Bible and science. - A thiad Sive expanding ever since - Both the Bible and science. - A thiad Sive expanding ever since - Both the Bible and science. - A thiad Sive expanding ever since - Both the Bible and science. - A thiad Sive expanding ever since - Use of non-renewable resources: solar panels, electric cars etc God created natural resources for people to use but not of the earth. Then God said "Let us make mankind in our image, of the earth. Then God said "Let us make mankind in our image, of the earth. Then God said "Let us make mankind in our image, of t		- Genesis: God created the universe in six days and rested on the sev	nth : 'And God said, 'Let ther	The Big Bang Around 12 9	hillion voars ago. A massivo ovnansion	menne	e D. Religion and Life
Image: Conservative - humans inspired by God. Six periods of time. - Conservative - humans inspired by God. Six periods of time. - Liberal - interpret passages differently to fit modern society - Theistic - religion and science - Creation: The Bible teaches that creation belongs to God: 'The earth is the Lord's and everything in it, the world, and all who it world, and all who of the earth. Then God said "Let us make mankind in our image, of the earth. Then God said "Let us make mankind i	Origins of	- Literal – word of God		of space It has been expand	ling ever since		Key Words
Image: Second	the universe	- Conservative – humans inspired by God. Six periods of time.		- Both the Bible and science.	. God was the omnipotent creator of		
Image: New Year Provide Contract Contender Contract Contract Contract Contract C	Min .	- Liberal - interpret passages differently to fit modern society		the big bang		Abortion	The ending of a pregnancy
 Creation: The Bible teaches that creation belongs to God: <i>The earth is the Lord's and everything in it, the world, and all who live in it'</i> The value of - Dominion: God gave humans power and authority to take charge of the earth. <i>Then God said "Let us make mankind in our image,</i> Matural resources: solar panels, electric cars etc God created natural resources for people to use but not the world abuse of the environment abuse of the environ		- Theistic – religion and science				Big Bang	Scientific theory of the creation of the
earth is the Lord's and everything in it, the world, and all who live in it' - Use of non-renewable resources: solar panels, electric cars etc - Water, air and land pollution - Water, air and land pollution The value of the world - Dominion: God gave humans power and authority to take charge of the earth. Then God said "Let us make mankind in our image, - God created natural resources for people to use but not abuse - Believe the world is on loan to humans who have been given the responsibility - Dominion Euthanasia The painless killing of a terminally ill	• • •	- Creation: The Bible teaches that creation belongs to God: 'The	atural resources	Th	e use and abuse of the environment	Theory	universe through a large explosion
Ive in it' - Dominion: God gave humans power and authority to take charge of the earth. Then God said "Let us make mankind in our image, of the earth. Then God said "Let us		earth is the Lord's and everything in it, the world, and all who \cdot	Jse of non-renewable resourc	ces: solar panels, electric	nd pollution	пеоту	
The value of the world - Dominion: God gave humans power and authority to take charge of the earth. Then God said "Let us make mankind in our image, buse - God created natural resources for people to use but not abuse - Believe the world is on loan to humans who have been given the responsibility Creation		live in it'	rs etc	- V	Nater, air and land pollution	Dominion	The power humans have over God's
the world of the earth. Then God said "Let us make mankind in our image, abuse who have been given the responsibility Euthanasia The painless killing of a terminally ill	The value of	of - Dominion: God gave humans power and authority to take charge -	God created natural resources	s for people to use but not - B	Believe the world is on loan to humans		creation
	the world	of the earth. Then God said "Let us make mankind in our image, a	ouse	wi	ho have been given the responsibility	Euthanasia	The painless killing of a terminally ill
in our likeness, so that they rule over the fish in the sea' - God created humans to look after the world. Need for to look after it patient		in our likeness, so that they rule over the fish in the sea'	God created humans to look a	after the world. Need for to	look after it		patient
- Stewardship: Adam and Eve were the first stewards of the earth stewardship - The parable of the Talents/Bags of Gold: Evolution Scientific theory of the development		- Stewardship: Adam and Eve were the first stewards of the earth	ewardship	- T	he parable of the Talents/Bags of Gold:	Evolution	Scientific theory of the development of
Part and all humans since have the same role to look after the planet - Need for conservation for future generations need to be God will be the final judge about how humans from apes		and all humans since have the same role to look after the planet	Need for conservation for futu	ure generations need to be Go	od will be the final judge about how		humans from apes
• Responsibility: Humans are stewards and have a responsibility to considered I responsible numans have been looking I have a responsibility: Humans are stewards and have a responsibility to considered I have a responsible numans have been looking	•	- Responsibility: Humans are stewards and have a responsibility to c	nsidered	re:	sponsible humans have been looking		Deve discoute and the second sec
liok after God's creation and pass it on to the next generation God will noid people accountable on Judgement Day parter the earth Paradise where those judged good go		look after God's creation and pass it on to the next generation		able on Judgement Day an	ter the earth	Heaven	Paradise where those judged good go after
Animal Experimentation death to be forever with God death to be forever with God		- The Rible says animals should be cared for: 'The righteous care for	he needs of - Part of their	duty as stewards of creation t	to protect animals not exploit them		death to be forever with God
The use and animals' me bible says animals should be cared for. The righteous cure for the needs of their animals' Proverts 12:10	The use and	animals'	The righteou	is care for the needs of their a	nimals' Proverbs 12:10	Hell	Damnation where those judged bad go
abuse of - The Bible says that God gave humans dominion over animals: 'they may rule over - Some will accept for medicines only as this is necessary to help humans in curing after death to be forever without God	abuse of	- The Bible says that God gave humans dominion over animals: 'they may rule over - Some will accept for medicines only as this is necessary to help humans in curing					after death to be forever without God
animals the fish in the sea and the birds in the sky'	animals	the fish in the sea and the birds in the sky'	the fish in the sea and the birds in the sky' diseases				After death Christians halisus you are
Judgement After death Christians believe you are		, , , , , , , , , , , , , , , , , , , ,				Judgement	After death Christians believe you are
- Adam was made from 'the dust of the ground' <u>Evolution</u>		- Adam was made from 'the dust of the ground' <u>Evolution</u>					
when God breathed life into him - All the species of living creatures in the world have developed over time from simple life forms Liberal A type of Christian who reads the Bib		when God breathed life into him - All the specie	- All the species of living creatures in the world have developed over time from simple life forms				A type of Christian who reads the Bible as
- Eve was created out of one of Adam's ribs to - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the fittest - changing and adapting to surroundings - Survival of the f		- Eve was created out of one of Adam's ribs to - Survival of th	fittest – changing and adaptil	est – changing and adapting to surroundings			stories, myths and metaphors
Origins of life provide company and help for Adam - Some Christians are creationists who believe the origin of human life is exactly as recorded in the Bible and Lifearelist - Some Christians are creationists who believe the origin of human life is exactly as recorded in the Bible and	Origins of life	e provide company and neip for Adam - Some Christia	is are creationists who believe	ve the origin of human life is ex	actly as recorded in the Bible and	Literaliet	A turne of Christian who haliawas the Dible
to look after the place that God had created for Many Christians accent the scientific view of evolution and so not believe it should cause conflict with their faith	, all	to look after the place that God had created for	a accent the scientific view o	of evolution and so not believe	it should cause conflict with their faith	Literalist	A type of christian who believes the Bible
them		them	is accept the scientific view o				is literally true + the word of God
- Circumstances: rape, poverty, age etc - The rights of the unborn child are equal to those of her mother		- Circumstances: rape, poverty, age etc	- The rights of	f the unborn child are equal to	those of her mother	Natural	Materials found in pature (e.g. coal, eil)
- Situation ethics - the most loving thing to do: 'As God's chosen people, clothe - Life begins at conception, it is murder: 'You shall not murder'		- Situation ethics – the most loving thing to do: 'As God's chosen pec	<i>le, clothe</i> - Life begins a	at conception, it is murder: 'You	u shall not murder'	Resources	which are exploited by humans
Abortion yourself with compassion' - Sanctity of life – Only God has the right to decide when we die so we are 'playing	Abortion	yourself with compassion' '	- Sanctity of life – Only God has the right to decide when we die so we are 'playing			Resources	
- Lesser of 2 evils God' when we abort a foetus: 'You knit me together in my mother's womb' Purgatory Where Catholics believe souls are pu		- Lesser of 2 evils	God' when we	e abort a foetus: 'You knit me a	together in my mother's womb'	Purgatory	Where Catholics believe souls are purified
- It's your life, you can choose when to die - Alternatives e.g. hospices after death + before heaven		 It's your life, you can choose when to die 	- Alternatives	s e.g. hospices			after death + before heaven
Futhanasia - Situation ethics: most loving thing to do: 'Love your neighbour as yourself' - It is deliberately taking someone's life, which is a sin against God: 'You shall not Quality of Life - How easy or difficult someone's life i	Futhanasia	- Situation ethics: most loving thing to do: 'Love your neighbour as y	urself' - It is deliberat	ately taking someone's life, whi	ich is a sin against God: 'You shall not	Quality of Life	How easy or difficult someone's life is -
- God gave humans the ability to develop life-ending drugs and the free will to use murder'	Luthanasia	- God gave humans the ability to develop life-ending drugs and the f	ee will to use <i>murder'</i>			Quality of Life	o g cancer causes a low quality of life
them: 'blessed are the merciful' - Sanctity of life – only God has the right to decide when we die.		them: 'blessed are the merciful'	- Sanctity of li	ife – only God has the right to o	decide when we die.		e.g. cancer causes a low quality of life
- Souls live on after death. humans will be resurrected: 'I am the resurrection and the life'		Is there an afterlife?	- Souls live on after death.	humans will be resurrected: 1	am the resurrection and the life'	Sanctity of Life	The belief that all life is sacred as man is
- They will be judged by God and either rewarded (heaven) or punished (hell): 'Then they will go		YES	- They will be judged by Go	od and either rewarded (heave	n) or punished (hell): 'Then they will go	Salletity of Life	made in God's image
Some people claim to have died, seen have come back to L Parable of the Sheen and Goats		- Evidence in scripture or religious texts	Darable of the Shoon and	ent, but the righteous to eterno	ar nje.		
The Afterlife life again (near-death experiences)		e life again (near-death experiences)	- Heaven - etornity in the n	recence of God. No codpose or	unhanniness: 'He will wine away	Stewardshin	The responsibility God gave humans to
In the mean mean again ag			every tear from their ever	Teaven - eternity in the presence of God. No sadness or unhappiness: 'He will wipe away			look after the world
- Purgatory - a process of cleansing and purification before eventually securing entry to heaven		NO	- Purgatory - a process of cl	leansing and nurification befor	re eventually securing entry to heaven		
- No proof of any form of afterlife. Could have been made up		- No proof of any form of afterlife. Could have been made up	- Hell - a state of existence	without God. Eternal torment	in a fiery pit ruled by Satan: 'and	Vegetarian	The choice not to eat animals
- Ideas of spirits etc. are just wishful thinking		- Ideas of spirits etc. are just wishful thinking	throw them into the blazin	ng furnace, where there will be	e weeping and gnashing of teeth'	· coctanium	

