



Y10 KNOWLEDGE ORGANISER BOOK SPRING TERM 2023

NAME:

.....

TUTOR GROUP:

Please bring this booklet to school every day. Respect it and keep it safe.

SAPIENTIA DUCET AD ASTRA
WISDOM LEADS TO THE STARS



PRINT FOR SCHOOLS

Y10 Knowledge Organisers

Spring Term 2023

Contents

Academy Information	4-7	
English	8-9	
Maths	10-11	
Physics	12-13	
Chemistry	14-15	
Biology	16-17	
RE	20-22	
Geography	23-24	
Spanish	25-26	
DT 3D Design	27	
DT Food	28-29	
Computer Science	30-31	
Personal Development	33	
Art	34-35	

Astrea Academy Sheffield

Vision: To provide an exceptional, knowledge-rich educational experience, which ensures all scholars succeed.

Motto: A relentless commitment to excellence - every day.

Values:

Scholarship	To be committed to advanced academic work
Respect	To be kind, considerate and follow the rules
Responsibility	To do what is morally right and make sensible decisions
Curiosity	To be eager to learn and know more
Tenacity	To be very determined and to not give up easily

School Day

Session	Start Time	End Time	Session Length
Breakfast Club	08:00	08:20	20 minutes
Tutor Time	08:20	08:40	20 minutes
Period 1	08:40	09:35	55 minutes
Period 2	09:35	10:30	55 minutes
Break	10:30	10:45	15 minutes
Period 3	10:45	11:40	55 minutes
Period 4	11:40	12:35	55 minutes
Lunch A / Reading & Fresh Air	12:35	13:15	40 minutes
Lunch B / Reading & Fresh Air	13:15	13:55	40 minutes
Period 5	13:55	14:50	55 minutes
Period 6 (Mon, Wed, Thur only for Y11)	14:50	15:40	50 minutes

Essential equipment

1. Black/blue pen
2. Red pen
3. Pencil
4. Ruler
5. Rubber
6. Reading book
7. Knowledge Organiser
8. Homework Book
9. Bag

Mobile Phones

- Mobile phone use is not permitted on the academy site at any time.
- Mobile phones should not be seen or heard.
- Mobile phones will be confiscated if seen or heard – they will need to be collected by parents and will not be handed back to the scholar.

Whilst it is understood that parents may wish their child to have a phone with them, in this case they should be turned off and remain in your bag at all times. Astrea Academy Sheffield will not take responsibility for the loss or damage, however caused, to mobile phones.

Personal Property: *Parents and scholars should be mindful of the appropriateness of the items that are brought into the academy. Astrea Academy Sheffield will not take responsibility for the loss or damage, however caused, to items of personal property.*

Banned items

Category 1

- ** Mobile phones (should not be seen or heard) / personal tablet devices / earphones
- ** Chewing gum and sweets/confectionery
- ** Glass bottles
- Cable ties
- Laser pens
- LED torches
- ** Fizzy drinks (including energy drinks)
- ** Correction fluid (such as Tippex)
- ** Permanent marker pens
- ** Cigarettes, cigarette papers, tobacco, snuff, matches or lighters (smoking paraphernalia)
- ** E-cigarettes (or liquids that are used in E-cigarettes)
- ** Aerosols other than for medical purposes (non-aerosol deodorants are permitted)
- ** Super glue

Category 2

- ** Needles other than for medical purposes
- ** Alcohol
- ** Illegal drugs
- ** Knives, blades, cutting utensils or tools (hammers, screw drivers, multi-tools etc.)
- ** BB guns or catapults
- ** Fireworks
- Solvents or hazardous chemicals
- ** Offensive material (pornographic, homophobic, racist, extremist)
- ** Any items that is illegal to possess or carry, or inappropriate for the age of the scholar or the Academy environment

Academic Uniform	
ACADEMY dark blue blazer	
ACADEMY tie	
White long or short sleeved school shirt (not polo shirt)	
Black school shoes (not boots or trainers)	
Dark grey tailored trousers or dark grey tailored shorts	Dark grey tailored trousers or dark grey knee or ankle length smart skirt
Dark grey or black socks	Dark grey or black socks or tights
<u>Optional items:</u> ACADEMY burgundy V-neck tank top ACADEMY burgundy V-neck jumper	

Uniform

- All religious headwear should be black, navy blue, dark grey or burgundy and contain no embellishments.
- Belts should be black or navy blue and made from leather/leather look material with a plain buckle.
- Leggings underneath skirts are not permitted.
- No false eyelashes, lash extensions or false nails.
- Earrings - only 1 small stud.
- No other piercings.

Active Uniform
ACADEMY navy trackpants, leggings or shorts
ACADEMY polo t-shirt or ¼ zip jumper
Sports trainers
Important information:
- Long hair must be tied up
- All jewellery must be removed
- When scholars have PE (practical) or electives, they can attend the academy in their PE kit.

Attendance – Every Day Counts

100%	Excellent! Always at school, making good progress	ALWAYS PRESENT
95%	Missing Some Key Lessons A good chance of gaps in knowledge	MISSES 6 LESSONS PER MONTH
90%	Persistent Absence A significant proportion of lessons missed	MISSES 12 LESSONS PER MONTH
85%	Serious Concern Significant intervention from the Academy	MISSES 18 LESSONS PER MONTH
80%	Unacceptable Court Action proceedings will commence	MISSES 30 LESSONS PER MONTH

English	Topic: <i>A Christmas Carol</i> , Charles Dickens	Term: Spring
	Key Words	
1	Antagonistic: showing hatred or dislike for something or someone.	
2	Atoning: doing something to show you are sorry for wrong you have done.	
3	Antithesis: the complete opposite of something.	
4	Didactic intending to teach people something, especially a moral lesson.	
5	Genial: someone who is kind and friendly.	
6	Metamorphosis: when a person or thing develops and changes into something completely different.	
7	Misanthropic: having or showing a dislike of other people; unsociable.	
8	Microcosm: A small society, place or activity which has all the typical features of a much larger one; a smaller version of it.	
9	Parsimonious: someone who is very unwilling to spend money.	
10	Redemption: the act of saving, or being saved from sin, error or evil.	
	The author and historical context:	
11	Criticism of the Poor Law, 1834: Poor Law led to impoverished people having no other option but to go to severe workhouse. Dickens highly critical of system as felt it criminalized the poor.	
12	Thomas Malthus: 17 th century economist who believed that overpopulation would lead to the poorest in society starving to death. Scrooge twists his ideas to imply that therefore poor people are 'surplus' and not needed; he implies they would be better off dead.	
13	Generation of Lost Youth: term to refer to poor children forced to sacrifice their childhood and work to help their struggling families. Dickens worked in a Blacking Factory as a child which heavily influenced his writing; he became a lifelong advocate and voice for the poor in society.	
	Key Quotations and Analysis	
14	<i>'As solitary as an oyster,' 'as hard and sharp as flint,' 'tight-fisted hand at the grindstone.'</i> Similes/metaphor for Scrooge in Stave 1: represents his isolation and miserable personality.	
15	Scrooge: <i>'Are there no prisons? Are there no workhouses?' 'Decrease the surplus population.'</i> Scrooge's (and Victorian rich's) views about what should happen to the poor in Stave 1.	
16	Marley: <i>'I wear the chain I forged in life... I made it link by link, years by yard, and of my own free will I wore it.'</i> <i>'Mankind was my business.'</i> The links of the chain connect to the things Marley felt most important such as wealth, money and profit. The idea that choice effects you beyond the grave so ensure that you make the correct ones.	
17	Belle: <i>'Another idol has displaced me... A golden one.'</i> Belle explains why she breaks off the engagement, she feels she has been replaced in Scrooge's heart by his love of accumulating wealth	
18	Bob Cratchit, about Tiny Tim: <i>'As good as gold, and better.'</i> Bob's simile promotes the idea that what truly matters in life isn't the pursuit of wealth, but family and human connections.	
19	The Ghost of Christmas Present: <i>'This boy is Ignorance. This girl is Want. Beware them both... but most of all beware this boy, for on his brow I see that written which is Doom.'</i> The allegorical characters represent society's abandonment of the poor; the responsibility of all of mankind.	
20	<i>'As light as a feather,' 'happy as an angel,' 'merry as a schoolboy,' 'I am quite a baby.'</i> Similes and metaphor used by Scrooge in Stave 5 to explain how he feels now he has been given a second chance to lead, and improve, his life.	

