BOURNEMOUTH SCHOOL

Year 9

Knowledge Organiser 2

Autumn Term: 2023-24

Name:_____

✓Hard Work ✓Discipline ✓Smart Appearance ✓Respect

Bournemouth School

Knowledge Organiser: Year 9 Autumn Term 2

'Knowledge is power' by Francis Bacon

A knowledge organiser provides you with all the most important knowledge you need for each unit of study this half term. Your aim is to transfer all of this information into your long-term memory so you can use it in your lessons and further expand your understanding of this work.

How to use your knowledge organiser (KO)?

1. Ensure you have your KO with you at all times in school and when you need to do your homework at home.
2. Ensure you have your homework learning journal with you at all times in school and when you need to do your homework at home.
3. In lessons when you have covered information that appears on your KO your teacher will ask you to put a tick next to that section. This means that is now added to what you must learn for homework.
4. Initially follow your homework timetable to decide what to revise each evening.
5. There are 4 strategies that you can use to revise. They are progressively more challenging so always start with number 1.
    a. Look Cover Write Check
        i. Identify the subject and section of your KO that you want to revise. This should be one of the ticked sections.
        ii. LOOK carefully at the subject and section of your KO you want to revise and try to remember as much as you can. Remember this should be a ticked section.
        iii. Now COVER this information so you can't read it.
        iv. WRITE out what you can remember word for word in your Homework Learning Journal.
        v. CHECK what you have written by comparing it to your KO. Tick each correct word in green pen and correct any errors you have made.
        vi. Repeat this process until you are confident you can remember everything you need.

        AIM:

        You should be able to repeat the information by rote
    b. Self or peer quizzing
        i. Identify the subject and section of your KO that you want to revise. This should be one of the ticked sections.
        ii. Write out a list of questions you could ask either yourself or a friend about this section of the KO. Write these in your homework learning journal
        iii. If you are working on your own, cover the KO and write a full answer to each question.
        iv. If you are working with a partner swap books and copy down their questions and have a go at answering them.
        v. Now uncover the KO and with a green pen correct your work.

        AIM:

        You should be able to repeat the information by rote but with a good understanding
    c. Playing with words and sentences
        i. Identify the subject and section of your KO that you want to revise. This should be one of the ticked sections.

ii. You now want to check how well you have learnt the information in your KO.
iii. Definitions – look at words that are used in this section. Can you write a definition in your own words?
iv. Rephrasing – can you rewrite the sentences or explanations in your own words
v. Summary – can you summarise the main points of this section of the KO?
vi. Synonyms – can you write synonyms for key words and ideas
vii. New Sentences – Can you write a sentence that includes the key vocabulary or definitions that you have learnt?

AIM

You should be able to use the information in your KO in a flexible and confident way in your writing.

d. Think it, Link it
   i. This is a technique to use towards the end of the half term when you are revising all of the KO.
   ii. Think of the links or connections between different sections of your KO.
   iii. Write these out in your own words in your homework learning journal
   iv. Think about the links between a particular section of you KO and what you have learn in your lessons. Can you expand on this section by linking it to your wider knowledge?
   v. Write this out in your homework learning Journal.

AIM

You should be able to link your homework and your lessons to show a confident understand of the work covered.

Homework Learning Journal

1. Always write the subject and the date when you start your homework
2. Always write the strategy that you are going to use for your homework
3. Use a blue or black pen to complete your homework or a pencil if you need to draw.
4. Always use a ruler to underline titles and dates
5. Use a green pen to complete corrections of your work

Checking:

Your tutor will check your Homework Learning Journal at least once a week. If they are concerned that you aren't doing your homework properly they will offer support and guidance. If you don't respond to this guidance you will be added to the afterschool 'Success club' where a member of staff will help you complete your homework.

DO NOW tasks:

At the start of every lesson you should expect a Do Now task. This is a low stakes retrieval quiz on what you have learnt so far. If you have completed your homework this should be easy. The aim is to get 100% in each of these. If you miss this target occasionally don't worry. If it happens regularly your teacher will ask your tutor to have a chat and offer you support.

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Year 9 'Power & Conflict (2)' Knowledge organiser

Poem	Themes	✓	Content	✓	First class quotations	✓	Context	✓
Poppies	Loss, family, suffering, motherhood		Focuses on a mother's perspective of waiting for her son to come back from war and remembering his childhood.		"All my words flattened, rolled, turned into felt" "Like a treasure chest"		Weir was a textile designer. Conflict is ambiguous to give a timeless relevance to families left behind.	
Kamikaze	Patriotism, honour, nature, memories		Follows the journey of a pilot going into battle, his decision to return home, and how his family shun him afterwards.		"Dark shoals of fish flashing silver" "A shaven head full of powerful incantations"		Cowardice was a great shame in wartime Japan, it brought rejection from society.	
The Emigree	Identity, memory, childhood, displacement		A female is forced to leave her country for political or social reasons. Her positive memories of home cannot be lost.		"I comb its hair and love its shining eyes" "I am branded by an impression of sunlight"		Published in 1993, still topical. Country is not specified, gives the poem a timeless relevance.	
Ozymandias	Nature, decay, pride, leadership		The narrator meets a traveller who tells him about a decayed stature that he saw in a desert. Human power is temporary.		"Look on my works, ye mighty, and despair" "The lone and level sands stretch far away"		Romantic poetic, interested in nature and emotion. Inspired by the French revolution, opposed the oppressive monarchy.	
Prelude	Nature, fear, childhood, experiences		A boy confidently steals a boat, rows across a lake, sees a looming mountain ahead and gets scared, scared by the experience.		"An act of stealth/ and troubled pleasure" "Upreared its head"		Part of a 14 book epic poem. Orphaned at 13, lived with family in the Lake District who treated him badly, became suicidal.	
Storm on the Island	Nature, fear, politics, community		The community prepares for a violent storm and describe the various sounds and sights during it.		"Exploding comfortably" "Spits like a tame cat turned savage"		Published during The Troubles in Northern Ireland. STORMONT is the name of the Northern Irish parliament.	
London	Corruption, inequality, poverty, loss of innocence		Narrator describes a walk around London, he is saddened by the sights and sounds of poverty.		"Mind-forged manacles" "Every black'ning church appals"		Blake had radical political views, he believed in social and racial equality. From a collection focusing on lost innocence.	
My Last Duchess	Pride, control, jealousy, status		Shows a visitor around his art collection and points out a portrait of his dead wife. He was annoyed by her "flirtatious" behaviour.		"As if she ranked / My gift of a nine-hundred-years old name" "I gave commands; then all smiles stopped"		Based on the Duke of Ferrara (1533-1598) whose wife died suspiciously. He is the inspiration for Browning's poem.	
Checking Out Me History	Protest, identity, pride, culture		Represents the voice of a man who was frustrated by the Eurocentric history curriculum that he was taught at school.		"Dem tell me wha dem want" "I carving out me identity"		Born in British Guyana, moved to England when grown up. His poems challenge racism and prejudice.	
Tissue	Nature, control, identity, fragility		Explores the paradox that although paper is fragile, temporary and ultimately not important, we allow it to control our lives.		"The sun shines through their borderlines" "Let the daylight break through capitals and monoliths"		Taken from a collection that questions how well we know the people around us ("The Terrorist At My Table")	

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Year 9 'Paper 1 (Dystopian)' Knowledge organiser

Contained narrative plan	✓
Establish a thread	
Drop the reader into the setting	
Zoom in on a character	
Shift to another time or place	
Return/ zoom in on the character again	
Zoom out and close the narrative	
Motif will run throughout	

Opening hooks	Effect	✓
Action	Throws the reader into chaos, could create disorientation.	
Question	Involves the reader from the start.	
Dialogue	Gives insight into the character's issues.	
Something unexpected	Creates a puzzling effect, intrigues the reader.	
A contrast	Forces the reader to consider deeper ideas.	
Character description	Allows connection with key characters.	
Setting description	Orientates the reader to the surroundings, creates atmosphere.	
Humour	Immediately engages the reader.	

Techniques	Definition	✓
Motif	A dominant of recurring idea in a piece of writing.	
Tense	Expresses time of action (past, present, future)	
Fragmented sentence	A sentence missing either its subject or main verb.	
In media res	Starting in the middle of the action.	
Symbolism	Using words, images, people, locations or abstract ideas to represent something beyond the literal meaning.	
Assonance	Repetition of vowel sounds in words that are close together.	
Atmosphere	The main tone/ mood of a piece of writing.	

Ending type	Definition	✓
Cyclical narrative	Where the ending resumes back to the beginning.	
Plot twist	Complete change in direction.	
Epiphany	Sudden moment of realisation for the character.	
Cliff hanger	The reader is unclear at the end.	
Resolved	The strands of the plot are brought together and completed.	
Converging storylines	Two or more different storylines converge at the end.	
Deus ex machina	Where a seemingly unsolvable problem is suddenly solved by a new character/ place/ object/ unexpected occurrence.	
Repeated motif or symbol	Ending with zooming back in on the motif that runs throughout.	

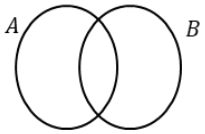
Glossary		
Key term	**Meaning**	✓
Convincing	Believable as true.	
Compelling	Powerful/ interesting.	
Cacophonic	A harsh mixture of sounds.	
Bobsled	A mechanically steered sled.	
Laceration	Deep cut or tear in skin.	
Foible	A weakness/ eccentricity in someone's character.	
Salvo	A simultaneous release of weapons in battle.	
Interlude	An interval.	
Contretemps	Dispute/ disagreement.	
Pneumatic	Operated by air or gas under pressure.	
Aural	Related to hearing.	
Tympanic	Related to the ear drum.	
Endeavouring	Try hard to do something.	
Terrestrial	On or relating to Earth.	