AOA Daliai Studies A – gion and Life

			Key Idea	IS			AQA C	itizenship – Rights
	Rule of Law		Why do societie	es need laws?	Legis	lation against discrimination	and	Responsibilities
	- The idea of legal certainty		Safety: ensures	citizens are kept safe and protect	ed Equa	l Pay Act 1970		
	- Laws are properly enacted ar	nd clear - equality and fairness	Justice: to ensu	re everybody is treated fairly and	equally. • Sex [Discrimination Act 1975		Key Words
1 Principles	- Laws cannot be retrospective	e – can't be charged with an	Deterrence: ens	sures that criminals are put off fro	om Race	Relations Act 1976	The Law	system of rules created and
of Low	action that is now an offence b	out was carried out before the	committing crin	ne.	Disat	bility Discrimination Act 1995		enforced by the state to ensure
OILdW	law came into force		Regulation: to e	ensure everybody behaves in a wa	ay which is Requ	lations 2003		order and safety.
-	 Due legal process 		accepted. Law h	nelps to establish societal norms.	• Empl	oyment Equality (Sexual Orientation)	Justice	Behaviour or treatment that is
	Fundamental principles are jus	stice, fairness, presumption of	Deal With Com	plex Problems: to ensure that wh	en issues	lations 2003		morally right or fair
•T•	innocence and equality before	e the law.	arise within soc	iety they can be dealt fairly and ju	istly e.g.	lity Act (Part 2) 2006	Fairness	treating people equally and
			discrimination. • Equality Act (Sexual Orientation) Regulations 2007					appropriately for the
2 Dights in	-Different societies have differ	ing views on some legal issues	How do we solv	ve global criminal problems?				circumstances
	e.g. gun control, death penalty	/.	Globalisation lea	ading to new types of crime resul	ting in organisatio	ns/agreements to combat it.	Presumption	person brought before a court
	-Post WW2 (1945) Universal D	eclaration of Human Rights	International C	riminal Police Organization (INTE	RPOL) – supports	police with terrorism, cybercrime	of Innocence	is assumed to be not guilty -
global	was established - became inter	rnational law in 1976	and organised c	rime by sharing data and a global	database of wante	ed criminals 'red notice'. The		suilt not the assured to prove
situations	-192 countries have signed De	claration	European Arres	t Warrant – cross-border judicial	surrender procedu	ure allows quick and easy transfer		inneconce
	- Council of Europe devised Eu	ropean Convention on Human	of suspected cri	minals across member states. Un	ited Nations Office	e on Drugs and Crime – encourages		innocence.
	Rights – UK helped draft and 4	7 countries have signed.	global approach	on drug, terrorism and political o	corruption. Interna	ational Criminal Court –	Equality	treating every person equally,
	0		investigates and charges for gravest crimes e.g. genocide				before the	allowing every person equal
	Role of the Police		Police Powers			Role of Judges	law	access to the justice system
	- Maintain law and order, prot	ect public and property,	Stop and search – any person/vehicle can be stopped & searche			-Legal experts who examine	Deterrence	sentencing used to prevent a
3. Operation	investigate crimes.		for prohibited items e.g. weapon if reasonable grounds to suspect. cases where citize			cases where citizens are accused		potential criminal from
of the	 Organised regionally – 43 dist 	trict forces in England & Wales	FOR – helps pre	vent serious crime AGAINST – un	fairly targeted	of breaking the law.	<u></u>	offending
justice	- 2012 – Role of Police and Crir	me Commissioner established in	minority ethnic	groups.		-Determine sentence (common	Common Law	Judgements made by Judges on
system	charge of local police forces, d	irectly elected – low voter	Power to arrest	to arrest - statutory power to arrest if individual comm		law)		now to interpret the law
	turnout now at same time as g	general election.	or attempts to o	commit a crime. Individual must b	Politically neutral – no bias	Jury	Group of 12 citizens selected to	
	- Forces headed by elected chi	ef constable. Ranked from	they are being a	arrested and police to only use rea	asonable restraint.	-Judges recommended by		pass judgment on a case
	police constable to chief const	able.	Entry search and seizure – must gain permission from a judge			independent panels - lifetime	Legislature	branch of government that
			reasons of arres	t, finding evidence, or recovering	stolen property.	appointments	ludicion.	makes laws
	Role of legal		A REAL PROPERTY AND INCOME.	Court system	Sources of Law		Judicialy	system of judges / courts
	Representatives	UK Supreme Court		If you are found guilty in a	Parliament: One of	of the three branches of	Criminal Law	criminals charged and punished
	Members of the legal	Court of Appeal	and a second second	magistrate's court, you can	government is the	e legislative - responsible for		by the state
4 Operation	profession acting on behalf	sections of an error brief terms and contraction		appeal against your conviction	making new laws.	. When parliament pass a law it	Civil Law	disputes between citizens -
of the	of citizens e.g.	^		to a Crown Court/the High	becomes legislation	on or statute.		damages awarded
iustice	solicitor/barrister. Barristers	High Court	Internet Address and	Court. If that fails, and the	Judges: when ma	king a judgement on a case, a judge	Tribunal	inferior courts to deal with
svstem	cross-examine witnesses and	rina sector selp to rescire the product	and a state of the	issue is an aspect of <u>how the</u>	particularly when	the issue is newly arising (a matter		issues like employment, health
-,	defendants in courtrooms.	Crown Court		law is interpreted, you can	of the first impres	ssion), will offer a	Ombudsmen	appointed official to check on
	lury			request an appeal to the Court	new/unprecedent	ted ruling. This ruling then		government activity for citizen
	12 neonle listen to details of			of Appeal from there the	becomes the com	mon/accepted way of dealing with	Special	Volunteer helps community -
<u> </u>	the case and judge and pass	Magistrates' Court County Court	Family Court	matter can be determined by	the legal issue. All	I future cases will follow this ruling.	Constable	no police powers
<u>~</u> `	vordict lurors are votted for			the Supreme Court (highest	Therefore, Comm	on Law is always constantly	Drosperition	that decides if charges should
	vertice. Jurors are verted for			court in the land)	evolving/respond	ing to legal developments.	Service (CBS)	he brought
	competence.						Jeivice (CP3)	