English	Topic: Power and Conflict Anthology Poetry In Y10 we are studying 8 of the 15 poems	Term: Spring
	1 Key Quotation and Analysis	
1	<i>London</i> , William Blake: 'the chartered Thames.' Juxtaposes the idea of something which should be free and natural but is being oppressed and controlled.	
2	<i>My Last Duchess</i> , Robert Browning: 'all smiles stopped together.' Sibilance emphasises the Duke's sinister nature. 'Stopped' is very definitely and echoes the certain death of the first duchess.	
3	<i>Tissue</i> , Imtiaz Dhaker: 'let the daylight break / through capitals and monoliths'' Violent verb 'break' showcases the power of nature against manmade structures.	
4	<i>Extracts from The Prelude</i> , William Wordsworth: 'a huge peak, black and huge.' Repetition of 'huge' highlights the speaker's speechlessness in the presence of such powerful nature.	
5	<i>The Emigrée</i> , Carol Rumens: 'There once was a country... I left it as a child' . Fairytale style beginning suggests that the speaker's memories are more fiction than fact. Ellipses highlights uncertainty.	
6	<i>Checking Out Me History</i> , John Agard: 'Dem tell me / Dem tell me.' Plosive repetition showcases the speaker's anger. Agard writes in non-standard English to represent the speaker's identity and dialect.	
7	<i>Storm on the Island</i> , Seamus Heaney: 'spits like a tame cat / Turned savage.' Simile emphasises the dangerous, unpredictable and vicious nature of the ocean.	
8	<i>Ozymandias</i> , Percy Bysshe Shelley: 'a shattered visage lies.' The 'shattered' face symbolises how human power is not permanent and can be destroyed by time and nature.	
	Poetic methods:	
9	Metaphor: Describing something by referring to something else which is the same a particular way.	
10	Simile: A way of describing a person or thing as being similar to something else.	
11	Symbolism: Using an object, part of nature or colour to represent something else.	
12	Alliteration: Two or more words that begin with the same letter or sound.	
13	Sibilance: The repetition of s, z or soft c sounds.	
14	Ambiguity: Something that is unclear, or it can be understood in more than one way.	
15	Imagery: The pictures that a writer creates in the mind of their reader. Often symbolic.	
16	Semantic field: A group of words/phrases all linked by one idea.	
17	Personification: When a non-living object is given human qualities or emotions.	
18	Pathetic fallacy: When natural things (such as the weather) are used to represent mood or emotion.	
19	Juxtaposition: Two opposites placed close together.	
20	Onomatopoeia: A word that sounds like the thing it's describing.	
21	Hyperbole: Exaggeration.	
22	Plosive: A short burst of sound made when you say a word containing the letters b, d, g, k, p or t.	
23	Caesura: A pause in a line, e.g. after the word 'dropped' in 'He dropped,- more sullenly than wearily.'	
24	Enjambment: When a sentence or phrase runs over from one line or stanza to the next.	
25	Volta: A turning point in a poem, when the argument or tone changes dramatically.	

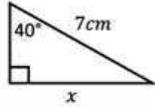
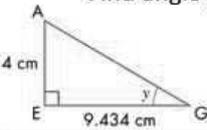
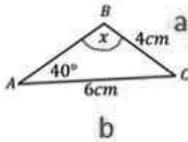
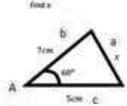
Subject: Maths	Topics: Probability, Linear Expressions, Linear Equations, Pythagoras, Trigonometry, Area and Perimeter.	Term: Spring.
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Key Words		
1	Event	Something that happens.
2	Probability	Calculation of how likely something is to happen.
3	Mutually Exclusive	Events that can't happen at the same time.
4	Theoretical Probability	The mathematical probability that something will happen.
5	Experimental probability	The probability of something happening from an experiment.
6	Expression	A collection of numbers, letters, and symbols and operators representing a number or amount; for example $x + 3y$.
7	Factorise	The arrangement of a given number into a product of its factors
8	Expand	Multiply out (terms with brackets).
9	Changing the Subject	Rearranging to put an expression in a different order.
10	Formula	A mathematical rule, using numbers and letters, which shows a relationship between variables; for examples, the conversion formula from temperatures in Fahrenheit to temperatures in Celsius is: $C = \frac{5}{9}(F - 32)$.
11	Term	In Algebra a term is either a single number or variable, or numbers and variables multiplied together.
12	Expression	Numbers, symbols and operators (such as + and \times) grouped together that show the value of something.
13	Equation	An equation says that two things are equal. It will have an equals sign.
14	Inequality	An inequality compares two values, showing if one is less than, greater than, or simply not equal to another value.
15	Hypotenuse	is the longest side and it's always opposite the right angle.
16	Pythagoras' theorem	states that for all right-angled triangles, 'The square on the hypotenuse is equal to the sum of the squares on the other two sides'.
17	Trigonometry	The study of triangles.
18	Sine	The ratio of the length of the side opposite the given angle to the length of the hypotenuse of a right-angled triangle.
19	Cosine	The ratio of the length of the side adjacent to the given angle to the length of the hypotenuse of a right-angled triangle.
20	Tangent	The ratio of the length of the side opposite the given angle to the length of the adjacent side of a right-angled triangle.
21	Area	the total space taken up by a flat (2-D) surface or shape of an object.
22	Perimeter	The distance around a two-dimensional shape.
23	Sector	The area between two radiuses and the connecting arc of a circle.

Subject: Maths	Topics: Probability, Linear Expressions, Linear Equations, Pythagoras, Trigonometry, Area and Perimeter.	Term: Spring.
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Key formulae		
1	Probability (outcome)	$p(\text{outcome}) = \frac{\text{number of ways the outcome can happen}}{\text{total number of all possible outcomes.}}$
2	Theoretical Probability	$\text{Probability of event} \times \text{number of trials}$
3	Experimental Probability	$\frac{\text{number of events}}{\text{number of trials}}$
4	Pythagoras Theorem	$a^2 + b^2 = c^2$
5	Trigonometric Ratios	$\sin(x) = \frac{o}{h}$ $\cos(x) = \frac{a}{h}$ $\tan(x) = \frac{o}{a}$
6	Sine Rule	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
7	Cosine Rule	$a^2 = b^2 + c^2 - 2bc\cos A$
8	Area of a triangle	$\frac{1}{2}ab\sin C$
9	Circumference of a circle	$P = \pi d$ Remember to use 2r instead of d
10	Area of a circle	$A = \pi r^2$
11	Arc Length	$\frac{\theta}{360} \pi d$ Remember to use 2r instead of d
12	Area of Sector	$\frac{\theta}{360} \pi r^2$

Key Examples

EXAMPLE 1	<p>Simplify the expression $5x + 10y - 12x + 4y$ Collect the x's and y's</p> $5x - 12x = -7x \qquad 10y + 4y = 14y$ $14y - 7x$	EXAMPLE 1	<p>Find the missing side x</p>  $\sin(x) = \frac{o}{h}$ $\sin(40) = \frac{x}{7}$ $7 \times \sin(40) = x$ $x = 4.5\text{cm}$
EXAMPLE 2	<p>Substitute $x = 4$ and $y = -7$ into this expression.</p> $7x + 2y^2 = (7 \times 4) + (2 \times -7^2)$ $= (7 \times 4) + (2 \times 49)$ $= 28 + 98$ $= 126$	EXAMPLE 2	<p>Find angle y</p>  $\tan y = \frac{o}{a}$ $= \frac{4}{9.434}$ $= 0.4240$ $\Rightarrow y = \tan^{-1} 0.420$ $= 23.0^\circ \text{ (3 sf)}$
EXAMPLE 3	<p>Expand and Simplify</p> $3(x + 2) + 3(2x + 1)$ $3x + 6 + 6x + 3$ $9x + 9$ <p>Factorise</p> $4x^2 + 12x$ $\text{HCF} = 4x$ $4x(x + 3)$	EXAMPLE 3	<p>Find angle x</p>  $\frac{\sin A}{a} = \frac{\sin B}{b}$ $\frac{\sin 40}{6} = \frac{\sin x}{4}$ $\frac{6 \times \sin 40}{4} = \sin(x)$ $\sin^{-1}\left(\frac{6 \times \sin 40}{4}\right) = x$ $74.6^\circ = x$
EXAMPLE 4	<p>Change the subject for x</p> <p>Subtract 7 on both sides.</p> $2x + 7 = y$ $2x = y - 7$ <p>Divide both sides by 2.</p> $x = \frac{y - 7}{2}$	EXAMPLE 4	 <p>Step 1: Label your sides and angles</p> <p>Step 2: Substitute the values into the formula and simplify.</p> $a^2 = b^2 + c^2 - 2bc\cos A$ $a^2 = 7^2 + 5^2 - 2 \times 7 \times 5 \times \cos 60$ $a^2 = 49 + 25 - 70\cos 60$ $a^2 = 74 - 70 \times 0.5$ $a^2 = 74 - 35$ $a^2 = 39$ <p>Step 3: Square root at the end</p> $a = 6.244 = 6.2\text{cm}$