Keyword		Definition	Example(s)
Combinations		The number of ways of combining objects, found by multiplying the number of options for each choice	*Choose 2 students from a class of 30.* $\frac{30 \times 29}{2} = 435$
Estimating		Rounding values to 1 or 2sf to simplify a calculation	
Factor		A number that divides exactly into a given number	8 *is a factor of* 24
Multiple		A number in the given numbers times table	18 *is a multiple of* 6
Prime Factor Tree		Breaks up a number into products of its prime factors	12 4 3 2 2
Prime Factor Decomposition		A number written as a multiplication of its prime factors, normally written in index form.	$140 = 2^2 \times 5 \times 7$
HCF (highest common factor)		The largest number that divides into 2 numbers with no remainder	*HCF of 20 and 28* 4
LCM (lowest common multiple)		The smallest number that 2 numbers divide into exactly	*LCM of 20 and 28* 140
Standard form		A number written in the form $A \times 10^n$, where $0 < A \leq 10$ and n is an integer	$0.00284 = 2.84 \times 10^{-3}$
Surd		An irrational number, written exactly using square or cube roots	$\sqrt{5}, \sqrt[3]{8}$
Rational		A number that can be expressed in the form $\frac{a}{b}$	$\frac{6}{7}, 1.5, 0.\dot{6}$
Irrational		A non-terminating decimal with no recurring pattern	$\pi, \sqrt{2}, 3\sqrt{5}$
Rationalising a denominator		Multiplying $\frac{a}{\sqrt{b}}$ by $\frac{\sqrt{b}}{\sqrt{b}}$ to attain an integer denominator of b	

Keyword		Definition	Example(s)
Identity		The $\equiv$ symbol shows an identity. In an identity the two expressions are equal for all values of the variables.	$2(x+5) \equiv 2x+10$
Equation		An equation is only true for certain values of the variable. An equation has an equals sign, the variable and numbers. It can be solved to find the value of the variable.	$2y - 4 = 9y + 1$
Consecutive integers		Numbers one after the other in order.	$2, 3, 4,$ or $-8, -7, -6$
Expression		An expression contains letter and/or number terms but no equals sign	$2ab$ $2ab + 3b$ $2ab - 7$
Term		Separate parts of expressions, equations, formulae and identities separated by addition or subtraction	Within $2ab + 3b - 7$ there are 3 terms
Coefficient		The numerical value in an algebraic term	3 is the coefficient in $3x^2$
Formula		A formula has an equals sign and letters to represent different quantities.	$A = \pi r^2$
Subject of a formula		The subject of a formula is the letter on its own, on one side of the equals sign.	s is the subject of $s = ut + \frac{1}{2}at^2$
The nth term		The nth term of a sequence tells you how to work out the term at position n (any position). It is also called the general term of the sequence	
u_n		u_n denotes the nth term of a sequence,	u_1 is the first term, u_2 is the second term, and so on.
Arithmetic sequence		Terms increase by a fixed number called the common difference. General form $An + B$	$3, 7, 11, 15, \ldots$ nth term = $4n - 1$
Geometric sequence		Terms increase by a constant multiplier called the ratio. General form $a \times r^n$ or $a \times r^{n-1}$	$2, 6, 18, 54, \ldots$ nth term = $2 \times 3^{n-1}$
Quadratic expression		A quadratic expression contains a term in n^2 but no higher power of n General form $an^2 + bn + c$	$3, 8, 15, 24, \ldots$ nth term = $n^2 + 2n$
Expand		Remove brackets by multiplying terms	$2(2x+1) \equiv 4x+2$
Factorise		Arrange an expression into a product of its factors by placing terms in brackets.	$4x + 2 \equiv 2(2x+1)$

After completing a Prime Factor Decomposition for numbers A and B:

$HCF = A \cap B$
$LCM = A \cup B$



Surd Laws

- $a\sqrt{b} \times c\sqrt{d} = ac\sqrt{bd}$
- $\frac{a\sqrt{b}}{c\sqrt{d}} = \frac{a}{c}\sqrt{\frac{b}{d}}$
- $\sqrt{a^2} = \sqrt{a}^2 = a$

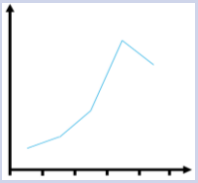
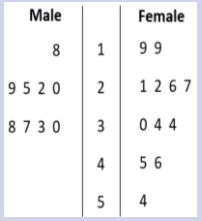
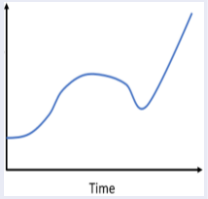
Standard form operations

- $(A \times 10^n) \times (B \times 10^m) = (AB) \times 10^{n+m}$
- $(A \times 10^n) \div (B \times 10^m) = \left(\frac{A}{B}\right) \times 10^{n-m}$
- $(A \times 10^n) \pm (B \times 10^n) = (A \pm B) \times 10^n$

note the powers must be the same

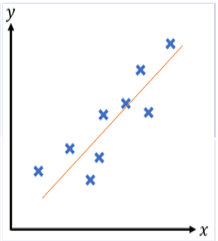
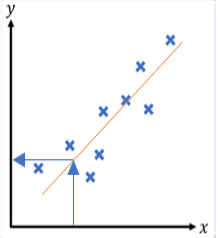
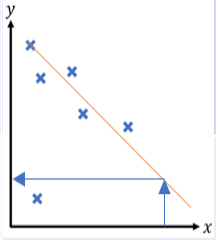
Index Laws

- $x^a \times x^b = x^{a+b}$
- $x^a \div x^b = x^{a-b}$
- $(x^a)^b = x^{ab}$
- $x^0 = 1$
- $x^{\frac{1}{a}} = \sqrt[a]{x}$
- $x^{-a} = \left(\frac{1}{x}\right)^a$

Keyword	Definition	Example(s)
Qualitative	Describes a characteristic of the data	*Colour, Brand*
Quantitative	Data counted or measured in numerical values	*Height, Weight*
Discrete	Data that takes fixed values	*Shoe size, Year*
Continuous	Data that can take any value	*Foot length, Time*
Frequency polygon	Used for grouped data with even class-widths. Plot midpoint against frequency	
Pie chart	Shows portions of a whole, split into sectors	
Stem-and-leaf diagram	Simplifies writing long lists of numbers by using common digits as a stem. Must have a key.	
Median	The middle piece of data when in order of size, found using $\frac{n+1}{2}$.	*Find the median of the males:* 29
Range	A measure of spread. Difference between largest and smallest.	*Find the range of the males* 20
Time-series	A graph that shows how data varies over time	

Pie chart

$$Sector\ angle = \frac{f}{\sum f} \times 360$$

Keyword	Definition	Example(s)
Scatter graph	Displays bivariate data. Used to show if there is a relationship.	
Line of best fit	Drawn on a scatter graph to show the trend and predict data values.	
Correlation	A description of the relationship of bivariate data.	*Positive, negative, no*
Interpolation	Predicting within the range of data.	
Extrapolation	Predicting outside of the range of data	
Anomaly	A piece of data that does not fit the trend.	
Mode	The most common piece of data.	*Find the mode of* *2, 6, 3, 6, 4* *= 6*
Mean	The sum of all the pieces of data, divided by how many there are	*Find the mean of* *2, 6, 3, 6, 4* *= 4.2*

Mean from grouped data $= \frac{\sum fx}{\sum f}$

Mean from individual data $= \frac{\sum x}{f}$

B1b- Cell division and cell transport

Large organisms = small surface area: volume ratio

Small organisms = large surface area: volume ratio

Mitosis – cell division		✓
Stage	Description	
1	Number of sub-cellular structures (organelles e.g. ribosomes and mitochondria) increases. The DNA replicates to form two copies of each chromosome.	
2	One set of chromosomes is pulled to each end of the cell. Nucleus divides.	
3	Cytoplasm and cell membrane	

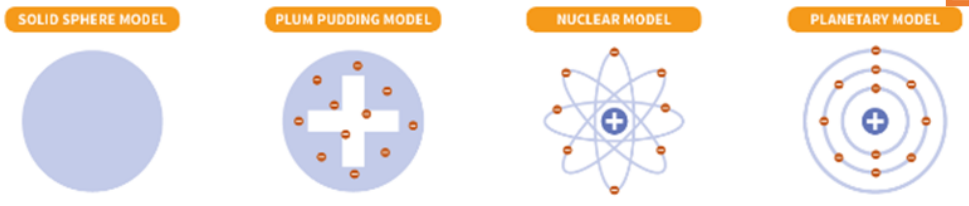
Adaptations to maximise diffusion		✓
Thin walls	Creates a short diffusion distance	
Good blood supply	Maintains concentration gradient	
Increased surface area	Maximises rate of diffusion	

Transport across membranes				✓
Process	Definition	Diagram (to be drawn in class)	Examples	
Diffusion	The passive movement of particles resulting in a net movement from an area of higher concentration to an area of lower concentration. Occurs in solutions and gases.		Movement of oxygen and carbon dioxide in gas exchange (lungs and leaves)	
Osmosis	The diffusion of water from a dilute to concentrated solution, across a partially permeable membrane		Movement of water across cell membranes into and out of cells	
Active transport	The movement of particles from a low concentration to a high concentration, using energy from respiration		• Absorption of mineral ions into plant root hairs • Absorption of sugar molecules from the gut into the blood	

Chapter 1b – Atomic Structure and the Periodic Table

Keyword	Learn	✓
Physical Property	A characteristic of a substance that can be observed or measured without changing the identity of the substance. Examples are: melting and boiling point, density, hardness, colour, electrical conductivity.	
Chemical Property	A characteristic of a substance that may be observed when it takes part in a chemical reaction. Examples are: reactivity, flammability, toxicity.	
Metal	Element that forms positive ions by losing one or more electrons to get a stable, full outer shell.	
Non-metal	Element that forms negative ions by gaining one or more electrons to get a stable, full outer shell.	
Ion	A charged particle formed when an atom gains or loses electrons to form a full outer shell. The number of protons is different to the number of electrons in an ion, which makes them charged.	

Development of the Atomic Model



JOHN DALTON
Atom is a solid sphere.

J.J. THOMSON
Atom is a ball of positive charge with negatively charged electrons scattered throughout.

ERNEST RUTHERFORD
- Mass and positive charge concentrated in nucleus
- Electrons orbit nucleus
- Mostly empty space

NIELS BOHR
Electrons orbit in shells at fixed distances from nucleus.

Trends in the Periodic Table

GROUP 1 (Alkali Metals)
- Reactivity increases down the group
- Outer shell electrons are further from the nucleus as atomic radius increases
- Attraction between nucleus and outer shell electrons becomes weaker
- Outer shell electrons are more easily lost

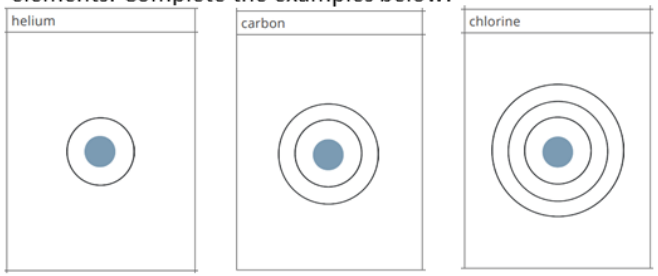
GROUP 7 (Halogens)
- Reactivity decreases down the group
- Outer shell electrons are further from the nucleus as atomic radius increases
- Attraction between nucleus and outer shell electrons becomes weaker
- Outer shell electrons are less easily gained

TRANSITION METALS
- Harder & denser than Group 1 metals, with higher melting & boiling points
- Less reactive than Group 1 metals

GROUP 0 (Noble Gases)
- Unreactive due to full outer shell of electrons
- Boiling point increases down group because number of electrons increases, so attraction between atoms gets stronger

Electron Configuration

You need to be able to draw the arrangement of electrons of the first 20 elements. Complete the examples below:



Answers:
He = 2; C = 2,4;
Cl = 2,8,7

Electrons are found in shells. A maximum of 2 in the innermost shell, which is filled first, then 8 in the second and third shells.