Key Ideas										
	<u> Magna Carta - 1215</u>	<u>Human Rights Act – 1998</u>	8		Common Law		Trade	<u>Union</u>		
	Signed in 1215 by King	-Incorporates the ECHR (1	1950) into dor	mestic UK law. Allows resolution	Judges in a case set a legal		A grou	up of workers in the same tra	ade or profes	sion who have
	John lays the foundation	of human rights cases in l	UK courts rega	ardless of citizenship. UK courts	precedent by making decision			d together to protect their rig	ghts e.g. NEU	(education) or RCN
5. Citizens' Rights	for the modern English	must follow decision of E	uropean Cour	t of Human Rights in legal	about laws. Ensures poorly drafted			es). Represent workers, impr	ove pay and v	working conditions,
	legal system Many	practice.			laws or laws unrelated to		histor	ric links to the Labour party, p	play a role in (electing Labour
	elements remain e g trial	-Public bodies must respe	ect, protect ar	nd act in accordance with	contemporary issues are one	en to	leade	r, organise strikes		
\bigtriangleup	by jury justifiable arrests	individual's human rights			interpretation Judgments ca	n thon	Emplo	oyers Association		
	oguality before the law	- 16 rights – absolute 'rig	ht to life' can'	t be interfered with, l imited	he used in other courts as	in then	Repre	esent businesses and owners	. Aim to defer	nd profitability of
	equality before the law,	'right to liberty' restricted	ight to liberty' restricted in some circum		be used in other courts as		their i	members' businesses. Histor	ic links to Cor	servative party and
	presumption of innocence	to privacy' – restricted to	protect other	rs.	precedents – nigner courts c	an	electi	ng leader. Employers' associa	ations may lo	bby government.
	Turner of Oniver	Cult a manifest a		Count Coto conication	overrule lower courts.	Eastars A	ffocting	- Crimo		
	<u>Types of Crime</u>	<u>Cypercrime</u>	blackmail 9	Court Categorisation	Gender	Factor	mecting	Explanation	Mitigation	
	-Homicide (murder/	includes fraud, extortion,	DIACKITIAII &	Summary Only Onences –	-Males (75%) commit more	Poverty	,	Could lead to crime due to not	However, if mo	re government support was
	manslaughter)	sexual offences.		least serious offences, dealt	crimes than female (25%)	loverty		being able to meet the basic needs of survival so turn to theft	put place e.g., fi	inancial support, UBI, this reduced.
	-Violent crime (ABH/GBH),	Law enforcement face iss	ues or:	with by Magistrates court e.g.	-Women likely to receive			(absolute). Or if individuals feel their		
	knife crime)	-identity - criminals nide	benind	fine or limited isil contence	shorter sentences as			standard of living does not match those around them (relative).		
	-Robbery & theft	security walls		Fither Way Offenses	involved in less serious crime	Peer Pro	essure	Could lead to crime due to	However, if mo	re investment was made
	-Fraud (identity theft) -	crimes anywhere – can be difficul		cases of fraud, can be	Age			people, being forced into	about the dange	ers of crime this factor could
	Technology misuse	ant overadited to LIK if cri		referred to Crown Court if	-Boys makes up 82% of	s up 82% of		social/peer approval.	Moreover, if young services were improved/created young people may not	
6. Nature of	(hacking)	committed abroad	mes	crime is deemed too serious	-More robberies and burglaries				seek the thrill o	f criminal activity.
Criminality in UK	-Domestic violence	- privacy - internet compa	niec	and stricter sentencing	committed by under 18s	Addictio (drug, a	on Icohol,	Could lead to crime due to individuals becoming dependent	educating peop	re investment was made in ole about the dangers of
-	-Rape	reluctant to share inform	ation	required for guilty verdict	Class	gambiii	'B <i>)</i>	not having the legitimate means	reduced.	se this factor could be
	-Ecological crime	Ways to prevent crime		Indictable Only Offences –	-Working class more likely to				system of rehat	silitation was established,
	(polluting)	-Neighbourbood watch -	lower crime	most serious offences e g	commit crime				rather than crim	ne to fund their behaviour.
	-Arson (burning property)	levels heightens awarene		murder Accused will appear	-White collar crime e.g. money	Opportu	unities	Could lead to crime due to opportunistic criminals taking	However, if moi into policing, ha	re investmen t was made arsher laws/punishments
	-Tax evasion (not paving	community co-operation.		in Magistrates court and then	laundering tend to be			security, harsh sentences etc.	and security measures and environmental design improved this factor could	
	tax)	-CCTV – deters criminals.	protects and	be referred to Crown Court.	Ethnicity	Lack of	shared	Could lead to crime due to not	However, if opp	portunities for socialisation
	-Anti-social behavior	reassures citizens. can be	evidence in	Unlike accused would be	-27% of prisoners from	values/ norms v	which	feeling part of a group, community or society. This may	were increased all those within	and communities ensured them felt connected this
	-Hate crime (Anti-	court, cheaper than polic	ing the	granted bail and hearing takes	ethnic minority group	bind soo togethe	ciety er.	make an individual not concerned of the consequences	factor could be Moreover, if ta r	reduced. rgeted work was
	Somitism)	streets.	0	place during custody	-link between ethnicity and			on criminal activity.	radicalise/ disto	ort society crime may also be
	Semilising				custodial sentence	I			Teduced.	
7. Forms of	Aims of Sentencing				Non-custodial and Custo	dial Sen	tences			Youth Justice
Dunichmont	Deterrence - prevent and p	ut criminals off committing	g an offence e	.g. prison sentence, criminal reco	rd Discharge – least serious	offences	s. No fu	urther action but criminal rec	ord.	-Youth court
and i	Rehabilitation – change beh	aviour and prevent crimin	als committin	g another crime e.g. sobriety tag	Fine - money owed by se	riousnes	s of cri	me - most common sentence	ş	overseen by three
	Protection – to keep the po	pulation in the community	safe from cri	minals e.g. prison, tag	Community Sentence – c	riminal c	comple	tes activities from list of 13 e	.g. curtew.	magistrates or
	Reparation – to make crimir	hals pay back for damages	caused e.g. co	ompensation, community sentend	e Prison – custodial and mo	ost serio	us – tei	rm varies depending on crim	e.	district judge.
	The Universal Declaration of	of Human Rights	European Co	onvention on Human Rights	The United Nations Conv	ention (on the	Rights of the Child - Came in	ito force in	-No jury and less
8. Human Rights	-End of WW2 UN was forme	ed - aim to rebuild world	-Developed b	by Council of Europe – 47 countrie	es September 1990 – by 202	20 196 c	ountrie	es signed. All rights connecte	d and equal.	formality e.g. use of
-	on values of peace, freedom	n & justice	signed		Aims to end child exploit	ation and	d abuse	е		first names.
	- UDHR approved by UN in 1	1948 – 192 countries	-Protect basi	c rights, hold governments	International Humanitar	ian Law	(IHL) -	Protects people involved in o	conflict e.g.	-Supported by youth
	signed – widely accepted as	template of entitlement	accountable	in European Court of Human Righ	its swounded, prisoners. Ge	neva Co	nventic	on 1949 – protects both sides	s – if broken	offending team
N-K			in Strasbourg	g if rights aren't provided.	accountable in Internatio	nal Crim	inal Co	ourt		(101)

Year 11 Dance

COMPONENT 1 Still | Rise

<u>1. Creative Intentions / influences – What the work is</u> <u>about / based on.</u>

THEME / ISSUE: To show the resilience of the human spirit. To show off a human's physical strength and vulnerability (women can be as athletic as men / men can be as sensitive as women).