Subject: Physics	Topic: Energy	Term: Spring
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Key Words	
1	Specific heat capacity – The amount of energy needed to raise the temperature of 1kg of substance by 1°C
2	Work done - Another way of saying energy transferred
3	Lubrication - reduces the friction between two surfaces (e.g. oil on bike chains)
4	Conduction - The transfer of thermal/heat energy through a solid
5	Convection - The transfer of thermal/heat energy through a fluid (liquid or gas)
6	Insulation – A material that prevents the loss of thermal energy
7	Energy stores – includes gravitational potential energy, kinetic energy, elastic potential energy, magnetic energy, chemical energy, electrostatic energy, thermal energy, nuclear energy
Equations for energy	
8	Kinetic energy: $E_k = \frac{1}{2} mv^2$
9	Gravitational potential energy: $E_p = mgh$
10	Elastic energy: $E_e = \frac{1}{2} ke^2$
11	Specific Heat Capacity: $\Delta E = mc\Delta\theta$
12	Power: $P = E/t$; $P = W/t$
13	Efficiency: Efficiency = useful output energy/ total input energy (x by 100 for a percentage)
14	Specific latent heat: $E = mL$
Facts on energy	
15	Energy stores: Thermal; Kinetic; Gravitational potential; elastic potential; chemical; magnetic; electrostatic; nuclear
16	Energy can be transferred, stored or dissipated, but can never be created or destroyed
17	Renewable energy resources – Solar, Wind, Waves, Hydroelectric, Biofuel, Tidal, Geothermal
18	Non-renewable energy resources – Oil, coal and natural gas
19	Advantages of renewable- don't run out, cheaper to run, no/little pollution
20	Disadvantages of renewable – do not generate as much electricity, many are weather dependent, expensive to set up, location/eyesore
21	Disadvantages of fossil fuels – CO ₂ released, greenhouse effect, contributes to global warming

Subject: Physics	Topic: Electricity	Term: Spring
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	Key Words
1	Current – flow of electrical charge
2	Resistance – Anything that slows the flow down – unit – ohm Ω
3	Alternating current - electric current that continually changes direction
4	Component – part of a circuit – e.g. bulb/lamp; switch; diode
5	Coloumb - Unit of electric charge. C
6	Direct current - flow of electric charge in one direction only
7	LDR – Light dependent resistor
8	LED – Light emitting diode
9	National grid - network of cables and transformers that links power stations to consumers
10	Transformer - Allow an increase and decrease in the voltage carried through the national grid
	Equations for electricity
11	Charge flow: $Q = It$
12	Potential difference: $V = IR$
13	Power: $P = VI$
14	Power: $P = I^2R$
15	Energy transferred: $E = Pt$
16	Energy transferred: $E = QV$
17	Transformers: $V_p I_p = V_s I_s$
	Facts on electricity
18	<p>The diagram shows eight circuit symbols in a row, each with a label below it: an open switch, a lamp (circle with an X), an LDR (circle with a rectangle and two arrows pointing towards it), a thermistor (rectangle with a diagonal line and a small circle at the end), a diode (triangle pointing right inside a circle), an LED (triangle pointing right inside a circle with two arrows pointing away from it), a variable resistor (rectangle with a diagonal arrow through it), and a battery (four cells connected in series).</p>
19	Ohmic conductors have a constant resistance
20	Thermistor – in hot conditions the resistance drops; in cool conditions the resistance goes up
21	Series circuit – one loop; Potential difference is shared; current is the same everywhere
22	Parallel circuit – more than one path for the current to follow; PD is the same; current is shared
23	Plugs have three wires; Neutral/blue; Live wire/brown; earth wire/yellow and green
24	National grid – system of cables and transformers; demand changes throughout the day; power stations predict demand to make sure there is enough electricity (advert breaks in popular TV shows when everyone puts the kettle on)

Subject: Chemistry	Topic: Bonding and Chemical Changes	Term: Spring
Bonding		
1	Atom - the smallest part of an element that can exist.	
2	Boiling - changing from the liquid to the gas state, in which bubbles of gas form throughout the liquid.	
3	Boiling point - the temperature at which a substance rapidly changes from a liquid to a gas.	
4	Bond - the chemical link that holds molecules together.	
5	Compressed - made smaller by squeezing together.	
6	Energy - the capacity of a system to do work or the quantity required for mechanical work to take place. Measured in joules (J).	
7	Evaporation - the process in which a liquid changes state and turns into a gas.	
8	Ion - electrically charged particle, formed when an atom or molecule gains or loses electrons.	
9	Melting - the process that occurs when a solid turns into a liquid when it is heated.	
10	Melting point - the temperature at which a solid changes into a liquid as it is heated.	
11	Molecule - a collection of two or more atoms held together by chemical bonds.	
12	Particle - a general term for a small piece of matter. For example, protons, neutrons, electrons, atoms, ions or molecules.	
13	Physical properties - a description of the appearance of a substance or how it acts without involving chemical reactions. For example, state, melting point, conductivity, etc.	
14	State - solid, liquid or gas. Evaporation is a change of state from liquid to gas.	
15	States of matter - the three forms in which a substance can exist (solid, liquid, and gas).	
16	Sublime - able to change from a solid to a gas, or from a gas to a solid, without becoming a liquid.	
Chemical Changes		
17	Acid – a substance producing more hydrogen ions than hydroxide ions when dissolved in water.	
18	Anode - the positive electrode during electrolysis.	
19	Balanced equation - a chemical equation written using the symbols and formulae of the reactants and products, so that the number of units of each element present is the same on both sides of the arrow.	
20	Cathode - the negative electrode during electrolysis.	
21	Concordant - titres within 0.20 cm ³ (or sometimes 0.10 cm ³) of each other.	
22	Displacement - reaction that occurs when a more reactive element replaces a less reactive element in a compound.	
23	Electrode – a conductor used to establish electrical contact with a circuit.	
24	Electrolysis - the decomposition (breakdown) of a compound using an electric current.	
25	Electrolyte - a substance which, when molten or in solution, will conduct an electric current.	
26	Extraction - the process of obtaining a metal from a mineral, usually by reduction or electrolysis.	

Subject: Chemistry	Topic: Bonding and Chemical Changes	Term: Spring
Chemical Changes continued		
27	Half equation - an equation, involving ions and electrons, that describes the process happening at an electrode.	
28	Molten - a term used to describe a liquid substance (e.g.. rock, glass or metal) formed by heating a solid.	
29	Ore - a rock containing enough quantities of a mineral for extraction to be possible.	
30	Oxidation - the gain of oxygen, or loss of electrons, by a substance during a chemical reaction.	
31	Reactivity - a measure of how vigorously a substance will react. The more reactive it is, the greater its reactivity and the more vigorous its reactions will be.	
32	Redox - when reduction and oxidation take place at the same time.	
33	Reduction - the loss of oxygen, gain of electrons, or gain of hydrogen by a substance during a chemical reaction.	
34	Salt - the substance formed when the hydrogen ion in an acid is replaced by a metal ion.	
Disciplinary knowledge		
35	Hypothesis – a prediction of what is going to happen in an experiment.	
36	Control variable – the variable(s) which does not change during an experiment.	
37	Independent variable – the variable which is changed during an experiment.	
38	Dependent variable – the variable which is measured during an experiment.	