Neutrons

James Chadwick discovered the neutron.
This explained the existence of isotopes. Atoms of the same element could have the same number of protons (atomic number) but a different atomic mass due to a different number of neutrons.

Keyword	Learn	✓
Energy store	Name the different stores: kinetic, chemical, thermal (internal), gravitational potential, magnetic, electrostatic, elastic potential and nuclear	
Energy transfer	Can be done by waves (light and sound), electrical and work.	
System	An object or a group of objects that interact	
Principle of conservation of energy	Energy can be transferred from one store to another, but energy cannot be created or destroyed	
Kinetic energy	The amount of energy stored in a moving object	
Gravitational potential energy	The amount of energy stored in an object raised above the ground	
Elastic potential energy	The amount of energy stored in a stretched spring	
Spring constant	The force needed to stretch a spring 1 metre	
Work	1 joule of work is done when a force of 1 N causes an object to move 1 m	
Power	The rate at which energy is transferred (or rate at which work is done)	
Specific heat capacity	The amount of energy required to raise the temperature of 1 kg of a substance by 1°C	
Dissipate	To scatter in all directions or to use wastefully	
Thermal conductivity	The higher the thermal conductivity of the material the more the material allows heat to conduct through,	
Efficiency	The proportion of energy that is usefully transferred	
Non-renewable energy resources	Coal, Oil, Gas and Nuclear. These will run out, because there are finite reserves, which cannot be replenished.	
Renewable energy resources	Solar, Wind, Hydroelectric, Wave, Tidal, Geothermal, Biomass/fuel. These will never run out. They are replenished as they are used.	

Quantity	Unit	Symbol
Energy	joule	J
Work	joule	J
Power	watt	W
Mass	kilogram	kg
Extension	metre	m
Height	metre	m
Force	newton	N
Temperature	degrees Celsius	°C
Speed	metres per second	m / s
Spring constant	newtons per metre	N / m
Gravitational field strength	newtons per kilogram	N / kg
Specific heat capacity	joules per kilogram per degree Celsius	J / kg°C

Equations

Kinetic energy = ½ x mass x speed² $E_k = \frac{1}{2} \times m \times v^2$

Elastic potential energy = ½ x spring constant x extension² $E_e = \frac{1}{2} \times k \times e^2$

Gravitational potential energy = mass x gravitational field strength x height $E_p = m \times g \times h$

Work = force x distance moved in the direction of the force $W = F \times s$

$Power = \frac{Energy\ transferred}{Time}$ $P = \frac{E}{t}$ OR $Power = \frac{Work\ done}{Time}$ $P = \frac{W}{t}$

$Efficiency = \frac{Useful\ output}{Total\ input}$

Practical work vocabulary – the words have the same meaning in all three science subjects. You are expected to know these definitions in the exams. Learn the spellings and definitions.

Vocabulary taught in Topic 1 - Energy		
Vocabulary	**Learn**	✓
Data	Information, either qualitative or quantitative, that has been collected	
Fair Test	A fair test is one in which only the independent variable has been allowed to affect the dependent variable	
Interval	The quantity between readings	
Reproducible	If the investigation is repeated by another person, or by using different equipment or techniques, and the same results are obtained	
Resolution	This is the smallest change in the quantity that can be measured by the measuring instrument	
Variables	These are physical, chemical or biological quantities or characteristics	
Categoric variables	These have values that are labels, e.g. names of plants or types of material	
Continuous variables	These can have values that can be given a magnitude either by counting or by measurement	
Control variable	This is one which may, in addition to the independent variable, affect the outcome of the investigation and therefore has to be kept constant or at least monitored	
Dependent variable	The variable of which the value is measured for each and every change in the independent variable	
Independent variable	The variable for which values are changed or selected by the investigator	

Vocabulary taught in Topic 5a – Forces		
Vocabulary	**Learn**	✓
Accuracy	A measurement result is considered accurate if it is judged to be close to the true value	
Measurement error	The difference between a measured value and the true value	
True value	This is the value that would be obtained in an ideal measurement	
Calibration	Marking a scale on a measuring instrument.	
Systematic error	These cause readings to differ from the true value by a consistent amount each time a measurement is made.	
Zero error	Any indication that a measuring system gives a false reading when the true value of a measured quantity is zero, eg the needle on an ammeter failing to return to zero when no current flows.	
Hypothesis	A proposal intended to explain certain facts or observations	
Prediction	A prediction is a statement suggesting what will happen in the future, based on observation, experience or a hypothesis	

Vocabulary taught in Topic 3 – Particle Model of Matter		
Vocabulary	**Learn**	
Anomalies	These are values in a set of results which are judged not to be part of the variation caused by random uncertainty	
Random Error	These cause readings to be spread about the true value, due to results varying in an unpredictable way from one measurement to the next. Random errors are present when any measurement is made and cannot be corrected. The effect of random errors can be reduced by making more measurements and calculating a new mean	
Range	The maximum and minimum values of the independent or dependent variables; important in ensuring that any pattern is detected.	
Precision	Precise measurements are ones in which there is very little spread about the mean value. Precision depends only on the extent of random errors – it gives no indication of how close results are to the true value	
Repeatable	A measurement is repeatable if the original experimenter repeats the investigation using same method and equipment and obtains the same results.	
Sketch graph	A line graph, not necessarily on a grid, that shows the general shape of the relationship between two variables. It will not have any points plotted and although the axes should be labelled they may not be scaled	

Vocabulary taught in Topic 8 - Space		
Vocabulary	**Learn**	✓
Evidence	Data which has been shown to be valid	
Validity	Suitability of the investigative procedure to answer the question being asked	
Valid conclusion	A conclusion supported by valid data, obtained from an appropriate experimental design and based on sound reasoning	

Prefix	Abbreviation	Power of ten
Giga–	G	10^9
Mega–	M	10^6
Kilo–	k	10^3
Centi–	c	10^{-2}
Milli–	m	10^{-3}
Micro–	μ	10^{-6}
Nano–	n	10^{-9}

Shekhinah	The Divine Presence of God.
Shema	Contains the central statement of Jewish belief – Monotheism.
Aseitic	Self-existent, not dependent on anything for his existence.
Sovereign	Reigns supreme – is not subject to anyone.
Transcendent	Above and beyond the understanding of humans.
Monotheism	The central belief that there is only one God, who is infinitely powerful, loving and wise.
Omnibenevolent	The belief that God possesses unlimited goodness, mercy and compassion.
Omnipotent	The belief that God is unlimited in power.
Omniscient	The belief that God possesses infinite knowledge and wisdom.
Hashem	Literally 'the name'. Jews replace God's name YHWH with Hashem because His name is too holy to utter.
Maimonides and Hashem	Maimonides wrote that there is no language in existence that can describe the uniqueness of God.
Judah Ha Levi and Hashem	Judah Ha Levi wrote that ''If I understand Him I would be Him''.
The Shema	The Shema is the Jews' most important prayer. It is a declaration of faith, which is 'Belief in one God'.
The Shema Declaration / Teaching	"Hear O Israel, the Lord is our God, the Lord is one. Love the Lord your God with all your heart, with all your soul, and with all your strength. Never forget these commands that I am giving you today."
The Shekhinah	God's divine presence, such as at the burning bush, and on Mount Sinai, when God gave the Torah to Moses.

The Messianic Age	A future period of time when the messiah (Mashiach) will reign and bring universal peace on earth. He will be a great political leader descended from King David and will be well-versed in Jewish law.
Why belief in a Messiah is important	The arrival of the Mashiach signals the end of persecution of Jews. YHWH will be made known to all nations, and everyone will follow God and abide by the laws of the Torah.
Abrahamic Covenant	Abraham lived in the land of Ur, where people were wicked. God called Abraham to leave Ur and made a covenant with him, which was sealed through the blood of circumcision.
Abraham's side of the covenant	• Worship the one true living God (YHWH). • Move out of the land of Ur and taking all his belongings with him. • Obey God (live holy lives).
God's side of the covenant	• Abraham's descendants would be given a land of their own. • Abraham's descendant would become a great nation and a blessing to others. • Abraham's descendants would become God's chosen people.

The Ten Commandments	
1	Do not have any other gods before me.
2	Do not make any graven images of Me.
3	Do not take the name of the Lord your God in vain
4	Remember the Sabbath Day and keep it holy.
5	Honour your father and your mother.
6	Do not kill.
7	Do not commit adultery.
8	Do not steal.
9	Do not give a false testimony against your neighbour.
10	Do not covet (be jealous of) your neighbour's possessions.

Pikuach Nefesh	The principle in Judaism that the preservation of human life takes priority over virtually any other religious duty.
Can rules be broken to save lives?	When the life of a person is in danger, almost any mitzvah of the Torah becomes redundant, except three: idolatry, sexual immorality and murder.
Do Jews have free will?	In Judaism, free will is considered a fundamental aspect of human nature. God has granted humans the ability to make choices, which Jews refer to as yetzer ha tov and yetzer ha ra.
Yetzer Hatov	The inclination to make good choices.
Yetzer Hara	The inclination to make bad choices.
Responsibility	To be accountable for our actions. Free will agents are morally accountable.
Does observance of the Torah remove free will?	Humans are not expected to obey the mitzvot robotically. The principle of Pikuach Nefesh allows humans to use reason to decide when mitzvot may be broken due to extenuating circumstances.
How do Jews perceive the Mitzvot?	Jews believe the mitzvot contain God's instructions on how to live holy lives. They are perceived as a gift from God because they reveal actions that offend God, and teach Jews how to live righteously.
What is the purpose of the mitzvot?	The mitzvot reveal what actions are sinful, enabling humans to live harmoniously with God and with our neighbour, granting us rights such as freedom from oppression.

YEAR 9 GEOGRAPHY — Oceans on the Edge

Section 1&2: Threats to the Ocean

There are a number of threats to the worlds Oceans. Scientists have predicted that:

- Salt water fish will be **extinct by 2048**
- Excessive fishing has caused a **90% decline in shark populations** across the world's oceans
- **Bluefin Tuna are almost extinct**. One sold for **$1.8** million.
- **Jelly fish** are increasing in numbers.
- **Dead zones** are areas of the Ocean where ecosystems have collapsed.

Section 4: Unsustainable use

Overfishing

- Krill populations have decreased by 80% since 1980.
- Krill are under threat from 'suction harvesting' to meet growing demand for krill, Omega 3 health supplements, Food for fish farms
- Onboard processing and fast-freeze means ships can take even bigger harvests!