- "I wanted to show resilience...the sense that if you knock me down I'll stand straight back up" Victoria Fox quote.
- Inspired by the poem by Maya Angelou "Still I Rise" specifically the way she reads / bring it to life.

MORE CREATIVE INTENTIONS ON THE SECTION BREAK DOWN SHEETS.

• **<u>STYLE:</u>** Contemporary dance.

2. Stimulus / Creative Development – How the dancers / choreographer responded to the stimulus / tasks set to develop the choreography.

<u>RESPONSE TO STIMULUS:</u> Every dancer performed the movements slightly differently – they added their own personality and style during movement creation. Gets dancers to "mess it up" and add their own flair.

- Lots of improvisation and "freedom".
- Movement and music to work collaboratively gets dancers to feel the music – enhances the performance.

TASKS: – paying attention to all parts of the body "oiling the joints". Using RADS to gain an awareness of the space before rehearsal.

- Highlight key words from the poem these turn into actions e.g. "still I rise" walk, run, jump, grow etc. –list how the words make you feel to show creative intention interpretively.
 - Draw 2 different pathways on paper and create movement fitting those directions.
 - Create a travelling phrase on a straight pathway which uses kicks, steps, turns and other movement as a way to show "War".

3. Purpose – What the work aiming to show the audience.

- **TO ENTERTAIN:** The high intensity and athleticism of the work makes for a very entertaining performance. It is engaging to audiences as there are fast transitions, dynamic movement and moments of explosion. The musical accompaniment strengthens the entertainment value as it helps to portray the theme of the piece and the intention of each section.
 - <u>TO CHALLENGE VIEWPOINTS</u>: The whole purpose of this work is to challenge stereotypes and view points of gender roles and traits. It is showing the resilience of getting back up when struck down by showing how the human spirit can be both gentle and aggressive.
- **<u>TARGET AUDIENCE</u>**. All ages specifically women due to the sex of the dancers and strong theme. Also young people to show them breaking stereotypes / convention is allowed.

4. Practitioner influences: Who the choreographer was influenced by stylistically / choreographically / technically (in terms of other people as inspirations)

- Pina <u>Bausch</u> Male German contemporary dance choreographer "I'm not so interested in how they move as in what moves them". She uses "extreme choreography...which pushes dancers to their limits" and "elaborate sets" to really wow audiences.
- Ohad Naharin male contemporary choreographer who created GAGA technique (a form of contemporary dance). Known for his creative and textured movement. Gaga technique focuses on knowing the body and its limits.
 - Jasmin Vardimon Israeli female contemporary choreographer. "Uniquely theatrical" choreography which combines physical theatre and dance. Work is very detailed and daring.

Overall style is a mix of European contemporary dance with ballet influence and pedestrian movement – from Fox's prior training and inspirations.

Fieldwork and Enquiry

Fieldwork Investigation

The fieldwork investigation includes 7 steps:

Planning- preparing a question or hypothesis. Researching the topic.
Methodology- planning and justifying your methods.

Completing the fieldwork- data collection.
Data presentation- showing your data in graphs, maps, diagrams etc.
Data analysis- discussing and manipulating your data to link it to the

question/ hypothesis and topic.
Conclusion- summarising findings.
Evaluation- evaluating the reliability of methods, data presentation and data analysis. Reflecting on accuracy of conclusions.

Planning Fieldwork

You will need to complete fieldwork in a human environment (Newcastle Quayside) and a physical environment (Seaham Coast).

One investigation needs to link physical and human processes- Flood risk on the River Tyne, how will this affect the area.

When choosing fieldwork location you need to account for:

•Accessibility of the location- how will you get there, are you allowed to go there (land ownership), is it easy to access (e.g. steep slopes, floods etc.) and how long will it take?

•Safety- is this a safe location to visit. •Suitability- is this location appropriate to investigate the task question or hypothesis?

Identifying questions:

•A hypothesis is a statement that can be tested

•The **questions** should be focused on the place or processes in places.

•You should be able to explain **why** you are studying this statement or hypothesis and the **results you expect**.

•You should be able to justify why this is an important issue.

Data Collection

Sheets- These need to be designed as tables or tick sheets to quickly collect the data and ensure it is well presented and clearly labelled.

Sampling size- needs to avoid bias so needs to be large enough to be **representative** but small enough so you are able to complete the data collection.

Sampling methods

Random Sampling-where any of the features/ people could be chosen, and a random number counter selects. E.g. it selects 1, 5, 7 and the 1st 5th and 7th people to walk past would be asked.

Stratified Sampling-equal results in each category e.g. the amount of sand: pebbles at Seaham Beach.

Systematic sampling- Having a clear system to collect the sample, e.g. asking every 5th, 10th person etc.



Fieldwork and Enquiry

<u>Data</u>

Quantitive Data- numerical data. **Qualitative data-** descriptive information.

Primary Data- the data you collect yourself.

Secondary Data- collected by other people.

Accuracy- how reliable the data is. Sample size- how many pieces of data were collected.

Skills

Mean, percentages and fractions.

Type of data presentation	Examples
Maps	A map of the study area
Graphs (simple)	Bar chartLine graphPie chart
Graphs (sophisticated)	 Choropleth map Flow line map Scatter graph Transect Proportional symbols
Visuals	Field sketchPhoto

Risk assessment

Hazard- the risk e.g. vegetation over path.

Impact- what could happen from this risk., such as getting scratched. Risk rating- score of how bad this risk could be, out of 10.

Control- the measures taken to avoid the risk.

Digital Data- this can include photographs, GIS, data on a computer etc.

GIS- geographical information systems, e.g. google maps. **Satellite Imagery-** photos from satellites (above).

Conclusions

Summarising what has been found out linking to the task/ hypothesis.

Evaluation

Discussing how effective (a bit/ not at all/very) effective the planning, methodology, data presentation and conclusion were and why.

Discussing how much this impacts the conclusion, and whether your conclusion is reliable.



Investigation questions

You need to be able to form basic questions for fieldwork at any location. These can be simple or complicated.