Subject: Biology	Topic: Organisation	Term: Spring
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	Key Words
1	Tissues – groups of cells with similar structure or function working together.
2	Organs – groups of tissues with similar structure or function working together.
3	Enzyme – special biological catalysts that speed up reactions.
4	Active site - enzymes catalyse specific reactions in living organisms due to the shape of their active site.
5	Veins - the blood vessels that carry blood toward from the heart.
6	Arteries – the blood vessels that carry blood away from the heart.
7	Capillaries – The smallest blood vessels. They run between individual cells and are one cell thick.
8	Carcinogen – A chemical that causes cancer.
9	Xylem – Narrow, hollow dead tubes with lignin, responsible for the transport of water and minerals in plants.
10	Phloem – Tissue in plants that transports sugars and amino acids.
	Digestive System
11	Proteins are nutrients used for building up the cells and tissues of your body.
12	Protease is an enzyme that will catalyse the breakdown of proteins into amino acids.
13	Biuret reagent is used to test for the presence of protein in food.
14	Carbohydrates are made up of sugars – simple (glucose) and complex (starch).
15	Amylase is an enzyme that will catalyse the breakdown of starch.
16	Benedict’s solution is used to test for the presence of glucose and iodine is used to test for the presence of starch in food.
17	Lipids are made up of three molecules of fatty acid joined to a molecule of glycerol.
18	Lipase is an enzyme that will catalyse the breakdown of lipids.
19	Ethanol and water (emulsion test) is used to rest for the presence of lipids in food.
	Disciplinary Knowledge – Required Practical ‘The effect of pH on the rate of reaction of amylase’
20	The activity of enzymes can be affected by factors such as temperature and pH.
21	pH is the independent variable being tested, so temperature must be controlled using a water bath.
22	Time is the independent variable to measure the time it takes for the amylase completely digest starch.
23	Measure the rate of reaction by the colour change of an iodine indicator
24	Using a plastic syringe, pH buffer solution is added to a boiling tube of starch.
25	Iodine is added to each well of a spotting tile. Every 30 seconds, a drop of the amylase and starch mixture will be added to a different well to observe the colour change.

Subject: Biology	Topic: Organisation	Term: Spring
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Circulatory System	
1	The heart is an organ that pumps blood around the body in a double circulatory system.
2	The right ventricle pumps blood to the lungs and the left ventricle pumps blood around the body.
3	Deoxygenated blood from the body enters the heart through the right atrium.
4	Oxygenated blood from your lungs enters the heart through the left atrium.
5	Valves in the heart stop blood back flow.
6	Blood is oxygenated in the lungs and then carried back to the heart.
7	Carbon dioxide diffuses from the blood into the air in the alveoli.
8	Oxygen diffuses from the air in the alveoli into the blood.
9	Haemoglobin is a protein in red blood cells that can combine with oxygen as blood passes through the lungs and release the oxygen when it reaches the cells.
10	Alveoli have a large surface area and a rich supply of blood capillaries to increase rate of diffusion.
Health issues	
11	Coronary heart disease is a cardiovascular disease where layers of fatty material build up inside the coronary arteries.
12	A risk factor is something that increases the likelihood of developing disease.
13	Communicable disease are caused by pathogens that can be transmitted from person to person.
14	Benign tumours are growths of abnormal cells contained to one area.
15	Malignant tumours are cancers. They invade neighbouring tissues and spread to other parts of the body.
Plant organisation	
16	Epidermal tissues in leaves cover the surfaces and protect them.
17	The waxy cuticle on the epidermal tissues is waterproof and reduces water loss by evaporation.
18	The upper epidermis is transparent so that light can get through.
19	The palisade mesophyll contains lots of chloroplasts for photosynthesis to occur.
20	The spongy mesophyll has large air spaces and a large surface area to allow diffusion of gases.
21	The lower epidermis contains the guard cells which work together to open and close the stomata.
22	The stomata are tiny openings that allow gases into and out of the leaf.
23	Transpiration is when the plant opens its stomata to let in carbon dioxide, water on the surface of the cells of the spongy mesophyll and palisade mesophyll evaporates and diffuses out of the leaf.
24	The constant movement of water molecules through the xylem from the roots to the leaves is called the transpiration stream.

Year 10
Subject: History
The Norman Conquest, 1066-1100

Term: Spring

Key words

1	Vassal	A person who is subordinate (lower on the hierarchy) than another person.
2	Survey	A record or description of something.
3	Government	A group of people with the authority to govern an area or country.
4	Abbots	A person who is in charge of an abbey of monks.
5	Clergy	A group of people who work for the Church.
6	Excommunicate	To remove membership to the Catholic Church.
7	Monastic orders	A specific type of Christian worship done by monks. For example, 'The Order of St. Benedict'.

Timeline

8	5 January 1066	Edward the Confessor died – start of the succession crisis
9	6 January 1066	Harold Godwinson became king of England.
10	20 September 1066	Battle of Fulford
11	25 September 1066	Battle of Stamford Bridge
12	14 October 1066	Battle of Hastings
13	1067	Rebellions against William on the Welsh borders, in Kent and in Northumbria.
14	1068	Edwin and Morcar Rebel
15		Gytha (Harold Godwinson's mother) rebels
16	1069	Edgar Aetheling rebels
17	1070	The Harrying of the North
18		Lanfranc was appointed Archbishop of Canterbury
19	1073	Pope Gregory VII becomes Pope
20	1075	The Revolt of the Earls
21	1077	First Cluniac Monastery in England
22	1085	The Domesday Survey begins
23	1087	Domesday Book is finished
		William I died
		26 th September - William II (Rufus) became King of England.
		Robert (William I eldest son) became Duke of Normandy
24	1089	Lanfranc, Archbishop of Canterbury, died
25	1093	William Rufus appointed Anselm as the new Archbishop of Canterbury
26	1100	Henry I became king of England

Year 10
Subject: History
Power and the People, 1215-2010

Term: Spring

Key words

1	Democracy	A system of government where all adults have a say in choosing who runs the country
2	Dictator	Someone who rules on their own, without Parliament
3	Franchise/ Suffrage	The right to vote in political elections
4	Hustings	A system of voting in which each voter has to stand up and publicly state who they are voting for
5	Economics	To do with money, trade, jobs
6	Laissez-Faire (French)	A belief that it is up to individuals, not the government, to put right wrongs in society
7	Utilitarianism	A belief that society should act in a way that benefits the most people most of the time
8	Unionism	The belief that workers are stronger and more influential when they work together
9	Emancipation	Freedom from political or legal restrictions
10	Globalisation	The theory that big companies run the world's economy
11	Marginalise	Reduce in importance, push to the edges, have less influence
12	Persecution	Ill treatment because of religion, beliefs, or race

Timeline

13	1215	The Magna Carta
14	1264-1265	Simon de Montfort's rebellion
15	1381	Peasants' Revolt
16	1536	Pilgrimage of Grace
17	1642-1649	English Civil War
18	1776-1783	US War of Independence
19	1819	Peterloo Massacre
20	1834	Tolpuddle Martyrs
21	1838	The Chartists
22	1833	Anti-Corn Law League
23	1833	Workers' rights
24	1860-1900	Votes for women
25	1918	General Strike
26	1926	Equality after WW2
27	Post 1945	Thatcher vs. Unions
28	1984	Anti-Corn Law League