Eutrophication

- Harmful algal blooms, dead zones, and fish kills are the results of a process called eutrophication — which **occurs** when the environment becomes enriched with nutrients, increasing the amount of plant and algae growth in coastal waters.

Habitat destruction

- Mining, hurricanes and tourism all contribute to habitat destruction.

All these things put the ocean food webs under pressure.

Section 6: Sustainable development

Sustainable management: Balancing act between ecosystem conservation and helping local people to make a living without overharvesting resources.

- Social: must involve local communities
- Economic: must make money or break even.
- Environmental: Must not harm the environment

Examples include:

- **Shark Tourism:** Tourists pay money to dive with sharks. It has the added advantage of protecting areas
- **Line fishing:** selective fishing using a rod and line. Avoids bycatch
- **Coral Gardening:** planting new corals on damaged or destroyed reefs.

Section 3: Coral Reefs

Coral Reefs are the **"Rainforests"** of the Oceans.

- They thrive in areas that have **shallow water** to maximise sunlight, have water between **24-26°C**, they avoid the **mouth of rivers**.
- Coral reefs provide us with: **Income from tourism, food, shoreline protection, medicine, fish for aquariums**

Threats to Reefs

Global threats: **El Nino and Global Warming** causing coral bleaching, **Ocean acidification** stopping the corals from growing.

Local threats: **Blast fishing, cyanide fishing, trawling, coral mining** for building materials, **biological threats**-Crown of Thorns **starfish, pollution, hurricanes and siltation**

Section 5: Climate Change

There are a number of impacts that Climate change will have on Marine Ecosystems.

- **Warmer Oceans**: will cause coral bleaching. Many species will be forced to migrate in search of cooler waters. The worlds major ocean currents will alter.
- **Melting of Sea Ice**: Diminished sea ice results in the loss of vital habitat for Seals, Walruses, Polar Bears, Penguin, Orcas, Minke whales, and Krill in the Arctic and Antarctic.
- **Rising Sea Levels:** Will cause the flooding of Mangroves and will also cause coral reefs to be in deeper water, restricting their access to sunlight.
- **Ocean Acidification:** Co2 in the atmosphere will be absorbed into the oceans. This causes them to be more acidic, affecting mollusc crustaceans and corals.

Definitions

Keystone Species	The foundations that many other parts of the ecosystem rely on, eg: Krill
Eutrophication	The overgrowth of Algae in the oceans. Caused by humans adding fertiliser to the oceans. The Algae dies and decomposes taking up O2
Ocean Acidification	When Co2 is absorbed by the Ocean. This causes sea water to become more acidic.
El Nino	A change in the Ocean currents in the Pacific. This brings warmer water to the coast of Peru and changes the ocean ecosystem.
Biological Threats	Plants or animals that pose a threat to the ecosystem. Eg: the Crown of thorns starfish eats corals.
Sustainability	Sustainability consists of fulfilling the needs of current generations without compromising the needs of future generations, while ensuring a balance between economic growth, environmental care and social well-being.
Invasive species	These are species that are not native to an area. Eg: Lionfish in the Caribbean
Ocean currents	The predictable movement of seawater around the Ocean

YEAR 9 GEOGRAPHY

Oceans on the Edge

Section 7: Local management strategies

In **St Lucia** the coral reefs and mangroves were suffering damage.

- **Fishing, litter and pollution** are all causing this area to be threatened.
- St Lucia is a small, **poor country** and can not simply protect the whole island.
- **Stakeholders** (Divers, Fishermen, Tourists, Yacht owners) were **consulted** on the best way to protect their livelihoods but causing as little damage as possible to the environment.
- The island was divided into **land use** zones as part of the **Soufriere Marine Management Area (SMMA).** This done by participatory planning.

Section 8: Regional management strategies

- A scientific model of the **North Sea** ecosystem suggests the total **stock of fish has dropped from 26 million tonnes to 10 million** in just over a century.
- Some fish, such as the **Bluefin Tuna**, have disappeared completely following intensive fishing in the 1960s.
- Others, including **cod, haddock and mackerel**, have declined considerably.
- To protect North Sea fish the **EU** introduced **quotas** for different fish based on scientific data.
- EU regulations have made **net mesh sizes bigger** to allow smaller fish to escape in order to maintain the breeding stock.
- The maximum permitted cod catch one year under EU rules is **34,301 tonnes**, stocks were so low only **13,000** tonnes were caught.
- Quotas increased **bycatch** as fishermen had to throw back fish that exceeded their quota.

Section 9: Global Management Strategies

The International Whaling Commission

- **Banned whaling for commercial purposes** from 1982. Since then it has establish **whale sanctuaries** in the Southern and Indian Oceans
- Problems with the IWC ban are;
  - -**Japan** continues to **slaughter** whales for **'scientific purposes'**
  - -**Norway** objects to the whale sanctuary
  - -The **Faroe Islands** hunt around 1000 pilot whales each year; they argue it is an important part of their culture

UNCLOS

- The **United Nations Convention on the Law of the Sea** was adopted in 1982. It had established rules governing all uses of the oceans and their resources.
- UNCLOS obligation and responsibility of protecting and preserving **the marine environment** to all countries, and requires them to take every necessary measure to prevent, reduce and control pollution of the oceans.

CITES

- CITES (**the Convention on International Trade in Endangered Species of Wild Fauna and Flora**) is an international agreement between governments to protect endangered species of plants and animals.

Definitions

Participatory Planning	The whole community is involved with the development of the scheme
Stakeholder	Someone who has an interest in the success of a project
Bycatch	Fishermen sometimes catch and discard animals they do not want, cannot sell, or are not allowed to keep.
Quotas	Limits to the number of fish that can be caught by each country/fisherman

Section 10: Plastic Planet

- **Plastic is cheap** for industries to use, plastic becomes a widespread material.
- **Plastic pollution** is when plastic has gathered in an area and has begun to negatively impact the environment and create problems for plants, wildlife and even human population.
- Huge **garbage patches** have formed on the oceans such as the Great Pacific Ocean Patch
- Turtles and other aquatic life can suffer from **injuries** from plastic. For example plastic can holders can get stuck around their necks.
- It is estimated that **60% of all seabirds have ingested plastic**. They can't distinguish plastic items from food and often starve because they can't digest the plastic, preventing them from eating real food.
- Whales have washed up on beaches with a stomach full of plastic.
- The likelihood of **coral** becoming **diseased** increases from **4% to 89%** after coming in contact with marine plastic
- Invisible plastic **(microplastics)** have been identified in tap water and are present in all samples collected in the world's oceans.

Section 11: Solutions to the Plastic problem

Scientists have looked at some different ideas to reduce the amount of plastic in the ocean.

- **Floating booms** to trap plastic in the Oceans.
- Using **seaweed** to create **biodegradable** packaging rather than plastic.
- Encouraging people to **recycle** by offering money for recycling plastics.
- Using **robots** to collect plastics.

Bournemouth School: History Department: Knowledge Organiser: Year 9: Autumn 2: Hitler's Rise to Power

Timeline of key events:

August 1914: WWI starts and Hitler joins the German army
1918: Hitler awarded the Iron Cross for bravery in WWI
Sept. 1919: Anton Drexler founds DAP
Feb. 1920: Twenty Five Point Programme written declaring the main policies of the Nazi Party
1921: SA formed by Ernst Rohm
1923: Hyperinflation
Nov. 1923: The Munich Putsch; the failed attempt by Nazi party to overthrow the regional government of Bavaria and national government of Germany by force
April 1924: Hitler sentenced to 5 years in Landsberg Prison (released after only 9 months)
1924: Ban on Nazi Party lifted
1926: Bamberg Conference
1928 Election: Nazis won 12 seats in the Reichstag
29 Oct. 1929: Wall Street Crash; more than 16 million shares were traded in panic selling, triggering further sales and leading to a world economic crisis
1928-30: Muller government
1930-May 1932: Bruning government
Sept 1932 Election: Nazis win 107 seats in the Reichstag
1932: Presidential Election: Hindenburg wins, but Hitler polls 13.4m votes
July 1932 Election: Nazis win 230 seats in the Reichstag
November 1932 Elections: Nazis win 196 seats in the Reichstag
30 January 1933: Hitler appointed Chancellor of Germany by Hindenburg

Key terms/definitions

Term	Definition	✓
Balanced budget	When a nation does not spend more than it earns	
Bamberg Conference	Nazi Party meeting where Hitler strengthened his power and reorganised the Nazi party	
Centre Party (ZP)	A Catholic Party occupying the middle ground in political views	
Charisma	A quality in leadership which arouses loyalty and enthusiasm for a public figure	
Civil Servants	Citizens who work for and are paid by the government	
Communist	Supporter of communism: a political idea where workers have power and wealth is shared	
DAP	German Workers Party; the early Nazi Party, established by Anton Drexler in 1919	
Fuhrer	Leader; title given to Hitler to define his role of absolute authority	
Fuhrerprinzip	The idea that the Nazi Party and Germany should have one leader, obeyed by all	
Gaultier	The leader of branches of the Nazi Party (Gaue)	
General Elections	Elections held for the German people to choose deputies to sit in the Reichstag	
Great Depression	Slump in the economy in the 1930s which led to high unemployment	
Heil Hitler	Raised arm salute to Hitler	
Hitlerjugend	Hitler Youth movement, set up for the young in Germany, to convert them to Nazi ideas	
Indoctrination	Converting people to a set of ideas using education and propaganda	
Informant	Person who gives information to the authorities about the activities of other people	
Left wing	People who favour socialism and /or communism	
Manifesto	A public declaration of the policy of a political party	
Mein Kampf	Book containing autobiography/political views of Hitler written in 1924 in Landsberg Prison	
NSDAP	National Socialist Party or Nazi Party	
Presidential Election	Elections held for the people of Germany to choose the President of the Weimar Republic	
Political Intrigue	Trickery and secret deals used in politics instead of open political debate	
Propaganda	Use of a variety of means including newspapers, broadcasts and education to accept political ideas without question	
Querfront	'Cross front': bringing together different strands of left & right-wing parties to rule Germany	
RFB	Red Front Fighters; Communist private army (militia)	
Right Wing	People who favour groups that are nationalistic, patriotic and sometimes racist	
SA	Sturmabteilung; paramilitary storm troopers of the Nazi Party	
SS	Schutzstaffel: originally Hitler's bodyguard, they became the most powerful troops in Nazi Germany and were responsible for concentration camps and the Final Solution	
Stock market	The place where stocks and shares are traded; Wall Street in New York was the most important Stock Market in the world in the 1920s	
Taxes	Money paid by workers to the government to fund public works, schools, unemployment benefits etc	
Treason	The act of betraying your country; considered to be one of the most serious criminal acts	
Unemployment	The number of people who are without a job in a country	
Unemployment benefit	Money given to the unemployed by the government (unemployment insurance)	

Bournemouth School: History Department: Knowledge Organiser: Year 9: Nazi control of Germany 1933-9

1. Keeping Control by using Terror		
Method	**Description**	✓
SS	Led by Himmler, oversaw the terror state including concentration camps	
Concentration Camps (Feb 1933)	Used to imprison the Nazi's enemies: different categories	
Gestapo 1933	Secret Police, had power to arrest and send to camps without trial	
SD 1931	Intelligence agency led by Heydrich	

2. Keeping Control by using propaganda		
Method	**Description**	✓
Ministry of Propaganda	Led by Joseph Goebbels, oversaw all censorship and propaganda	
Censorship	Anti-Nazi papers closed, Radio controlled, pre-publication censorship, Jazz music banned, book burnings	
Propaganda	Spread Nazi message through: Posters, films, rallies (Nuremburg), architecture, theatre, literature, 1936 Olympics (4x Gold medals for Jesse Owens, pause on anti-Semitism)	

3. Keeping control of the Law		
Method	**Description**	✓
Nazi Socialist League for the Maintenance of Law	All judges had to join this organisation and swear an oath of loyalty.	
German Lawyer's Front 1933	All lawyers had to join and swear oath, 100,000 member by end of 1933	
People's Court 1934	Cases of treason tried and defendants summarily executed.	