Year 11 French – Knowledge Organiser – homelessness						
aider	to help	habiter	to live	SDF	homeless person	
aliments	food	ils n'ont pas de	they don't have	seul	alone	
apporter	to bring	inégalité	inequality	soutien	support	
association caritative	charity	le monde	the world	tout le monde	everyone, everybody	
avoir lieu	to take place	logement	accommodation	travail	work	
bénévolat	voluntary	loyer	rent	travail bénévole	voluntary work	
boîte en carton	cardboard box	malade	sick, ill, unwell	travailler	to work	
boulot	job	maladie	sickness, illness	triste	sad	
chômage	unemployment	une manifestation	a protest	trottoir	pavement	
combattre	to combat	médicaments	medication	un tiers	a third, 1/3	
défavorisé	disadvantaged	nourriture	food	vivre	to live	
déprimé	depressed	pauvre	poor	volontaire	voluntary	
distribuer	to give out	pauvreté	poverty	vouloir	to want	
donner	to give	pays	country			
dormir	to sleep	publicité	advert, publicity			
dur	hard	quartier	area, estate (in a town)			
emploi	job	rue	street			
faim	hungry	sac de couchage	sleeping bag			
gens	people	sans	without			
grave	serious	sans abri	homeless person			

Year 11 French – Knowledge Organiser – homelessness				
aider	to help	trottoir	pavement	
association caritative	charity	vivre	to live	
bénévolat	voluntary	volontaire	voluntary	
boîte en carton	cardboard box	logement	accommodation	
boulot	job	nourriture	food	
chômage	unemployment	pauvre	poor	
combattre	to combat	pauvreté	poverty	
défavorisé	disadvantaged	pays	country	
déprimé	depressed	rue	street	
distribuer	to give out	sans abri	h ann a la an marran	
donner	to give	SDF	nomeless person	
dormir	to sleep	tout le monde	everyone, everybody	
dur	hard	travail	work	
emploi	job	travail bénévole	voluntary work	
gens	people	travailler	to work	
grave	serious	triste	sad	
habiter	to live			
inégalité	inequality			
le monde	the world			

1. Characters			2. Plot			3. Vocabulary
Inspector Goole	Moral compass / Catalyst for change / Priestley's social and political m	Moral compass / Catalyst for change / Priestley's social and political mouthpiece		Sheila and G	Gerald's engagement is celebrated	Apathy
Mr Arthur Birling	Rejects social mobility / Epitome of industrialist greed / Capitalist mentality		Act 1	Birling says there will be no war; references Titanic		Inequality
Mrs Sybil Birling	Blissfully ignorant / Symbolises the hypocrisy of the generation / Callo	us and	Act 1	Inspector a	rrives; a young girl has committed suicide	Proletariat
	uncompassionate		Act 1	Birling three	w her out after strike; Sheila had her fired for laughing	Microcosm
Sheila Birling	Potential for seismic change / Undergoes a transformative journey / F	rivolous and child-like	Act 2	Gerald had	an affair with Daisy Renton	Polemic
Eric Birling	Product of his environment / Reckless youth / Potential for change		Act 2	Mrs Birling	refused to give charity to Eva; blames father	Social critique
Gerald Croft	Bound by social construct / Arguably less culpable than Mr and Mrs Bi fickle attitude of the aristocratic world	rling / Symbol of the	Act 3	Eric's involv	ement revealed; possible rape hinted at	Proselytise
			Act 3	Inspector le	aves. Gerald returns; met policeman, no Inspector Goole	Bourgeoisie
Eva Smith / Daisy Rei	the disparity between the classes	umstance / Represents	Act 3	Telephone	rings; an Inspector is coming	Class struggle
4. Key quotations		5. Themes	6. Theatric	al Stagecraft:	Dramatic Devices	Social mobility
Birling's confidence	'Peace, prosperity and rapid progress'	Social divide	1. Dramatic	irony	the audience knows what the characters don't	Oppression
Birling on society	'the way some of these cranks talk and write now, you'd think everybody	1	- 2. Stage directions		Instructions for the actors; often revealing	Inhibition
	has to look after everybody else'	Generational	3. Setting		Constant throughout but subtle changes e.g. lighting	Social
Sheila's recognition	'but these girls aren't cheap labour – they're <i>people</i> '	divide	4. Tension		Builds up throughout the play	moutriplece
Sheila's regret	'it's the only time I've ever done anything like that, and I'll never, never do it again to anybody'	'it's the only time I've ever done anything like that, and I'll never, never do Capitalist greed		n	Is there even one?	AI
Sheila on the Inspector	'we all started like that – so confident, so pleased with ourselves until he began asking us questions'	Power and	7. Key concepts and conte		rext	V IN J-:
Sheila on Eric	'he's been steadily drinking too much for the last two years'		1912		Play is set here; just before WWI and sinking of the Titanic	
Inspector on guilt	'I think you did something terribly wrong – and that you're going to spend the rest of your life regretting it'	Attitudes towards women	1945		Priestley wrote the play then; start of the welfare state and ideals of social equality made real	PE(PR
Mrs Birling defends herself	'she was claiming elaborate fine feelings and scruples that were simply absurd in a girl in her position'	Lack of social mobility	Social resp	onsibility	Or socialism; we must all look after each other	UTC IES
Eric explains	'I'm not very clear about it, but afterwards she told me she didn't want me to go in but that – well, I was in that state when a chap easily turns nasty –	Responsibility	Capitalism		Business should make money no matter the human cost; we are all responsible only for ourselves	DR (TL
The Inspector says	(but each of you halped to kill har. Bemember that)	Class struggle	Class		A gulf exists between the upper and lower classes	¥ R
Inspector's message	fullions and millions of Eva Smiths and John Smiths, their lives their		Age		Old vs young; new and old ideas counterposed	
	hopes and fears, their suffering, and chance of happiness, all intertwined with our livesWe do not live alone. We are members of one body'	Family	Attitudes t	o women	Patriarchal leading to misogyny	LS



Function of Nutrients in the

Boay	Nutrient	Types	Function	Effects too little (deficiency)	Effect of too much (excess)
	Carbohydrates 4kcal per gram Click here for video	Starches (complex): found in cereal grains such as rice, wheat, oats, plus starchy tubers (potatoes and sweet potatoes) and vegetables (carrots, beets, corn). Digest slowly, long lasting energy. Sugars (simple): lactose found in milk and dairy, fructose found in honey, fruits and some vegetables (peppers, tomatoes). Digest and enter the bloodstream quickly for a burst of energy.	Carbohydrate is the body's main source of energy (fuel). Carbohydrate breaks down to glucose, which is the only form of energy the brain recognises. Basically, without carbohydrate, your brain wouldn't function! All carbohydrates, no matter what type, provide 4kcal of energy per gram. The difference is complex carbs take longer to break down and therefore satisfy hunger for longer, whereas simple sugars leave you feeling empty and wanting more. Complex carbs provide dietary bulk and fibre which makes us feel fuller for longer. Dietary fibre: complex carbohydrate found in the cell wall of fruits, vegetables and cereals. Aids with removal of waste from the body.	Deficiency of carbohydrates is extremely rare in the UK as we have good access to carbohydrate rich foods. Long term lack of carbohydrates in the diet can cause ketosis - a condition where the body switches to using protein as an energy source. Visible symptoms: Lack of energy and weight loss. Non-visible symptoms: Not enough fibre from wholegrains foods leads to constipation and other intestinal/bowel problems.	If not used for energy, excess carbohydrates are converted to glycogen and stored in the muscles and liver. Visible symptoms: Weight gain and obesity. Non-visible: Eating too much non-refined (white) carbohydrates leads to tooth decay, raised blood sugar levels and increased risk of developing type 2 diabetes. (See carbohydrates and glycemic index slides 7-8).
MACRONUTRIENTS	<section-header></section-header>	 High Biological Value (HBV) protein: Meat, fish, poultry, dairy foods (milk), eggs, soya. Contain all the essential amino acids the body cannot make itself. Low Biological Value (LBV) protein: Quorn, Tofu, peas, beans, lentils, nuts, seeds and cereals. Missing one or more of the essential amino acids. Mainly come from plant sources. Two or more LBV proteins can be combined to make a complete protein. This is called protein complementation. Example: beans on toast. 	Protein is digested by the body into its component parts - called amino acids . There are 8 which are essential for adults and 10 for children. Protein is essential for the growth , maintenance and repair of body tissue . Protein is part of every living cell and some tissues like skin, muscle, hair and the core of bones and teeth!	Visible symptoms: • Wasting of muscle & muscle loss • Oedema - build up of fluids in the body • Slow growth in children Severe deficiency leads to kwashiorkor (bloating of the stomach). Non-visible symptoms: Weaker immune system, as it needs protein to function properly. This can lead to prolonged recovery from illness or getting ill more frequently. AAA-DI CHOOL	Visible symptoms: Excess stored as fat, which can lead to weight gain and obesity. Non-visible symptoms: Increased protein consumption leads to hyperfiltration - a state in which the kidney faces increased pressure in order to filter and remove waste from the body. Over the long term, hyperfiltration may lead to kidney damage.
	<section-header><section-header></section-header></section-header>	Monounsaturated Fat: Avocado, many nuts and seeds, olive oil, almond oil, sunflower oil. Polyunsaturated Fat: Vegetable oil, corn oil, safflower oil, nuts, oily fish. Saturated Fat: Mainly from animal sources. Meat, butter, cream, eggs. Omega 3, 6 and 9 Fatty Acid Oily fish, seeds and oils, flax seeds, pumpkin seeds, walnuts, soya beans, dark green vegetables, vegetable oils, margarines (polyunsaturated).	 Protection of internal organs Thermoregulation (temperature control) Insulation of nerve cells (conduct electrical messages) Uptake of fat soluble vitamins (A, D, E & K) Growth, development and repair of body tissues In women, storage and modification of reproductive hormones (oestrogen) Forms a vital part of cell membranes Supports mental health Improves heart health Supports health weight management Shown to reduce inflammation Supports infant brain development 	 Visible symptoms: Weight loss over time as the body uses stores of fat. Person feels cold as fat under skin acts as insulator. Non-visible symptoms: Bruising of the bones as they are not protected. Lack of fat in the diet can lead to deficiencies of fat soluble vitamins A, D, E & K. Fat deficiency can also lead to impaired in fertility in women due to anovulation. *Anovulation - happens when an egg (ovum) doesn't release from the ovary during the menstrual cycle. An egg is needed to have a pregnancy. 	Common issue in the UK: Over consuming foods high in fat can raise the blood cholesterol levels (fat in the blood). Cholesterol is a fatty substance that is needed for the body to function properly, however there are two types, LDL (bad) and HDL (good). LDL cholesterol comes from saturated fats, such as meat and cheese. Eating too much saturated fat can lead to obesity and higher 'bad' cholesterol levels as well as an increased risk of developing type 2 diabetes and heart disease. Unsaturated plant sources of fats are much healthier for us.