Subject: RE	Topic: Islam	Term: Spring
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Sunni and Shi'a Islam	
1	There are two main branches of Islam - Sunni and Shi'a.
2	Sunni is the largest branch of Islam.
3	Sunni and Shi'a Muslims agree on the basic principles of Islam.
4	Split was a result of disagreements about who was the rightful successor to Muhammad.
5	Shi'a Islam is divided into three further branches, including Twelver Shi'a.
Key Sunni Beliefs: Six Articles of Faith	
6	Tawhid: Having absolute faith in the oneness of God.
7	Malaikah: Belief in the importance of angels who pass messages – risalah – to prophets.
8	Holy Books: Respecting the holy scriptures, including the Qur'an.
9	Nubuwwah: Respecting the prophets, especially Muhammad , known as the Seal of the Prophets.
10	Akhirah: Belief in the Day of Judgement and afterlife.
11	Al-Qadr: Belief in Allah's divine plan. <i>"And those before them had plotted, but to Allah belongs the plan entirely."</i> Qur'an 13:24
Key Shi'a Beliefs: Five Roots of Usul ad-Din	
12	Tawhid: Having absolute faith in the oneness of God.
13	Adalat: God will judge everyone on the Day of Judgement.
14	Nubuwwah: Belief in and respect of prophets, especially Muhammad.
15	Imamate: Twelve imams were chosen by God to lead Islam after Muhammad.
16	Al-Ma'ad: Muslims will be resurrected and judged by God.
Nature of God	
17	Allah is the one true God - all respect, worship and praise is directed towards him.
18	It is blasphemy to believe in other gods, which means it is the worst sin.
19	Transcendent: Allah is above and beyond anything that exists in the world.
20	Just: Allah judges everyone equally.
21	Immanent: Allah is close to every human and within all things on Earth.
22	Omnipotent: Allah is all-powerful.
23	Benevolent: Allah is all-loving.
24	Merciful: Allah shows compassion and mercy, and he forgives people.
25	Allah has 99 names. Each of the 99 names relates to a particular attribute of Allah.
26	<i>"Say, "He is Allah, [who is] One"</i> Qur'an 112:1

Subject: RE	Topic: Islam	Term: Spring
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Angels	
27	The purpose of angels is to follow the orders of Allah and communicate with humans.
28	Angels are immortal, are made of light and have wings. They are pure and cannot sin.
29	<i>"They exalt him night and day and do not slacken."</i> Qur'an 21:20
30	Jibril: Brings good news; brought revelations to Muhammad and announced Maryam's pregnancy.
31	Mika'il: Bringer of rewards for those who do good.
32	Izrael: Angel of death; brings souls to the afterlife.
33	Israfil: Announces the Day of Judgement.
Afterlife	
34	Akirah refers to life after death. It explains that life on earth is a test set by Allah.
35	After death, most Muslims believe that the soul will enter Barzakh, a state of waiting, until the Day of Judgement.
36	Muslims who perform good deeds will go to Jannah, those who do not go to Jahannam.
37	Jannah is paradise.
38	<i>"Indeed, those who believe and do righteous deeds - for them are the Gardens of Pleasure."</i> Qur'an 31:1
39	Jahannam is the equivalent of hell, and is a place of torment.
40	Some Muslims believe that people can enter Jannah, even after being in Jahannam,
41	Yawm ad-Din is the Day of Judgement, when Allah will decide how people will spend their afterlife.
42	<i>"For one whose scales are heavy with good deeds, He will be in a pleasant life... for one whose scales are light, His refuge will be abyss."</i> Qur'an 101:6-9
43	Muslims can also ask for forgiveness and they recognise that intention is important.
Predestination	
44	Al-Qadr is the belief that Allah has decided everything that will happen in the world and in people's lives.
45	Sunni: Allah has made it impossible for them to choose anything other than what he has chosen.
46	Some Muslims often say <i>Insha'Allah</i> , which means "if Allah wills".
47	<i>"Only what God has decreed will happen to us."</i> Qur'an 9:51
48	Shi'a: God knows what will happen, but this doesn't mean that he decides it.
49	<i>"God does not change the conditions of a people for the worse unless they change what is in themselves."</i> Qur'an 13:11

Subject: RE	Topic: Islam	Term: Spring
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Five Pillars of Islam	
50	Five duties that every Muslim must follow in order to live a good and responsible life.
51	Described as pillars as they uphold the faith of a Muslim.
52	Shahadah: The statement of belief.
53	Salah: Prayer five times a day.
54	Zakah: Giving a portion of wealth to charity.
55	Sawm: Fasting during the month of Ramadan.
56	This ends with a celebration called <i>Eid ul-Fitr</i> .
57	Hajj: A pilgrimage to Mecca that every Muslim tries to undertake during the course of his or her lifetime.
The Ten Obligatory Acts	
58	Followed by Twelver Shi'a Muslims.
59	Combines some of the Five Pillars of Islam and jihad, which applies to all Muslims.
60	Salah, zakah, sawm and hajj are followed.
61	Jihad: The struggle to keep belief in Allah and follow his rules, to continue to follow the Five Pillars of Islam successfully and to defend Islam.
62	Khums: 20 per cent annual tax. This tax is paid on any profit.
63	Amr-bil Maruf: Encouraging people to do what is good.
64	Nahi Anil Munkar: Forbidding evil by discouraging people from doing what is wrong.
65	Tawallah: Showing love to Allah and his followers.
66	Tabarra: Not to associate with God's enemies.
67	<i>"Enjoin what is right and forbid what is wrong."</i> Qur'an 9:71
Jihad	
68	Jihad has two meanings for Muslims. It is both a struggle for faith and a struggle against evil.
69	Greater jihad: Making the effort to be a good Muslim through a personal struggle to improve spiritually.
70	It is a duty and an act of worship.
71	Lesser jihad: Defending Islam from threat.
72	Some people still take up arms against anybody they see as an enemy of Islam.
73	Many Muslims believe that lesser jihad is of less relevance today than in the past, when Muslims were being persecuted.
74	There are strict rules for a Muslim holy war.

Subject: Geography		Topic: The Living World	Term: Spring
Keywords			
1	Abiotic – relating to non living things e.g. climate, soil and water		
2	Biotic – relating to living things e.g. plants, animals, insects		
3	Ecosystem – a community of plants and animals that interact with each other and their physical environment		
4	Nutrient cycling – organisms extract minerals from soil or water before passing it on through the food chain		
5	Food chain – the connections between different organisms that rely on each other as a source of food		
6	Food Web – a hierarchy of plants and animals relying on each other for food		
7	Biomes – large areas on the earth's surface with flora and fauna adapting to their environment		
8	Biodiversity – The variety of life in the world or a particular habitat		
9	Sustainability – Actions and forms of progress that meet the needs of the present without reducing the ability of future generations to meet their needs		
10	Nutrient cycles – the movement of nutrients through an ecosystem		
Tropical Rainforests – Amazon, Brazil			
11	Climate – same all year round with high temperatures (20-28°C) and heavy rainfall (2000 mm p/y)		
12	Biodiversity – high biodiversity, 50% of the world's plant and animal species		
13	Plants and animals – species have adapted to the climate conditions of the rainforest		
14	Rainforest layers – forest floor, shrub layer, under canopy, (main) canopy, emergent.		
Tropical rainforest deforestation causes			
15	Farming – large areas are cleared for pastoral farming and cash crops. Development is increasing demand for food and resources		
16	Mining – the Amazon Basin is rich in natural resources. The Carajas mine in Brazil is the world's largest iron ore mine.		
17	Roads – the construction of access roads for workers results in large amounts of land clearing		
18	Hydro electric power – Large areas of forest being flooded to create the reservoirs and dams. The flooding of the Balbina dam in Brazil resulted in the loss of 920 square miles of tropical rainforest.		
19	Population growth – population growth has resulted in the loss of tropical rainforest as land is cleared to build houses and infrastructure.		
Tropical rainforest deforestation impacts			
20	Soil erosion – nutrients are washed away leaving the soil infertile and unable to support plant life		
21	Loss of biodiversity – many species die, impacting food webs and wider biodiversity		
22	Climate change – trees store carbon through photosynthesis. Less carbon dioxide will be stored.		
23	Economic development – mines, farms and roads have a positive economic impact on the local economy		
Tropical rainforest sustainable management			
24	Selective logging and replanting – Planned and controlled logging ensures that for every tree logged another is planted.		
25	Ecotourism – sustainable tourism, creates jobs for local people and ensures income is used to protect and conserve the tropical rainforest for future generations to enjoy.		
26	International agreement – agreements to protect tropical rainforests have been made between different countries through debt-for-nature swaps		