4. Keeping control of the churches		
Method	**Description**	✓
Catholic Church	Concordat signed with Catholic Church 1933. Hitler agreed to allow Catholic schools, if the church stayed out of politics	
Protestant Church	All Protestant churches merged in 1933 under Bishop Muller, Nazification of the churches – swastikas in church etc.	
Faith Movement	Rival church set up in 1933 to worship traditional volk images – worship of the soil, crops etc	

5. What opposition did Hitler face from churches?	✓	6. What opposition did Hitler face from the youth?	✓	7. What opposition did Hitler face from ordinary Germans?	✓
1. Catholic Church – Catholic schools shut, 400 priest sent to camps, vocal opposition from Cardinal Galen. 2. Protestant Church – Opponents set up the "confessional church" led by Father Niemoller. Emergency Pastor's league set up		1. Edelweiss Pirates – attacked Hitler Youth, listened to swing and Jazz, 2000 by 1939 2. Swing Youth – Swing music, dancing		1. Genuine support as result of Germany's economic recovery 1933. 2. Most happy to see Germany restored, Versailles reversed, army rebuilt. 3. Many happy that Communists imprisoned.	

avoir	to have	
J'ai	I have	
Tu as	You have	
Il/Elle a	He/She has	
Nous avons	We have	
Vous avez	You all have	
Ils/Elles ont	They have	

être	to be	
Je suis	I am	
Tu es	You are	
Il/Elle est	He/She is	
Nous sommes	We are	
Vous êtes	You all are	
Ils/Elles sont	They are	

faire	to do/make	
Je fais	I do/make	
Tu fais	You do/make	
Il/Elle fait	He/She does/makes	
Nous faisons	We do/make	
Vous faites	You do/make	
Ils/Elles font	They do/make	

aller	to go	
Je vais	I go	
Tu vas	You go	
Il/Elle va	He/She goes	
Nous allons	We go	
Vous allez	You all go	
Ils/Elles vont	They go	

Verb endings in the simple future		For example
Je	**-ai**	Je manger**ai**
Tu	**-as**	Tu manger**as**
Il/Elle/On	**-a**	Il/Elle/On manger**a**
Nous	**-ons**	Nous manger**ons**
Vous	**-ez**	Vous manger**ez**
Ils/Elles	**-ont**	Ils/Elles manger**ont**

The simple future:

It is used to describe what will happen in the future "I will eat".

To form it, use future stem plus appropriate ending e.g je manger**ai** – *I will eat*.
For **–er** and **–ir** verbs, the future stem is the infinitive.
For **–re** verbs, drop the –e from the infinitive.
e.g. boir**e** -> Je boir**ai** – *I will drink*

Mots essentiels	Essential words	
alors	so/then	
au moins	at least	
c'est-à-dire	that is to say	
chaque	each	
d'abord	first	
de bonne heure	early	
deux fois par semaine	twice a week	
donc	so	
ensuite	then	
finalement	finally	
où	where	
à l'avenir	in the future	
quand	when	

Picture description		
Sur la photo	On the photo	
Je peux voir	I can see	
On peut voir	We/you can see	
Il y a	There is/are	
De plus je peux voir	Also I can see	
À gauche	On the left	
À droite	On the right	
Au centre	In the centre	
À l'arrière plan	In the background	
Au premier plan	In the foreground	
Il est en train de …	He is in the middle of	
Ils sont en train de …	They are in the middle of	

Simple future verb forms for irregular verbs		
Irregular future stems + same endings		
avoir	aur-	
être	ser-	
aller	ir-	
faire	fer-	

Les parties du corps Parts of the body		
La bouche	mouth	
Le bras	arm	
Le corps	body	
Le dos	back	
L'épaule (f)	shoulder	
Le front	forehead	
Le genou	knee	
La jambe	leg	
La main	hand	
Le nez	nose	
Les oreilles (fpl)	ears	
Les fesses (fpl)	buttocks	
Le pied	foot	
La tête	head	
Le visage	face	
Les yeux (mpl)	eyes	
J'ai mal à	I have a pain in	

Manger sain Eating healthy		
les boissons gazeuses	fizzy drinks	
les céréales (fpl)	cereals	
les chips (fpl)	crisps	
l'eau (f)	water	
les pommes de terre	potatoes	
les gâteaux (mpl)	cakes	
les légumes (mpl)	vegetables	
la nourriture salée	salty food	
les oeufs (mpl)	eggs	
le pain	bread	
le poisson	fish	
les produits laitiers	dairy products	
la viande	meat	

Pour être en forme – In order to keep fit		
Je ferai du sport	I will do sport	
Je ferai trente minutes par jour	I will do 30 mins exercise a day	
J'irai au collège à vélo	I will go to school by bike	
Je jouerai au foot	I will play football	
Je mangerai équilibré	I will eat a balanced diet	
Je marcherai jusqu'au collège	I will walk to school	
Je ne boirai jamais de boissons gazeuses	I will never drinks fizzy drinks	
Je ne jouerai plus à des jeux vidéo	I won't play video games anymore	
Je ne mangerai plus de frites/hamburgers	I will not eat chips/hamburgers anymore	
Je ne prendrai pas le bus	I will not take the bus	
Je prendrai les escaliers	I will take the stairs	
Je prendrai des cours d'arts martiaux	I will take martial arts lessons	

Le sport et le fitness – Sport and fitness		
Pour arriver en forme, il faut…	In order to get fit, you must…	
avoir un bon programme	have a good schedule	
bien manger	eat well	
bien dormir	sleep well	
être motivé	be motivated	
faire du sport tous les jours	do sport every day	
jouer dans une équipe	play in a team	

Le sport et le fitness – Sport and fitness		
le sport diminue le stress	sport decreases stress	
C'est bon pour le moral	is good for morale	
C'est important pour la vie	is important in life	
ça me fatigue	it makes me tired	

On joue au paintball – We play paintball		
Qu'est-ce qui s'est passé?	What happened?	
Tu es touché?	Have you been hit?	
Où est-ce que tu es touché(e)?	Where have you been hit?	
le terrain	grounds	
les billes (fpl)	paintballs	
le casque	helmet	
le matériel	materials	
les règles	rules	

Wo hast du gewohnt? Where did you stay?

Ich habe … gewohnt	*I stayed*	
in einem Hotel	*in a hotel*	
in einem Ferienhaus	*in a holiday home*	
in einer Pension	in a B&B	
in einem Wohnwagen	*in a caravan*	
in einer Jugendherberge	*in a youth hostel*	
auf einem Campingplatz	*on a campsite*	
bei Freunden	*with friends*	
Ich habe…übernachtet	*I stayed*	

Was hast du gemacht? What did you do?

Ich habe viele Sachen gemacht.	*I did lots of things*	
Ich habe/Wir haben…	*I/we*	
Musik gehört.	*listened to music*	
Volleyball gespielt.	*played volleyball*	
einen Bootsausflug gemacht.	*did a boat trip*	
viele Souvenirs gekauft.	*bought lots of souvenirs*	
viel Fisch gegessen.	*ate lots of fish*	
die Kirche gesehen.	*saw the church*	
ein Buch gelesen.	*read a book*	
Sehenswürdigkeiten besichtigt	visited the tourist sights	
Freunde/Familie besucht	visited friends/family	
Ich bin zu Hause geblieben.	*I stayed at home*	

Wohin bist du gefahren? Where did you go?

Ich bin … gefahren	*I travelled*	
nach Deutschland	*to Germany*	
nach Wien	*to Vienna*	
Wie bist du gefahren?	*How did you travel?*	
mit dem Auto	*by car*	
mit dem Reisebus	*by coach*	
mit dem Schiff	*by ship*	
Ich bin geflogen.	*I flew*	
Ich bin zu Fuß gegangen.	*I walked*	
Mit wem bist du gefahren?	*Who did you travel with?*	
mit Freunden	*with friends*	
mit meiner Familie	*with my family*	

Was hast du noch gemacht? What else did you do?

Ich bin … gegangen	*I went*	
an den Strand	*to the beach*	
in die Stadt	*into town*	
windsurfen	*windsurfing*	
kitesurfen	*kitesurfing*	
schwimmen	*swimming*	
Ich bin …gefahren	*I travelled*	
Ich bin Ski gefahren	I went skiing	
Ich habe Snowtubing gemacht.	*I went snowtubing*	
Ich habe Eistennis gespielt.	*I played ice tennis*	

High frequency words

nur	*only*	
dort	*there*	
zu	*too*	
nicht	*not*	
gar nicht	*not at all*	
sehr	*very*	
ungefähr	*about*	
viel	*a lot*	
viele	*many*	

Wann war das? When was it?

in den Ferien	*in the holidays*	
im Sommer/ Winter	*in the summer/winter*	
letzten Sommer/ Winter	*last summer/ winter*	
heute	*today*	
gestern	*yesterday*	

Wie ist/war das Wetter? What is/was the weather like?