AC2.1.1 Nutrition: Describe functions of nutrients in the human body.			. Jul	Key Words 3	
Fat Vite	 A vitamin that can dissolve in fats and oils. Vitamins are nutrients that the body needs in small amounts to stay healthy and work the way it should. Fat-soluble vitamins are absorbed along with fats in the diet and are stored in the body's fatty tissue and in the liver. 		fats and oils . Vitamins are n small amounts to stay healthy and ble vitamins are absorbed along with in the body's fatty tissue and in	Deficiency Absorb	A shortage of a substance (such as a vitamin or mineral) needed by the body. Nutrients are taken into the body and (absorbed) and transported by the bloodstream to other parts of the body for use or storage.
	Fat Soluble Vitamin	Needed For	Found In		Deficiency/Excess
	A Adults aged 19 to 64 need (per day): 700mcg men 600mcg women	 helping your body's natural defence against illness and infection (the immune system) work properly helping vision in dim light keeping skin and the lining of some parts of the body, such as the nose, healthy 	 cheese eggs oily fish fortified low-fat spreads milk and yoghurt liver and liver products such as liver pâté Liver is a particularly rich source of vitamin A be at risk of having too much vitamin A if you more than once a week (pregnant women shou avoid eating liver or liver products). 	4, so you may 1 have it 11d	Deficiency - Night blindness. Xerophthalmia the eyes may become very dry and crusted, which may damage the cornea and retina. Frequent skin irritations. Excess Having more than an average of 1.5 mg (1,500 μ g) a day of vitamin A over many years may affect your bones, making them more likely to fracture when you're older. This is particularly important for older people , especially women , who are already at increased risk of osteoporosis, a condition that weakens bones
JTRIENTS	Beta-Carotene	You can also get vitamin A by including good sources of beta-carotene in your diet, as the body can convert this into retinol.	 yellow, red and green (leafy) vegetables, s spinach, carrots, sweet potatoes and red p yellow fruit, such as mango, papaya and app 	uch as peppers ricots	a condition that weakens bones.
MICRONU	D Adults aged 19 to 64 need: 10mcg per day	 keep bones, teeth and muscles healthy. 	 oily fish - such as salmon, sardines, herring mackerel red meat liver egg yolks fortified foods - such as some fat spreads breakfast cereals 	g and s and	Deficiency such as rickets in children, and bone pain caused by a condition called osteomalacia in adults.Excess cause too much calcium to build up in the body (hypercalcaemia). This can weaken the bones and damage the kidneys and the heart.
	E Adults aged 19 to 64 need: 4mg men 3mg women	 helps maintain healthy skin and eyes and strengthen the body's natural defence against illness and infection (the immune system). 	 plant oils - such as rapeseed (vegetable oil soya, corn and olive oil nuts and seeds wheatgerm - found in cereals and cereal presence of the sector of the se	l), sunflower, roduct	<u>Deficiency</u> - Any vitamin E your body does not need immediately is stored for future use, so you do not need it in your diet every day. <u>Excess</u> - N/A
	K Adults aged 19 to 64 need: 1 microgram per kg of body weight.	 a group of vitamins that the body needs for blood clotting, helping wounds to heal. 	 green leafy vegetables - such as broccoli c vegetable oils cereal grains small amounts can be found in meat and da 	and spinach airy foods.	 <u>Deficiency</u> - Taking 1mg or less of vitamin K supplements a day is unlikely to cause any harm. <u>Excess</u> - Rare, however vitamin K can interact with several common medications, including blood-thinners, anticonvulsants, antibiotics, cholesterol-lowering drugs, and weight-loss drugs.

Year 11 Foundation Topic 1 – Vectors - Student Knowledge Organiser

Key words and definitions

Magnitude – the length of a vector.

<u>Vector</u> – a quantity that is described by a length and a direction.

<u>Scalar</u> – a quantity that is described by a length (or numerical value) alone.

Direction – the direction along which it acts.

<u>Scalar Multiple</u> – the amount by which a vector's length is changed.

<u>Parallel</u> – Vectors acting in the same direction will be parallel (side-by-side).

Column Vectors

A vector between two points A and B is described as: \overrightarrow{AB} , a or \underline{a} .



The vector can also be represented by the **column vector** $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$

The top number tells you how many spaces or units to move in the positive *x*-direction and the bottom number is how many to move in the positive *y*-direction.

Vectors are equal if they have the same magnitude and direction regardless of where they are.

Drawing Vectors

A vector can be represented by a line segment labelled with an



A vector between two points A and B is described as: \overrightarrow{AB} , a or \underline{a} .

A negative vector has the same magnitude but the opposite direction.



Vectors can be multiplied by a **scalar** which changes the size of the vector but not the direction.

 $k = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$

The vector *2k* is twice as long as the vector *k*. Double each number in *k* to get *2k*.

Vectors around a Shape

Example





$\overrightarrow{ZY} = a$

 \overrightarrow{ZY} and \overrightarrow{AX} are equal vectors, they have the same magnitude and direction.

 $\overrightarrow{YC} = b$

 \overline{YC} and \overline{XZ} are equal vectors, they have the same magnitude and direction.

 $\overrightarrow{ZA} = -c$

 \overrightarrow{ZA} has the same magnitude as \overrightarrow{AZ} but the opposite direction.

 $\overrightarrow{BX} = -a$

 \overrightarrow{BX} has the same magnitude as \overrightarrow{AX} but the opposite direction.