Subject: Geography	Topic: The Living World	Term: Spring
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Desert – Sahara, Africa	
1	Climate – extreme climate, low rainfall (less than 250 mm p/y), extreme temperatures
2	Soils – soil has limited fertility, shallow and gravelly texture
3	Biodiversity – very little biodiversity which is under threat from development and global warming
4	Fragile interdependent ecosystems – the biotic and abiotic components are closely linked
5	Plants and animals – are adapted in unique ways e.g. tap roots, waxy skin, water storage
6	Population – 2.5 million people
Desert opportunities	
7	Mineral resources – Morocco is the largest exporter of phosphate
8	Oil and gas – Algeria is a leader in oil extraction
9	Solar energy – solar development in Tunisia will supply electricity for 2.5 million homes
10	Tourism – small scale and limited to cooler months, but growing in popularity
11	Farming – commercial farming is only possible with irrigation e.g. the Aswan damn
Desert challenges	
12	Extreme temperatures – extreme temperatures are dangerous to be in for long periods of time
13	Limited water supply – rainfall is low and unpredictable, providing water for crops and workers is challenging
14	Inaccessibility – the Sahara is vast, making it difficult and expensive to provide services
Desertification	
15	Desertification – the degradation of the land caused by human and physical factors
16	Sahel – a desert fringe area experiencing increasing rates of desertification
17	Human activities – removing fuel wood, overgrazing, over cultivation, population growth, migration
18	Physical factors – Climate change impacts rainfall amounts and extreme temperatures
Desertification management	
19	Water management – growing crops which require less water, using drop irrigation
20	Tree planting – trees act a windbreak reducing wind erosion, stabilise the soil, reduce evaporation rates
21	Soil management – leaving areas to recover nutrients before use, rotating crops
22	Appropriate technology – cheap sustainable materials e.g. sand barriers, terraces, solar cookers
Global ecosystems	
23	Tropical rainforest – Equator (Asia, Africa / South America). 6% of earth’s surface. 0°C – 23.5°C , 250mm rain
24	Tropical grasslands (Savanna) – Between equator and tropics. 20 – 30°C, 500 - 1500 mm of rain per year. Wet and dry seasons.
25	Deserts – Tropics (Sahara and Australia). Over 30°C, less than 300 mmm per year rain. 20% of land’s surface.
26	Deciduous forests – Higher latitudes (W Europe, N America, New Zealand). 23.5 – 60°C and between 500 – 1500 mm rain per year. 4 distinct seasons. Lose leaves in the winter to cope with the cold.
27	Coniferous forests (Taiga) – 60°N (Scandinavia / Canada). Cone bearing evergreen trees. No sunlight for part of the year.
28	Tundra – Above 60°N (Arctic Circle). Less than 10°C and less than 500mm per year rain. Cold, icy and dry means 2 month growing season.

Subject: Spanish	Topic: Mi vida en el insti	Term: Spring
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Key Nouns					
1	Maths	Las matemáticas	13	subjects	Las asignaturas
2	English	El inglés	14	GCSE	La ESO
3	Biology	La biología	15	A levels	El bachillerato
4	IT	La informática	16	Secondary school	El instituto
5	Science	Las ciencias	17	Primary school	El colegio de primaria
6	History	La historia	18	University	La universidad
7	RE	La religión	19	Vocational Training	La formación profesional
8	PE	La educación física	20	The teacher	el/la profesor/a
9	Phisycs/chemistry	La física/química	21	The uniform	El uniforme
10	DT	La tecnología	22	The rules	Las normas
11	Business Studies	Las empresariales	23	Electives	Las optativas
12	Art	El dibujo	24		

Key Adjectives					
25	Fácil/difícil	Easy/difficult	30	Estricto/serio	Strict/serious
26	Divertido/aburrido	Fun/boring	31	Paciente/impaciente	Patient/impatient
27	Útil/relevante/práctico	Useful/relevant/practical	32	tranquilo/a	calm/ quiet
28	creativo/relajante	Creative/relaxing	33	Trabajador/perezoso	Hardworking/lazy
29	Lógico/exigente	Logical/demanding	34	Simpático/tolerante	Nice/tolerant

Key Verbs					
35	estudio	I study	45	Hago los deberes	I do my homework
36	repaso	I revise	46	Participo en los clubs	I participate on clubs
37	Enseña/explica	He/she teaches/explains	47	Aprobar los exámenes	to pass the exams
38	llevo (llevar)	I wear	48	Aprendo	I learn
39	es	it is (description)	49	Hacemos experimentos	We do experiments
40	hay	there is/are	50	Hacemos ejercicio	We do exercise
41	había	there was/were	51	Está prohibido	It is forbidden
42	tiene	it has	52	Debemos + infinitive	We must + verb
43	tenía	it had	53	Voy en + transport	I go by + transport
44	era	it was (description)	54	Empezamos/terminamos	We start/finish

Subject: Spanish	Topic: Mi vida en el insti		Term: Spring
Key Phrases			
55	En mi instituto hay + facilities	In my school there is/are + facilities	
56	Mi escuela primaria tenía + facilities	My primary school had + facilities	
57	Las clases empiezan a las ocho y veinte	The lessons start at 8:20	
58	Las clases terminan a las tres	The lessons finish at 3	
59	El recreo dura quince minutos	Break last 15 minutes	
60	Está prohibido + verbs in infinitive	It's forbidden to + verbs	
61	Se debe + verbs in infinitive	You must + verbs	
62	Las normas son estrictas	The rules are strict	
63	Soy miembro del club de + activity	I am a member of the (activity) club	
64	Las actividades extraescolares son + adjectives	The extra-curricular activities are + adj	
65	El estrés de los exámenes es un problema	The stress of the exams is a problem	
66	Hay alumnos que se burlan de otros	There are students that make fun of others	
67	Hay que hacer los deberes/repasar	You have to do your homework/revise	
68	Para sacar buenas notas se debe + verbs in infinitive	To get good grades you must + verb	
69	En el colegio del future habrá + facilities	In the school of the future there will be...	
70	Estudiaremos + subjects	We will study...	
71	Podremos + verbs in infinitive	We will be able to + verbs	
72	El día escolar es muy largo	The school day is really long	
Key Structures			
73	Lo bueno de mi instituto es que	The good thing about my school is that	
74	Lo malo de mi instituto es que	The bad thing about my school is that	
75	Lo mejor de estudiar es que	The best thing about studying is that	
76	Lo peor de estudiar es que	The worst thing about studying is that	
77	Si fuera posible	If it was possible	
78	Si pudiera cambiar algo, sería	If I could change something, it would be...	
79	Suelo + Infinitive	I usually...	
80	Solía + Infinitive	I used to...	
81	Es necesario que tengas tiempo para estudiar	It's necessary to have time to revise	
82	Es importante que participes en clase	It's important to participate in class	
83	Siempre me ha gustado + subject	I have always liked ...	
84	Preferiría + Infinitive	I would prefer	

Subject: 3D Design DT	Topic: Investigating Design	Term: Spring
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How to analyse a designers work	
1	Introduction – What is the name of the artist/designer and what is the piece you are looking at called? When was it made? What is the first thing you think about when you look at the work?
2	Description – What types of colours and shapes has the artist/designer used? How would you describe the textures in this image? How do you think it was made? What techniques and media did the artist/designer use? Is there anything unusual that you have noticed about this work?
3	Interpretation – What do you think the meaning of the work is? Does it remind you of anything? Does it remind you of other artists? If you were the artist/designer, what would you have named this piece and why? Who was the audience for this piece? (who would buy it)
4	Evaluation – What do you like the most about this peice? How does it relate with what you have done in 3D design lesson at school? Was this piece successful? Do you think the artist/designer achieved their goal? Why or why not?.
How to analyse your work	
5	What: What is it? Explain the piece of work <ul style="list-style-type: none"> • This is a first hand drawing that I made of a... • This is a series of photographs that I took of.. • This is a mind map of.... • This is a collection of visual research about... • This is a copy that I made of.... Because...
6	How: How did you make it? Explain how you created it <ul style="list-style-type: none"> • I drew it/painted/constructed it with... • I worked from primary/secondary source • I found the information on a site called
7	Quality: How good is it? What are you pleased with? What could you improve? <ul style="list-style-type: none"> • I am pleased with the way I... • The best feature of this work is... • A particularly successful aspect of this work is... • I am not happy with... • One area that I could improve is... • The least successful area of this work is... • I wish that I had...
8	Why: Why did you make it? Explain how this work helps your development <ul style="list-style-type: none"> • ...to get ideas about... • ...to show what I have learned about... • ...to explore the idea of... • ...to examine the shape/form/texture/pattern of... • ...to analyse the style of... • ...to try out the technique of... • ...to develop my skills in...
9	Learning: What have you found out? What have you found out? What are your next steps? <ul style="list-style-type: none"> • I got better at working with... • I have a better understanding of the style of... • I feel more confident about... • Next I will try... • To follow this up, I will... • To build on this piece of work I hope to...