Wie ist/war das Wetter?	*How is/was the weather?*	
Es ist/war…	*It is/was*	
sonnig/kalt/heiß	*sunny/cold/hot*	
wolkig/windig/ neblig	*cloudy/windy/foggy*	
Es regnet/schneit	*It is raining/snowing*	
Es donnert und blitzt.	*There is thunder and lightening.*	
Es hat geregnet/ geschneit	*It rained/snowed.*	
Es hat gedonnert und geblitzt	*There was thunder and lightening.*	

gehen - to go		
ich gehe	I go	
du gehst	you go	
er/sie/es geht	he/she/it goes	
wir gehen	we go	
ihr geht	you go	
Sie/sie gehen	you(form)/ they go	

haben - to have		
ich habe	I have	
du hast	you have	
er/sie/es hat	he/she/it has	
wir haben	we have	
ihr habt	you all have	
Sie/sie haben	you (form)/ they have	

sein - to be		
ich bin	I am	
du bist	you are	
er/sie/es ist	he/she/it is	
wir sind	we are	
ihr seid	you all are	
Sie/sie sind	you (form) /they are	

Meinungen - opinions		
Meiner Meinung nach (V2)	In my opinion	
Es ist/war …….	It is/was …….	
Ich finde/fand	I find/found	
Ich denke/dachte	I think/thought	
Ich glaube/ glaubte	I believe/believed	
Es macht Spaß	It is fun	
Es hat Spaß gemacht	It was fun	

Strong verbs in German change the vowel in the "du & er/sie/es/man" forms only		
fahren = fährst/fährt	to travel	
tragen – trägst/trägt	to wear	
essen = isst/isst	to eat	
sehen = siehst/sieht	to watch	
lesen – liest/liest	to read	
Verbs with a stem ending in –d or –t add an extra "e" in these forms		
arbeiten = arbeitest/arbeitet	to work	
finden – findest/findet	to think/find	

To talk about actions in the past use the perfect tense. You need a form of haben or sein (for movement verbs) plus a past participle (ge+verb stem+t)		
Ich habe/er, sie hat/wir haben:	I/he, she/we	
gespielt/gelernt/ gemacht/gekauft	played/learnt/ did/bought/	
some past participles are irregular **getragen/ gesehen/gelesen**	wore/saw/read	
Ich bin/er, sie ist/wir sind: some past participles are irregular **gefahren/gegangen/ geschwommen/geblieben**	I/he, she/we travelled/went/ swam/stayed	

To talk about how you travel or who you travel with use:

Mit + mode of transport/person –

"mit" always takes ***DATIVE CASE***

Masc: der changes to ***dem***

Fem: die changes to ***der***

Neut: das changes to ***dem***

mit dem Bus/mit meinem Bruder

mit der Straßenbahn/mit meiner Familie

The imperfect tense is sometimes used to talk about the past. Usually used for formal situations. Three key verb are often used in the imperfect to DESCRIBE things in the past		
Es war / **Ich war**	It was / I was	
Es hatte / **Ich hatte**	It had / I had	
Es gab	There was	
Es war sehr touristisch – it was very touristy **Die Stadt hatte einen Marktplatz – the town had a market place** **Es gab keinen Bahnhof – there was no station**		

-ar verb endings preterite			
-é		-amos	
-aste		-asteis	
-ó		-aron	

-er verb endings preterite			
-í		-imos	
-íste		-isteis	
-ió		-ieron	

-ir verb endings preterite			
-í		-imos	
-íste		-isteis	
-ió		-ieron	

Preterite tense ir (to go)		
fui	I went	
fuiste	you went	
fue	he/she went	
fuimos	we went	
fuisteis	you all went	
fueron	they went	

Infinitives		
comer	to eat	
beber	to drink	
salir	to go out	
vivir	to live	
escribir	to write	
leer	to read	
vender	to sell	

tomar (to take) in the preterite tense			
tomé		tomamos	
tomaste		tomasteis	
tomó		tomaron	

comer (to eat) in the preterite tense			
comí		comimos	
comiste		comisteis	
comío		comieron	

vivir (to live) in the preterite tense			
viví		vivimos	
viviste		vivisteis	
vivió		vivieron	

Common irregular verbs		
hizo	I did/made	
tuve	I had	
fui	I went	
estuve	I was	
jugué	I played	
pude	I could	

Present continuous:

It is the equivalent of 'I am doing….' at that precise moment

Form of 'estar' + gerund (verb)

Estoy corriendo – I am running

Opinions in past tense					
fue genial	it was great		fue guay	it was cool	
fue divertido	it was fun		fue regular	it was ok	
fue estupendo	it was brilliant		fue un desastre	it was a disaster	
fue fenomenal	it was fantastic		fue raro	it was weird	
fue flipante	it was awesome		fue horroroso	it was terrible	

Comparatives		
más…que	more…than	
menos…que	less…than	
mejor que…	better than…	
peor que…	worse than	
tan…como…	as…as…	

Describing a photo		
En la foto	In the photo	
Hay	There is/are	
Puedo ver	I can see	
A la izquierda / derecha	On the left / right	
En el centro / medio	In the centre / middle	

Present continuous – remove ending 'ar/-er/ir' ending and add '-ando / -iendo'		
Form of 'estar'	Examples	
estoy (I am)	estoy bailando – I am dancing	
está (he/she/it is)	está comiendo – he / she / it is eating	
están (they are)	están saliendo – they are going out	

Los eventos en el pasado		
ayer	yesterday	
el año pasado	last year	
el verano pasado	last summer	
anoche	last night	
anteayer	day before yesterday	
una vez	one time/once	
el otro día	the other day	
el invierno pasado	last winter	
la primavera pasada	last spring	
el otoño pasado	last autumn	

¿Qué hiciste ayer?		
bailé en mi cuarto	I danced in my room	
fui al cine	I went to the cinema	
hablé por Skype	I spoke on Skype	
hice gimnasia	I did gymnastics	
hice kárate	I did karate	
jugué en línea con mis amigos	I played online with my friends	
jugué tres horas	I played for three hours	
monté en bici	I rode my bike	
ví una película	I watched a film	
salí con mis amigos	I went out with my friends	
no hice los deberes	I didn't do homework	

¿Qué tipos de música te gusta?		
el rap	rap	
el rnb	RnB	
el rock	rock	
la música clásica	classical music	
la música pop	pop music	
escucho rap	modern	
escucho de todo	I listen to everything	
la letra	the lyrics	
la melodía	the melody	
el ritmo	the rhythm	
mi canción favorita	my favourite song	
mi cantante favorito	my favourite singer	

¿Qué te gusta hacer en tu móvil?		
chateo con mis amigos	I chat with my friends	
saco fotos	I take photos	
veo videos	I watch videos	
descargo música	I download music	
comparto videos	I share videos	

¿Qué hiciste en tus vacaciones?		
bebí una limonada	I drank a lemonade	
comí paella	I ate paella	
conocí a un chico/a	I met a girl/boy	
salí con mi hermano	I went out with my brother	
vi un castillo interesante	I saw an interesting castle	

Las opiniones		
me gusta	I like (singular)	
me gustan	I like (plural)	
no me gusta	I don't like (singular)	
no me gustan	I don't like (plural)	
me gustó	I liked (singular)	
me gustaron	I liked (plural)	
no me gustó	I didn't like (singular)	
no me gustaron	I didn't like (plural)	
me gusta(n) mucho…	I like…a lot	
no me gusta(n) nada…	I don't like at all	

¿Qué tiempo hizo?		
Hizo buen tiempo	It was nice weather	
Hizo mal tiempo	It was bad weather	
Hizo calor/frío	It was hot/cold	
Hizo sol	It was sunny	
Hizo viento	It was windy	
Llovió	It rained	
El tiempo fue variable	The weather was variable	
Había niebla/tormenta	There was fog/a storm	
Había chubascos	There were showers	
Estaba nublado	It was cloudy	

La televisión		
Mi programa favorito es…	My favourite programme is…	
un concurso	a game/quiz show	
un programa de deportes	a sports programme	
un reality	a reality show	
un documental	a documentary	
una telenovela	a soap	
una comedia	a comedy	
una serie policíaca	a crime series	
las noticias	the news	

3.1.1.1 The structure and function of the Musculo-skeletal System (KO 2 of 3)

How do MUSCLES WORK?

Muscles can only PULL they cannot push. This means that they must work in pairs to allow parts of the body to move back and forth. THESE PAIRS ARE CALLED **ANTAGONISTIC PAIRS.**

Antagonistic Pairs

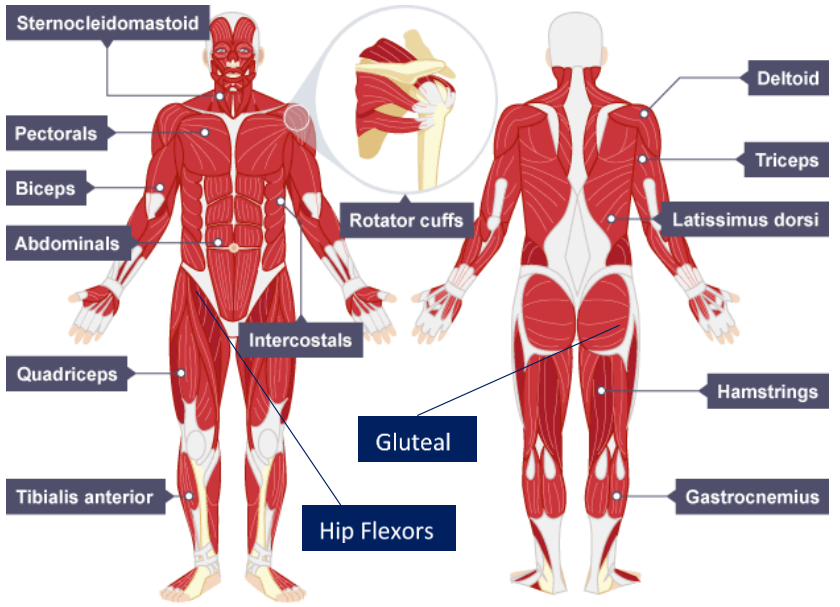
- A muscle must work in partnership with another muscle to allow movement to occur.
- The muscle that causes the movement (the pulling muscle) is called the **AGONIST** or **PRIME MOVER**. When this muscle contracts in becomes shorter.
- During this time the other muscle within this partnership is relaxing. This muscle is called the **ANTAGONIST** and is lengthening while it relaxes.

EXAMPLES:

When we flex our elbow, the biceps are the **agonist** and the triceps are the **antagonist**. However, these roles are reversed when the elbow extends, with the triceps becoming the **agonist** and the biceps becoming the **antagonist**.

When dorsiflexion occurs in our ankle the tibialis anterior is the **agonist** and the gastrocnemius is the **antagonist**. However, these roles are reversed when plantar flexion occurs at the ankle, with the gastrocnemius becoming the **agonist** and the tibialis anterior becoming the **antagonist.**

Muscles of the human body



Antagonistic Pairs	
HAMSTRINGS	QUADRICEPS
GASTROCNEMIUS	TIBIALIS ANTERIOR
BICEPS	TRICEPS
HIP FLEXORS	GLUTEALS
DELTOID	LATISSIMUS DORSI

Types of Muscle Contraction

Isotonic Contractions
These contractions occur when there is movement of the body. The ends of the muscles move closer together to cause the movement.