Sparx maths code

U632 - Understanding column vectors

- U903 Adding and subtracting column vectors
- U564 Multiply column vectors by a scalar
- U781 Solving geometric problems using vectors
- U660 Identifying parallel vectors
- U560 Geometric proofs with vectors
- U781 Solving geometric problems using vectors

Year 11 Foundation Topic 2 – Equations - Student Knowledge Organiser

Key words and definitions		Forming and Solving Equations			Solving Simultaneous Equations		
Word		Definition	The area of this rectangle is 56 cm ² . Find the value of r .	Area = base \times height Area = $7(3r + 2)$	Solve the	e following simultaneous equations:	In examples like this, one or both equations must be multiplied t create a common coefficient.
Variable Constant	A symbol for an unknown value. U used for a variable. A number on its own	Jsually a letter, such as <i>a</i> , <i>x</i> or <i>y</i> , is the symbol	(3r + 2) cm	The area of the rectangle has been given in the question as 56 cm²: ${\it 56}={\it 7}(3r+2)$	3x + y = 2x + y = First, iden	8 ntify which unknown has the same coefficient. In this	3a + 2b = 17 4a - b = 30 Multiply the bottom equation to create a common coefficient a
Coefficient Operator Term Expression	A number that is multiplied by a Example: 8y means 8 times y; 8 is A symbol (+, x, -, or \div) representi Either a single number, a variable Examples: 4 45 x abc 5w A term or a combination of terms Examples: 2 2x 2x + 7 y	 variable. the coefficient, and y is the variable. ng a mathematical operation , or numbers and/or variables multiplied together v 20mn and operators y - 3 7w + 3 8ab + 9 5xyz 	Area of a rectangle = base × height. This means $3^r + 2$ wil all be multiplied by 7. To show this in algebra, use a bracket for $3^r + 2$ to show that both terms are being multiplied by 7	Expand the bracket: $56 = 7 \times 3r + 7 \times 2$ 56 = 21r + 14 I Isolate $21r$ by subtracting 14 from both sides: 56 - 14 = 21r + 14 - 14 42 = 21r	example equation Either ad eliminate be subtro 3x + y - $-2x + y$	this is the letter y , which has a coefficient of 1 in each Id or subtract the two equations from each other to a the letter y . In this example the equations will need to acted from each other as $y - y = 0$. = II = 8	But the bottom equation to create a common coefficient of $2b$. 3a + 2b = 17 8a - 2b = 60 These equations can now be used to find the values of a and b . The signs in front of the common coefficients are different, so the equations should be added together:
Equation	A mathematical sentence stating variable	that two expressions are equal	7 multiplied by $(3r + 2)$ can be written as $7(3r + 2)$ as multiplication signs are not used in algebra.	Isolate <i>r</i> by dividing both sides by 21: 42 ÷ 21 = 21 <i>r</i> ÷ 21 2 = <i>r</i>	= = x The value find the v Substitut	= = 3 e of x can now be substituted into either equation to value of y. e $x = 3$ into either $3x + y = 11$ or $2x + y = 8$.	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$
	coefficient exp	9 = 24 pressions	The subject of a formula is the variable It can be recognised as the letter on its equals sign. For example, in the formula for the are area = base × height), the subject of t	e that is being worked out. s own on one side of the ea of a rectangle $A = bh$ (the formula is A .	$3x + y =$ Substitut $3 \times 3 + y$ $9 + y = 10$ Find the v	<pre>11 when x = 3 e x = 3: = 11 1 where of # using inverse operations to solve equations</pre>	a = 7 Substitute the value of a into one of the original equations to find the value of b . 3a + 2b = 17 (when $a = 7$) Substitute $a = 7$:
Solving L Solve th 4y + 5 = -	inear Equations ne equation $4y + 5 = -3$.	Solve the equation $5(2c-3) = 19$. Expand the bracket:	Rearrange the formula $v = u + at$ to make formula. v = u + at -u - u	t the subject of the	The inverside: 9 + y - 9 y = 2	se of adding 9 is subtracting 9, so subtract 9 from each $= 11 - 9$	$3 \times 7 + 2b = 17$ 21 + 2b = 17 Solve the equation by using <u>inverse operations</u> . The opposite of +21 is -21. Subtract 21 from both sides of the equation:
Subtract 5 4y + 5 - 5 Simplify: 4y = -8	from each side: = -3 - 5	10c - 15 = 19 Isolate 10c by adding 15 to each side: 10c - 15 + 15 = 19 + 15	v - u = at $\div a \qquad \div a$ $\frac{v - u}{a} = t \qquad \text{The letter } t \text{ is no}$ formula.	w isolated, so t is now the subject of the	Check the original ecorrect: 2x + y = 8	answers by substituting both values into the other quation. If the equation balances, then the answers are 8 when $x = 3$ and $y = 2$.	2b = -4 b = -2 Check the answers: 4a - b = 30 when $a = 7$ and $b = -2$.
Get <i>y</i> by its $4y \div 4 = -$ y = -2	self by dividing both sides by 4: $8 \div 4$	10c = 34 Isolate c by dividing by 10: $10c \div 10 = 34 \div 10$ $c = \frac{34}{10} = \frac{17}{5} \text{ or } 3.4$	Rearrange the formula $T = 2\pi \sqrt{\frac{T}{C}}$ Firstly, isolate the root: Now 'square' by $T = 2\pi \sqrt{\frac{T}{C}}$ $\div 2\pi \qquad \div 2\pi \qquad \left(\frac{T}{2\pi}\right)^2 = \left(\sqrt{\frac{T}{2\pi}}\right)^2$	\overline{L} to make L the subject. oth sides: Lastly, multiply by G : \overline{L}	Spa Solv	ring equations U755, U325, U505, U870	4 × 72 = 30
	North Fast	~	(2π) (VC	$d = \frac{1}{2} \frac{x_G - x_G}{(\pi)^2}$			-

 $\frac{T}{2\pi} = \sqrt{\frac{L}{G}}$

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Variable Constant Coefficient Operator Term

Expression Equation

> $\begin{array}{c} \overset{(2A)}{\times} G & \overset{G}{\times} G \\ G \left(\frac{T}{2\pi} \right)^2 = L \end{array}$ Rearranging Formulae U556, U585, U144 Simultaneous Equations U760, U757, U137

Year 11 Foundation Topic 3 – Pythagoras and Trigonometry - Student Knowledge Organiser

Key

Formula

 $a^2 + b^2 = c^2$

- a = side of right triangle
- b = side of right triangle
- c = hypotenuse

The **hypotenuse** (h) is the longest side. It is opposite the right angle.

The **opposite side** (*o*) is opposite the angle in question (*x*).

The **adjacent side** (*a*) is next to the angle in question (*x*).

Trigonometric Formula

What are the formulas for sin cos and tan?

$$sin x = \frac{opposite}{hypotenuse}$$
$$cos x = \frac{adjacent}{hypotenuse}$$
$$tan x = \frac{opposite}{adjacent}$$

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Pythagoras

Right-angled triangles

Pythagoras' theorem states that for all right-angled triangles, 'The square on the <u>hypotenuse</u> is equal to the sum of the squares on the other two sides'. The hypotenuse is the longest side and it's always opposite the right angle.



In this triangle $a^2 = b^2 + c^2$ and angle A is a right angle.

Pythagoras' theorem only works for right-angled triangles, so you can use it to test whether a triangle has a right angle or not.

In the triangle above, if $a^2 < b^2 + c^2$ the angle A is acute.

In the triangle above, if $a^2 > b^2 + c^2$ the angle A is obtuse.

 $AB^2 = BC^2 + AC^2$ $AB^{2} = 6^{2} + 8^{2}$ $AB^2 = 36 + 64$ 8 cm $AB^{2} = 100$ AB = $\sqrt{100}$ С 6 cm AB = 10 cm $a^2 + b^2 = c^2$ $x^2 + 3^2 = 5^2$ $x^2 + 9 = 25$ C 5cm а x² = 25 - 9 × $x^2 = 16$ $x = \sqrt{16}$ x = 4 cm3cmb

Trigonometry



Pythagoras – U385, U385, U541

Right Angled Trigonometry – U605, U283, U545, U283, U545, U967



Year 11 Foundation Topic 4 – Shapes and Angles- Student Knowledge Organiser

Key words and definitions

Polygon – a shape with at least three straight sides and angles, and typically five or more. Quadrilateral – 4-sided shape.