Subject: Food DT	Topic: Food Provenance	Term: Spring
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Key Terms			
1	Staple food – Food that forms the basis of a traditional diet (for example: wheat, barley, rice).		
2	Food miles – distance food has travelled from where it was harvested to when it reaches the consumer.		
3	Productivity – The amount of food produced.		
4	Primary processing - It is changing a basic food to preserve it or to prepare it for sale or cooking. Example, milling wheat into flour		
5	Secondary processing - this is when primary processed foods are made into other products. Example, making flour into pasta, bread, biscuits and other flour based products.		
Food provenance: Fruit and Vegetable			
6	Fruit can be categorised into four:	Citrus	Lemon, lime, oranges
		Soft/berry fruit	Strawberries, raspberries
		Hard Fruit	Apple, pear
		Fruits that don't fit in the category	Banana, kiwi, pomegranate, melon
Food provenance: Meat products			
7	The quality of meat products depends on how the animal has been kept, what it is fed, its age, and how it is processed and cooked.		
8	The Red Tractor - an independent mark of quality (symbol) that guarantees the food comes from farms and food companies that meet high standard of food safety and hygiene, animal welfare and environmental protection.		
Farming Methods			
9	Intensive farming - Is where a large amount of produce is generated from a relatively small area of land. Works for animals, plants and fish.		
10	Organic farming – food that are grown or reared without the use of artificial aids (e.g. hormones, fertilisers, pesticides).		
11	Sustainable farming - conserving an ecological balance by avoiding depletion of natural resources.		
Food provenance – Fish products			
12	Fish farming – It's a way of ensuring future fish supply. Fish are reared in tanks or enclosures either using an indoor or outdoor cage system.		
13	Advantage of fish farming	Disadvantage of fish farming	
	<ul style="list-style-type: none"> -Competing species cannot enter fish farm -Less transport cost to deliver fish to market -Fish can be produced in higher quantities -Wild fish stocks are not reduced. -Indoor fish farms are protected from weather changes. -Fish can't escape. -Fish are protected from predators. -Can control the environment the fish lives in 	<ul style="list-style-type: none"> -Cost of setting up a fish farm can be expensive -Running cost of a fish farm can be expensive -Sterile water, pesticides and antibiotics may be used to control diseases -In outdoor fish farms, drugs can pollute the surrounding waters -There may be more disease as the fish live closely together 	

Subject: Food DT		Topic: Food Provenance + Diet related diseases		Term: Spring
Food processing				
14	Why do we process food?	making food safe to eat by killing harmful bacteria		
		making foods become available that are out of season, like frozen raspberries and strawberries		
		making foods easier to prepare, this is important for people who live busy lifestyles		
		making foods have a longer shelf life by adding preservatives		
Primary process: Wheat				
15	Grains of wheat are made into flour through the process of milling .			
16	Extraction rate - how much of the whole grain is used to produce certain flour			
17	Wheat has 3 main layers: Bran, endosperm and germ.			
18	Wholemeal flour is healthier as it contains all parts of the wheat whereas white flour only makes use of the endosperm.			
Primary processing: Milk				
19	Milk is mainly water. It is an emulsion (mixture of two liquids) and has tiny drops of fat suspended in it.			
20	Milk we buy is homogenized . This is where milk is forced at high pressure through small holes to break up fat globules to spread them evenly and prevent separation.			
21	Most milk in the UK has been pasteurised which is a method of heat-treating milk to kill bacteria.			
Diet related diseases and conditions				
22	People who are obese are more likely to suffer from:	<ul style="list-style-type: none"> • coronary heart disease; • type 2 diabetes; • gall stones; • arthritis; • high blood pressure; • some types of cancers, i.e. colon, breast, kidney and stomach. 		
23	Osteoporosis - is a disease where bones become weak, brittle and break easily. It is caused by severe losses of calcium.			
24	Type 2 diabetes – where the body produces insulin in the pancreas, but it is insufficient(not enough) to control blood glucose effectively. This is often because the body tissues are resistant to the action of insulin. Type 2 diabetes can be controlled or improved by diet.			
25	Hypercholesterolemia is the presence of high levels of cholesterol in the blood. It can be caused by an unhealthy diet, lack of exercise or physical activity, drinking excessive amounts of alcohol and smoking.			

Subject: Computer Science	Topic 2: Data	Term: Spring
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1	A computer is made up of billions of switches, each with two states, - an off (represented by a 0) and an on position (represented by a 1).
2	Computers use binary to represent everything including numbers, text, sound, graphics and programs.
3	Our denary (decimal) system has a base of 10 digits 0-9. Binary has a base of just 2 digits.
4	An unsigned representation of a binary number can only represent positive numbers.
5	A signed integer can represent both positive and negative numbers.
6	Binary addition is done in the same way that denary numbers might be added together e.g. $0 + 0 = 0$
7	Overflow occurs when the result of adding two binary numbers is greater than the number of bits allowed.
8	A logical shift moves all of the bits in a given binary number either to the left or to the right by a given number of places. All of the empty spaces are then filled with zeros.
9	A left arithmetic shift is identical to a left logical shift
10	A right arithmetic shift of one place means that each bit moves right one place.
11	A hexadecimal number system uses a base of 16.
12	Hexadecimal numbers are easier to read so they are used for colour values in photo editing software and HTML, MAC addresses and memory address locations in assembly language.
13	Each character on a keyboard has a binary code which is transmitted to the computer each time a key is pressed.
14	ASCII stands for American Standard Code for Information Interchange.
15	The ASCII character set consists of 128 characters, each using 7 bits to uniquely represent them.
16	A bitmap image is made up of picture elements or pixels.
17	A pixel represents the smallest identifiable area of an image, each appearing as a square of a single colour.
18	The size of an image is expressed as width x height of the image in pixels, for example 600 x 400px.
19	As the number of bits per pixel increases (the colour depth or bit depth) , so does the quality of the image as you are able to more accurately represent the full range of colours visible to the naked eye.
20	The resolution is the density of the pixels in the same sized area. The more pixels per inch (PPI) will smooth the edge and improve the overall quality.
21	Analogue sounds must be digitally recorded in binary.
22	In order to record sound, the amplitude (height of the soundwave) emitted must be measured and recorded at regular intervals.
23	The sample rate is measured in hertz. CD quality playback is recorded at 44.1 KHz.
24	Compression software uses algorithms to remove repeated or unnecessary data.
25	A bitmap (.bmp) image is uncompressed.