Isotonic Concentric Contraction occurs when the muscle shortens e.g. biceps contracting concentrically during the upwards phase of a bicep curl / triceps contracting concentrically during the upwards phase of a press-up

Isotonic Eccentric Contraction occurs when the muscle lengthening (antagonist) is under tension. An eccentric contraction provides the control of a movement on the downward phase and it works to resist the force of gravity e.g. biceps contracting eccentrically when lowering the weight in a bicep curl.

Isometric Contractions
Takes place when the body is being held in the same position. The length of the muscle stays the same.

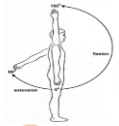
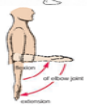
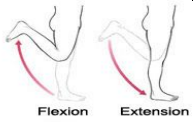
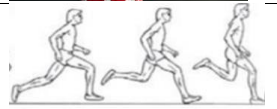
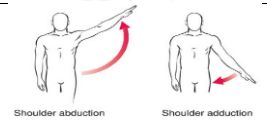
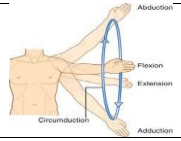
Muscle Name	Movement when the agonist
Sternocleidomastoid	Lifts rib cage up and out when exercising
Pectorals	Lifts rib cage up and out when exercising
Intercostals	Lifts rib cage up and out
Triceps	Elbow extension
Biceps	Elbow flexion
Abdominals	Assists with exhaling
Quadriceps	Knee flexion
Hamstrings	Knee extension
Hip flexors	Hip flexion
Gluteal muscles	Hip Extension
Rotator cuffs	Shoulder rotation/Circumduction
Tibialis Anterior	Dorsiflexion
Gastrocnemius	Plantar Flexion
Latissimus Dorsi	Shoulder adduction
Deltoid	Shoulder Abduction

3.1.1.1 The structure and function of the Musculo-skeletal System (KO 3 of 3)

Isometric Contractions
Takes place when the body is being held in the same position. The length of the muscle stays the same.

Isotonic Eccentric Contraction occurs when the muscle lengthening (antagonist) is under tension. An eccentric contraction provides the control of a movement on the downward phase and it works to resist the force of gravity e.g. biceps contracting eccentrically when lowering the weight in a bicep curl.

Tibialis Anterior	Dorsiflexion
Gastrocnemius	Plantar Flexion
Latissimus Dorsi	Shoulder adduction
Deltoid	Shoulder Abduction

Types of movement at a joint		Sporting Examples	
Flexion and extension at the shoulder - The **Deltoid** causes flexion at the shoulder (upwards) - The **Latissimus dorsi** causes extension at the shoulder (downwards)		**Flexion and extension at the shoulder** • **Badminton – smash if flexion at the shoulder, forehand high serve is extension at the shoulder**	
Flexion and extension at the elbow - The **Biceps** cause flexion at the elbow (upwards) - The **Triceps** cause extension at the elbow (downwards)		**Flexion and extension at the elbow** • **Push up – upwards is extension, downwards is flexion** • **Football throw-in – releasing the ball is elbow extension**	
Flexion and extension at the knee - The **Hamstrings** cause flexion at the knee (heel to buttock) - The **Quadriceps** cause extension at the knee (leg down)		**Flexion and extension at the knee** • **Running – heel lift in recovery leg is flexion, extension in drive leg when contacting the ground**	
Flexion and extension at the hip - The **Hip Flexors** cause flexion at the hip (leg up) - The **Gluteal muscles** cause extension at the hip (leg down)		**Flexion and extension at the hip** • **Squats – upward phase is extension, downwards phase is flexion** • **Running – drive leg moving backwards is hip extension, recovery leg coming forward is hip flexion**	
Plantar Flexion and Dorsiflexion at the ankle - The **Tibialis Anterior** causes dorsiflexion at the ankle (toes up) - The **Gastrocnemius** cause plantar flexion at the ankle (toes down)		**Plantar Flexion and Dorsiflexion at the ankle** • **Take off in long jump – plantar flexion** • **Vertical jump – prep is Dorsiflexion, execution is plantarflexion** • **Drive leg pushing off the ground is plantar flexion**	
Rotation of the Shoulder - The **Rotator Cuff** causes rotation at the shoulder		**Rotation of the Shoulder** • Bowling in cricket – spin bowling	
Abduction and Adduction at the shoulder - The **deltoid** causes abduction at the shoulder (away from midline) - The **Pectorals / Latissimus Dorsi** cause adduction at the shoulder (towards midline)		**Circumduction of the shoulder** • **Bowling in cricket – seam bowling** • **The arms when swimming freestyle and butterfly**	
Circumduction of the Shoulder - Is flexion, extension, adduction and abduction combined.		**Abduction and Adduction at the shoulder** • Star Jump – arms/legs outwards is abduction, arms/legs inwards is adduction.	

- Masks are used for different reasons and can be divided into masks that are used for **ritual reasons**, for **protection**, **disguise** and **entertainment.**

- Mod roc is another name for plaster impregnated gauze strips , and it can be used to make sculpture

Annotating your work **Use these heading to explain each piece of work you have done in your book**		**Tick**
What?	**What is it?** Explain the piece of work you are annotating Examples: This is a first-hand drawing that I made of a …This is a series of photographs I took of… This is a collection of visual research about... This is information I gathered about… This is a copy that I made of a piece of artwork by… This is a mood board of…to show ideas relating…	
Why?	**Why did you make it?** Explain how this piece helped you in your project. Examples: to get ideas about… to get me thinking about… to show what I have learned about… to explore the ideas of… to examine the shape/form/line/texture/pattern of… to analyse the style of… to try out the technique of… to practice… to develop my skills in…	
How?	**How did you make it?** Explain how you created the piece of work Examples: I drew it using… I painted it with… I constructed it from… I built it up by collaging… I photographed/drew it from life… I drew/painted it from a photography… I gathered the images from the internet… I researched the information on a site called…	
Quality	**How good is it?** What are you pleased with? What could you improve? Examples: I am pleased with the way I… one good element of the work is… the best feature of this work is… a section of this work that is particularly successful is…I'm not happy with… one area I could improve is… the least successful part of the work is… I wish that I had…	
Learning	**What did you learn?** What have you found out? What are the next steps? Examples: I improved my skills in… I got better at working in the style of… I have a better idea of… I have a clearer understanding 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…	

Painting your mask

- When painting your masks whether it is the Mod Roc or Clay, it is always best to paint a base layer colour.
- Gather a wide range of painting techniques either from books or the internet and practise these before applying to your mask- AO3
- Selection of paint type is important.

Types of paint

- **Acrylic**

Acrylic paints are extremely versatile, and ideal for fine brushwork, glazing, staining, water media techniques and many more. This smooth and light paint has excellent pigment quality, colour strength, and durability.

- **Watercolour**

Watercolour is a translucent paint containing pigment and a binder, typically gum-arabic. The gum-arabic holds the paint together and ensures the paint will not flake.
The paint has colour pigment suspended in water until the water dries and stains the surface. The paint brushes with fluidity and transparency and dries fairly quickly.

- **Gouache**

Gouache is a water-soluble and opaque paint so the white of the paper surface does not show through.

Painting techniques

- **Dry brush-** The dry brushing painting technique uses a thin layer of paint that's roughly brushed over a surface to give rough textured surface. Ensure you have applied a base layer as it may show through depending on the amount of paint added.

- **Tissue and paint-** Add tissue and smooth or scrunch, then paint on top.

- **Foil and paint-** Foil can add a metal type effect, you can paint over to create a tarnished appearance.

- **Sgraffito**, is the process of scratching through a surface to reveal the colours underneath.

GCSE BUSINESS *Business in the real world* 3.1.3 Setting Business Aims and Objectives

What are business aims and objectives?		☑
Aim	The general goal of a business	
Objective	A specific target that is set for a business to achieve	

Purpose of setting objectives	☑
1. Helps with decision making	
2. Potential investors understand the direction the business is heading in.	
3. Provides a target	
4. Motivates all employees	

Use of objectives in judging success	☑
Once a business has set objectives, it can check back after a period to monitor if these have been achieved, this is a way of measuring success.	
e.g. A business can measure the number of employees to assess if it has met its objective of growth *OR* Track share price or dividends paid if their objective s shareholder value.	

Role of objectives in running a business	☑
A business can have a variety of different objectives:	
1. Survival	
2. Growth (domestic and international markets)	
3. Increased market share	
4. Social and ethical	
5. Customer satisfaction	
6. Increased shareholder value	
7. Maximise profit	

Changing Objectives		☑
Factors affecting objective choice	**Changing over time**	
1. Size of the business	1. Survival to growth	
2. Level of competition in the market	2. Reflect new legislation	
3. Type of business	3. Changes in the economic environment	
4. Stakeholder views	4. Changes in environmental expectations	

Definitions		☑
Private sector organisation	Organisations owned by individuals	
Public sector organisation	Organisations owned and run by the government	

GCSE BUSINESS — *Business in the real world* — Topic 3.1.4/5 Stakeholders and Location

Main stakeholders of a business

1. Employees
2. The government
3. Suppliers
4. Community
5. Customers
6. Shareholders

Definitions

Key term	Definition
Stakeholder	Any individual or group of individuals who can be impacted by a businesses actions.

Objectives of stakeholders

Stakeholder group	Typical objectives
Employees	1. Secure jobs 2. High earnings
Owners/Shareholders	1. High dividend payments 2. Share prices
Local Community	1. Local job creations 2. Minimise local environmental impact
Government	1. Tax paid, 2. Growth
Suppliers	1. Fast payment 2. Growth
Customers	1. Quality 2. Customer service

Impact of business activity on stakeholders

Stakeholder	Impact
Employee	Employment opportunities Earnings
Local Community	Employment Investment in facilities Pollution
Suppliers	On time payments, Price negotiations & Abuse of power
Shareholders	Performance impacts share price and dividends
Government	Tax avoidance

Impact and influences stakeholders have on businesses

1. Negotiation:
Employees can demand better pay.
Suppliers can negotiate better terms and conditions

2. Direct Action:
Customers can stop buying products if they are unhappy
Employees can strike

3. Refusal to cooperate:
Local councils can refuse to cooperate if they feel a business is unethical for example they can refuse planning permission

4. Voting:
Owners such as shareholders can vote during AGM's to influence the objectives of a business.

Why is location important?

Cost: Rent varies according to location, London will have much higher rent costs than south wales.

Sales: Location can impact whether or not a business will get enough sales

Image: For some businesses, where they are located will have a big impact on their image for example a tourist shop in central London compared to on the outskirts of London

Location factors

Factor	Explanation
Proximity to market	A business will want to know where their customers are located and that they can reach them easily.
Availability of raw materials	Some businesses rely on raw materials, being close to these will reduce uncertainty and costs.
Availability of labour	Businesses may need to be located near highly skilled workers or highly populated areas for large numbers of employees.
Competition	Some businesses may want to be far from their competitors where as other may want to challenge their competitors by locating closer to them.
Costs	Location decision are often affected by costs and the amount of money the business can afford.