Pentagon – 5-sided shape.

Hexagon – 6-sided shape.

Heptagon – 7-sided shape.

Octagon – 8-sided shape.

Nonagon – 9-sided shape.

Decagon – 10-sided shape.

Hendecagon – 11-sided shape.

Dodecagon – 12-sided shape.



Prior Knowledge

Angles on straight lines/internal angle sums in polygons Angles in parallel lines

Interior and exterior angles of polygons



Angles in parallel lines



Angles in polygons - U427 Vertically opposite angles - U730 Angles in parallel lines - U826

Year 11 Higher - Topic 1 - Further Trigonometry Student Knowledge Organiser

Key words and definitions

Adjacent – the side next to the given angle in a right-angled triangle Opposite – the side opposite to the given angle in a right-angled triangle Hypotenuse – longest side of a right-angled triangle Tangent (tan) - the trigonometric ratio using Opposite and Adjacent

Cosine (cos) - the trigonometric ratio using Adjacent and Hypotenuse Sine (sin) – the trigonometric ratio using Opposite and Hypotenuse

Perpendicular – Making a right angle

Inverse function – is a function that "reverses" another function

2D – 2 Dimensional

3D – 3 Dimensional

Exact Values				
Angle ($oldsymbol{ heta}$)	$\sin(\theta)$	$\cos(\theta)$	$tan(\theta)$	
0 °	0	1	0	
30 °	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}}$	
45°	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$	1	
60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	
90°	1	0	Not Defined	



Sine and Cosine Rule

Sine Rule $\frac{a}{sinA} = \frac{b}{sinB} = \frac{c}{sinC}$ Cosine Rule $a^2 = b^2 + c^2 - 2bccosA$

Area of a triangle = $\frac{1}{2}ab sinC$

Use the Sine Rule to find the length BC



Trigonometric Graphs



Transforming Graphs

Transform graph of y = sin (x) :	Transform graph of y = cos (x) :
$y = -\sin(x),$	$y = -\cos(x),$
y = sin(-x),	y = cos(-x),
$y = \sin(x) + a,$	$y = \cos(x) + a,$
y = sin(x + a)	$y = \cos(x + a)$

Transform graph of y = tan (x) :
y = -tan(x),
y = tan(-x),
y = tan(x) + a,
v = tan(x + a)

Bearings

С

10cm

Use the Cosine Rule to

find the length YZ

8cm

Higher The bearing of g from h is 100° The bearing of f from h is 220° h50 mf f f f f f f g g g

SPARX Maths Links

Area of a Triangle	U592
Sine Rule	U952
Cosine Rule	U951
Bearings	U164

Year 11 Higher - Topic 2 - Functions Student Knowledge Organiser

Key words and definitions

- Substitution putting values into a function to replace the variable x
- Function notation written as F(x) =
- Variables the letters in volved in the expression usually x or y Domain –the numbers that are substituted into the function (input)
- Range the values that are obtain from substituting (output) Inverse function – is a function that "reverses" another

Composite Functions

Composite Functions

It is possible to combine functions by substituting one function into another.



g(f(x)) is a composite function and is read 'g of f of x'.



Example Given the functions f(x) = 2xand g(x) = x + 3find f(g(x)) and g(f(x)). f(g(x)) = 2(x + 3)

$= \frac{2x+6}{g(f(x))} = (2x)+3$ = 2x+3

Inverse Functions

- 1. Write as an equation: y =
- 2. Swap x and y
- 3. Change the subject
- 4. Write as $f^{-1}(x) =$

f(x) = 5x - 4



Evaluating Functions



Evaluate:

If
$$f(x) = -x^2 + x - 5$$
, find...
(a.) $f(x+1) - (x+1)^a + (x+1) - 5$
 $- (x^a + ax + 1) + x + 1 - 5$
 $- x^a - ax - 1 + x + 1 - 5 = - \frac{x^a - x - 5}{x^a - x - 5}$
(b.) $f(1/2) = -(\frac{1}{2})^a + (\frac{1}{2}) - 5$

SPARX Maths Links

Function Notation	U637
Composite Functions	U895 U448
Inverse Functions	U996



Year 11 Higher - Topic 3 - Proof and fractions Student Knowledge Organiser

Key words and definitions

Rationalise – to change to a rational number Numerator - the top part of a fraction Denominator – the bottom part of a fraction Surd – the root of a prime number or multiple of Rearrange – to change around using the rule of algebra

Algebraic Fractions

Simplifying algebraic fractions

$$\frac{2x^2 - 9x - 5}{4x^3 + 2x^2} = \frac{(2x+1)(x-5)}{2x^2(2x+1)} = \frac{x-5}{2x^2}$$

Four operations with algebraic fractions



Proof

Expressions and forming expressions including Integers - n consecutive numbers - n, n+1, n+2 Even numbers - 2n Odd numbers - 2n+1 Consecutive even numbers - 2n, 2n+2, 2n+4 Consecutive odd numbers - 2n+1, 2n+3, 2n+5





Direct Proof

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prov

Model expressions that could be a multiple of 7 (7n) or a multiple of 8 (8n) or 2 more than multiple of 3 (3n+2)

Algebraic Proof Prove the sum of four consecutive numbers is always even. x + (x + 1) + (x + 2) + x + 3) $4x + 6$ $2(2x + 3)$	Prove $(n + 6)^2 - (n + 2)^2$ is always a multiple of 8 (n + 6)(n + 6) - [(n + 2)(n + 2)] $n^2 + 6n + 6n + 36 - [n^2 + 2n + 2n + 4]$ $n^2 + 12n + 36 - [n^2 + 4n + 4]$ $n^2 + 12n + 36 - n^2 - 4n - 4$ 8n + 32
	8(n + 4)

SPARX Maths Links

Direct Proof	U582
Change the subject of a formula	U556
Algebraic Fractions	U103, U437,
U685, U457, U824, U294	

Direct Proof

A proof is a logical and structured argument to show that a mathematical statement (or **conjecture**) is always true. A mathematical proof usually starts with previously established mathematical facts (or **theorems**) and then works through a series of logical steps. The final step in a proof is a **statement** of what has been proven.



- In a mathematical proof you must
 - State any information or assumptions you are using
 - Show every step of your proof clearly
 - Make sure that every step follows logically from the previous step
 - Make sure you have covered all possible cases
- Write a statement of proof at the end of your working

Year 11 Higher - Topic 4 - Vectors Student Knowledge Organiser

Key words and definitions

- Scalar: a number (measure) with magnitude only
- Vector: an illustrative measure which has both magnitude and direction Magnitude the length of a vector (found using Pythagoras' theorem) **Pythagoras** - $a^2 + b^2 = c^2$
- **Direction**: the angle of the vector (often found using trigonometry) Column: 2 or 3 dimensional matrix isolating dimensional movement **Multiple** - many of the same type
- Parallel: vectors which are scalar multiples of one another



Vectors

A vector can be described by its change in position or **displacement** relative to the x- and y-axes.

 $\mathbf{a} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ where 3 is the change in the *x*-direction and 4 is the change in the y-direction. This is called column vector form.



- To multiply a column vector by a scalar, multiply each component by the scalar: $\lambda \begin{pmatrix} p \\ q \end{pmatrix} = \begin{pmatrix} \lambda p \\ \lambda q \end{pmatrix}$
- To add two column vectors, add the x-components and the y-components: $\binom{p}{q} + \binom{r}{s} = \binom{p+r}{q+s}$





Congruent Triangles



Use of vectors



Geometric Problems - Vectors

Vector addition and multiples of vectors



SPARX Maths Links

Vectors U903, U465, U781, U660, U560, U781 **Congruent Triangles U866**

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