Subject: Computer Science	Topic 3: Computers	Term: Spring
1	The purpose of the Central Processing Unit (CPU) is to continuously fetch, read and execute instructions stored in memory by repeatedly carrying out the fetch-execute cycle.	
2	The CPU contains the Arithmetic Logic Unit and the Control Unit.	
3	Every CPU instruction is fetched from memory. Once fetched, it is decoded by the Control Unit to find out what to do with it. Then the instruction is executed. Every operation carried out within the fetch-execute cycle is regulated by a 'tick' or cycle of the CPU clock.	
4	John von Neumann developed the stored program computer. In a von Neumann computer, both programs and the data they used are stored in memory.	
5	ALU (Arithmetic Logic Unit) - carries out mathematical and logical operations including AND, OR and NOT, and binary shifts. It compares values held in registers.	
6	CU (Control Unit). Coordinates all of the CPU's actions in the fetch-decode-execute cycle and decodes instructions. Sends and receives control signals to fetch and write data.	
7	Clock – The clock regulates the speed and timing of all signals and computer functions.	
8	Registers – Very small, very fast memory locations. Registers are built into the CPU chip to temporarily store memory addresses, instructions or data. They are used in fetch-execute cycle for specific purposes.	
9	Address, data and control buses – Wires used to transfer data, instructions, memory addresses (of data and instructions) and control signals from one component to another.	
10	The clock speed determines the number of fetch-execute cycles per second.	
11	RAM (Random Access Memory) is required to temporarily store the programs, instructions and data the computer needs whilst in operation. These are copied from the hard disk into main memory when they are required because it would be too slow to access everything directly from the hard disk.	
12	ROM (Read Only Memory) stores instructions and data that never need to be changed.	
13	An embedded system is used to control the function of electronic devices such as those commonly found in the home. They often do not need a full operating system.	
14	Secondary storage includes hard disks, USB flash drives and CDs.	
15	Hard disk drives (HDD) work by the drive read/write head moves into position across concentric tracks which hold the data.	
16	Solid State Disks (SSD) looks like a standard circuit board. They use electrical circuits to persistently store data.	
17	Optical drives (CD/ Blu-ray) uses a laser to reflect light off the surface of the disk.	
18	System software programs are those that are needed to enable the computer to function, including the operating system (OS), utilities, library routines and programming language translators.	
19	The operating system is a group of programs that is essential for managing the computer's resources.	
20	Utility programs are small programs that are used in conjunction with the main operating system in order to manage extra features or functions.	
21	Software needs to be written as robustly as possible in order to reduce the threat posed by misuse, malware, hackers and other attacks.	
22	A high-level language has a syntax and structure similar to English that is designed to be understood by humans.	
23	High-level must be compiled or interpreted into machine code before it can be run.	
24	There are two main types of translator, a compiler and an interpreter.	

Key words

1	Skill	A skill in physical activity is a specific and defined task that can be learned and practiced.
2	Open Skill	A skill performed in an unpredictable environment, where the performer has to react and adjust to the changing nature of the situation.
3	Closed Skill	A skill performed in a predictable environment, where very few variables are outside the performers control.
4	Basic Skill	A simple skill requiring little attention and concentration to execute, made up of no or few sub-routines.
5	Complex Skill	A skill requiring a lot of attention and concentration, made up of a lot of sub-routines.
6	High Skill	A skill that cannot be broken down easily and practiced separately because the phases of the skill are closely linked.
7	Low Skill	A basic skill that can be broken down easily into different phases so each part can be practiced separately.
8	Fixed Practice	During fixed practice a skill is practiced repeatedly in the same way The environment stays the same and the performer is able to focus solely on the skill itself
9	Variable Practice	Where a skill is practiced in a variety of different situations so that it can be adapted to suit different competitive situations. A skill is practiced in different settings with unpredictable and changing conditions
10	Massed Practice	Where a skill is repeated continuously during long practice periods without rests. The skill is practiced until it is learned. There are no breaks
11	Distributed Practice	Where a skill is practiced over several sessions or with breaks for rest, feedback and mental rehearsal. Best type of practice for learning new skills because it allows for feedback on performance
12	Goal Setting	Goal setting is the process of setting down targets that a performer will aim to accomplish.
13	SMART Targets	S – Specific M – Measurable A – Achievable R – Realistic T - Time-bound
14	Guidance	There are four types of guidance, visual, verbal, mechanical and manual
15	Feedback	There are four types of feedback, intrinsic, extrinsic, concurrent and terminal
16	Psychological Warm up	Good mental preparation during a warm-up - a psychological warm-up - ensures that all of a performer's attention is totally focused on the performance and nothing is able to distract from the task at hand

Subject: Personal Development	Topic: PSHE, Citizenship & careers	Term: Spring
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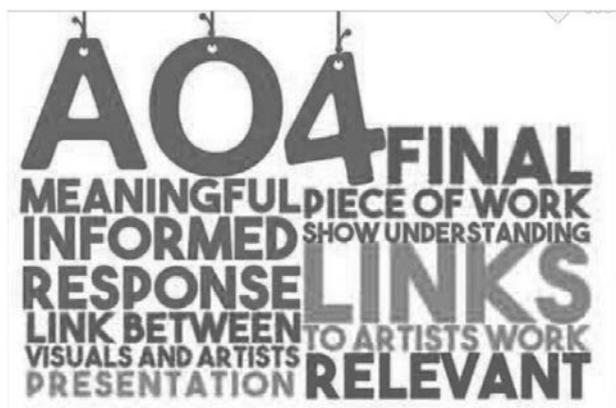
	Key Words
1	Protected Characteristics - Character traits of a person that it is against the law to discriminate against- there are 9 in total.
2	Characteristic - A quality or feature that is characteristic of someone or something is one which is often seen in them and seems typical of them.
3	Discrimination - The practice of treating one person, or a group of people, less fairly or less well than others.
4	British Values - British Values are what means to be a citizen in a modern and diverse Britain- there are 5 in total.
5	Tolerance - The quality of allowing people to say and do as they like, even if you do not agree or approve of it.
6	Democracy - A system of government in which people choose their leaders by voting for them in elections.
7	Health - A state of complete mental, physical and social wellbeing, and not merely the absence of disease and infirmity.
8	Wellbeing - The state of being comfortable, healthy, or happy. Examples include; physical, emotional and social.
9	Harassment - Aggressive pressure or intimidation. Examples include; Physical, verbal and sexual
10	Careers - an occupation undertaken for a significant period of a person's life and with opportunities for progress
	Key topics
11	Protected Characteristics: Age, Disability, Sex, Sexual orientation, Pregnant, Marriage/civil partnership, gender reassignment, religion, race
12	British values: Mutual respect & tolerance, Democracy, Rule of law, Individual liberty
13	CEIAG: Careers education, information and guidance
14	SMSC: Spiritual, Moral, Social and Cultural
15	Citizenship: the position or status of being a citizen of a particular country.
16	Relationships: the way in which two or more people or things are connected, or the state of being connected.

Subject: Art	Topic: Refine and Record	Term: Spring
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	Key Words
1	Refine: Modification of the composition – eg replacing one object with another or changing a pose slightly. A variation of a technique - eg trying oil pastel rather than painting to achieve an expressive style.
2	Tone: Tone means how light or dark something is. The tones artists and designers use and the contrast between them can create very different moods and visual effects.
3	Texture: Artists and designers can use actual texture in their work or they can suggest how something feels using techniques that imply texture.
4	Colour: Element of art derived from reflected light. We see color because light waves are reflected from objects to your eye.
5	Line: Lines are used by artists and designers to describe objects, add detail or create expression. Some form of line is used in every piece of artwork.
6	Space: Three-dimensional work creates real space. Two-dimensional works can create implied space using artistic technique. Objects take up positive space, while negative space is the empty space around them.
7	Form: refers to three dimensional objects. While shapes have two dimensions (height and width), forms have three dimensions (height, width and depth).
8	Gradation: in art is a visual technique of gradually transitioning from one colour hue to another, or from one shade to another, or one texture to another.
9	Blending: is a technique of shading that on concealing the application of marks by either applying them seamlessly or by rubbing in the media.
10	Develop: developing ideas is part of the creative process for artists and designers. By exploring and refining ideas, effective decisions can be made about the final piece of artwork or design solution.
	Assessment criteria
11	AO1: Develop your ideas through investigation informed by contextual and other sources, demonstrating analytical and cultural understanding. 1) Have you explored the work of artists. 2) Have you analysed their work to understand the reasoning and context behind their work. 3) Present your work to clearly show the links to the artists work
12	AO2: Refine your ideas through experimenting and selecting appropriate resources, media, materials, techniques and processes. 1) Use a range of materials and processes. 2) Evaluate your work, making intelligent improvements and showing links to the artists you have studied. 3) Trialing different materials to create the same/ similar outcome.

Subject: Art	Topic: Refine and Record	Term: Spring
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Key Words	
13	<p>AO3: Record your ideas through investigation informed by contextual and other sources, demonstrating analytical and cultural understanding.</p> <ol style="list-style-type: none"> 1) Collect images to inspire your project. 2) Have you got drawings and observations, using a range of materials. 3) Take your own photos and create artworks using these. 4) Make annotations to explain your thought process..
14	<p>AO4: Present a personal, informed and meaningful response demonstrating analytical and critical understanding, realising intentions.</p> <ol style="list-style-type: none"> 1) Producing a final piece that represents the artists and experiments explored throughout.





Astrea Academy Sheffield
Andover Street
Sheffield
S3 9BE

Tel: 0114 5539110
Email: info@astreasheffield.org

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