Factors influencing the location decision of a business

Five key factors that influence a location decisions:

1. Proximity to the market
2. Availability of raw materials
3. Availability of labour
4. Competition
5. Costs

Nature of the business can influence location

Retail: Want to be located as close to customers as possible
Service: Can be located anywhere as they may be able to offer their service remotely such as web designers. Taxi driver needs to be located close to customers
Manufacturing: Cheap rent due to size of land required. Good infrastructure for transportation.

2.2 Programming Fundamentals

Keyword	Definition / Example	✓
Iteration (definition)	This programming construct used to repeat sections of code a number of times.	

Iteration – count controlled	FOR loops are used when we know beforehand the exact number of iterations we wish to make.
	Python
	`#Outputs 1-10`
	`for count in range (1,11):`
	`  print(count)`
	OCR Ref.
	`#Outputs 1-10`
	`for count = 1 to 10`
	`  print(count)`
	`next count`	

Iteration – condition controlled	WHILE loops are used when the we do not know beforehand the number of iterations needed and this varies according to some condition.
	Python
	`continue = "Y"`
	`while continue == "Y":`
	`  continue = input("Continue?")`
	OCR Ref.
	`continue = "Y"`
	`while continue == "Y"`
	`  continue = input("Continue?")`
	`endwhile`	

Subprogram	Small programs that are written within a larger, main program. The purpose of a subprogram is to perform a specific task	

Procedure	A subprogram that performs a specific task.
	Python
	`def add(num1, num2):`
	`  answer = num1 + num2`
	`  print(answer)`
	OCR Ref.
	`procedure add(num1, num2)`
	`  answer = num1 + num2`
	`  print(answer)`
	`endprocedure`	

2.2 Programming Fundamentals

Keyword	Definition / Example	✓

Function	A subprogram that manipulates data and returns a result back to the main program.
	Python
	`def add(num1, num2):`
	`  answer = num1 + num2`
	`  return answer`
	OCR Ref.
	`function add(num1, num2)`
	`  answer = num1 + num2`
	`  return answer`
	`endfunction`	

Random	To generate a random number between two values.
	Python
	`rand = random.randint(1,10)`
	OCR Ref.
	`rand = random(1,10)`	

String manipulation	phrase = "Computer Science" **Python** `len(phrase)` → 16 **OCR Ref.** `phrase.length` → 16 **Python** `phrase[3:8]` → "puter" **OCR Ref.** `phrase.substring(3,5)` → "puter" **Python** `phrase.upper()` → "COMPUTER SCIENCE" **OCR Ref.** `phrase.upper` → "COMPUTER SCIENCE" **Python** `phrase.lower()` → "computer science" **OCR Ref.** `phrase.lower` → "computer science"	

Tick this box once this has been covered in lesson ☐

GCSE Design Technology — CORE 1.04 *part 1* Smart materials

Type	Description/function	Uses/ applications	Advantages	Disadvantages
Shape memory alloys (SMAs)	Can be deformed (crumpled etc) but returns to its' original shape when heat or electricity is applied.	• Glass frames • Tweezers and hooks • Orthodontic wires 	• Lengthens the life of the product • Reduced overall size, less complexity	• Expensive
Nanomaterials	Made of tiny components less than 100 nanometres (a millionth of a mm).	• Sunscreen • Car bumpers • Motorcycle helmets • Tennis rackets 	• Larger relative surface area can improve their strength, elasticity, conductivity properties • Can combine properties e.g. lightweight but robust	• Unusual properties – may need specialist risk assessments
Photochromic glass	Darkens when exposed to light and reverses in the dark (due to a chemical reaction with UV light).	• Sunglasses • Cockpit windows 	• Adapts easily to changing conditions • Can undergo 1000s of cycles without performance change	• Can be slow to react • User cannot control the reactions of the glass
Reactive glass	It changes from transparent to opaque when voltage is passed through.	• Welding masks and goggles • Windows • Toilets 	• Retains heat so reduces energy bills • Instant privacy without permanent blocking of light	• Expensive • Requires an electricity source
Conductive inks	Used in a pen – contains pigments which allow a small current to pass through.	• Improvising or repairing circuit boards • Drawing circuits on different materials 	• Easy to use • Lighter and more economical than traditional circuit boards • Low waste	• Expensive • Difficult to get circuits right/accurate
Temperature-responsive polymers	Changes physical properties (colour) when heat is applied to it.	• Baby products i.e. spoons, bath thermometers • Kettles • Biomedical applications 	• Safety – wont burn babies • Saves energy – kettles • Can deliver drugs to patients in a controlled way	• Still being researched so wider applications will need more time/designing
Piezoelectric materials	Used in sensors – generates a small electric charge when compressed.	• Sensors: burglar alarms, seatbelt sensors, keypads, keyless car entry • Actuators: for precise position control i.e. digital cameras 	• Sustainable • Low maintenance • Compact size • High speed in actuators	• Can wear out over time

Tick this box once this has been covered in lesson ☐

GCSE Design Technology

CORE 1.04 *part 2* Composite materials and technical textiles

Type	Description/ function	Uses/ applications	Advantages
Concrete	Made up of coarse aggregate (gravel), aggregate (sand), cement and water.	Construction (mostly), park benches, bins.	Excellent compressive strength, very durable, can be moulded into complex shapes well, good heat and sound insulator
Plywood	Made up of veneers/layers which are at 90° to each other.	Sheds, cladding, flooring, furniture.	High strength to weight ratio, high impact resistance, versatile (can be used indoors or outdoors – with exterior use plywood), available in large sheets.
Carbon fibre/ Fibre glass	Woven carbon fibres mixed with a resin or glass fibre sheets laminated with resin.	GRP – boat hulls, pond liners, car bodies. CF – golf clubs, body armour, sporting equipment.	Durable, good chemical resistance, lightweight, excellent strength to weight ratio. CF is much stronger than GRP but is more expensive.
Rein-forced polymers	Phenolic (a type of polymer) resins are combined with cotton fabrics to make materials.	Engineering components i.e. gears and bearings.	Strong, excellent machining qualities, good insulator of heat and electricity, available in a range of forms, good stability.
Robotic materials	Materials which couple sensing and movement and can then react to their surroundings.	Prosthetic limbs, plane wings.	Can react to surroundings without connection to a computer, react quickly and appropriately by themselves, can change colour/shape to match surroundings.

Type	Description/function	Examples	Advantages
Agro-textiles	Improve or increase agricultural production. Can be made from nylon, polyester, polypropylene of natural materials.	Netting, wind breaks, thermal insulation, shading	Durable, can be cheap, reduces the need for weed killers and pesticides
Constructi on textiles	Developed to improve construction appearance and longevity.	**Structures:** Waterproof membrane, concrete reinforcement **During construction:** Tarpaulins, nets	Strong, light, resistant to degradation by chemicals and sunlight
Geo-textiles	Used in civil engineering where geotechnical materials need to keep their structure.	Non-woven or woven mats for reinforcing banks	Cheap, deal well with water, do not rot
Domestic textiles	Used domestically within (households).	Furnishings, carpets, cleaning wipes, flooring	Hardwearing, easy to clean, absorbent
Environ-mentally friendly textiles	Use organically grown fibres such as wool, cotton, bamboo or recycled materials.	Agrotextiles, geotextiles, fashion	Processed with fewer chemicals, more resistant to mould
Protective textiles	Provide protection against heat, harmful chemicals, gases and even bullets.	Disposable chemical overalls, mountain safety ropes, fire retardant clothing	Improves protection while providing usability, reduces weight making it easier to work
Sports textiles	Combine function with comfort for high performance.	Running shorts, rugby tops, cycling shorts, swimming suits/shorts	Helps to improve the athletic performance, improved comfort

Name: Date:

Year 9 Knowledge Organiser The Eatwell Guide

- When choosing food and drinks, current healthy eating guidelines should be followed.

The Eatwell Guide
- Comprises 5 main food groups.
- Is suitable for most people over 2 years of age.
- Shows the proportions in which different groups of foods are needed in order to have a well-balanced and healthy diet.
- Shows proportions representative of food eaten over a day or more.

Fruit and vegetables
- This group should make up just over a third of the food eaten each day.
- Aim to eat at least five portions of a variety each day.
- Choose from fresh, frozen, canned, dried or juiced.
- A portion is around 80g (3 heaped tbs).
- 30g of dried fruit or 150ml glass of fruit juice or smoothie count as a max of 1 portion each day.

Potatoes, bread, rice, pasta or other starchy carbohydrates
- Base meals around starchy carbohydrate food.
- This group should make up just over a third of the diet.
- Choose higher-fibre, wholegrain varieties.

Dairy and alternatives
- Good sources of protein and vitamins.
- An important source of calcium, which helps to keep bones strong.
- Should go for lower fat and lower sugar products where possible.

Beans, pulses, fish, eggs, meat and other protein
- Sources of protein, vitamins and minerals.
- Recommendations include to aim for at least two portions of fish a week, one oily, and;
- People who eat more than 90g/day of red or processed meat, should cut down to no more than 70g/day.

Oil and spreads
- Unsaturated fats are healthier fats that are usually from plant sources and in liquid form as oil, e.g. olive oil.
- Generally, people are eating too much saturated fat and need to reduce consumption.

Foods high fat, salt and sugar
- Includes products such as chocolate, cakes, biscuits, full-sugar soft drinks, butter and ice cream.
- Are high in fat, sugar and energy and are not needed in the diet.
- If included, should be had infrequently and in small amounts.

8 tips for healthier eating
These eight practical tips cover the basics of healthy eating, and can help you make healthier choices.
1. Base your meals on starchy carbohydrates.
2. Eat lots of fruit and veg.
3. Eat more fish – including a portion of oily fish.
4. Cut down on saturated fat and sugar.
5. Eat less salt (max. 6g a day for adults).
6. Get active and be a healthy weight.
7. Don't get thirsty.
8. Don't skip breakfast.

Hydration
- Aim to drink 6-8 glasses of fluid every day.
- Water, lower fat milk and sugar-free drinks including tea and coffee all count.
- Fruit juice and smoothies also count but should be limited to no more than a combined total of 150ml per day.

Fibre
- Dietary fibre is a type of carbohydrate found in plant foods.
- Food examples include wholegrain cereals and cereal products; oats; beans; lentils; fruit; vegetables; nuts; and, seeds.
- Dietary fibre helps to: reduce the risk of heart disease, diabetes and some cancers; help weight control; bulk up stools; prevent constipation; improve gut health.
- The recommended average intake for dietary fibre is 30g per day for adults.

Composite/combination food
Much of the food people eat is in the form of dishes or meals with more than one kind of food component in them. For example, pizzas, casseroles, spaghetti bolognaise and sandwiches are all made with ingredients from more than one food group. These are often called 'combination' or 'composite' foods.

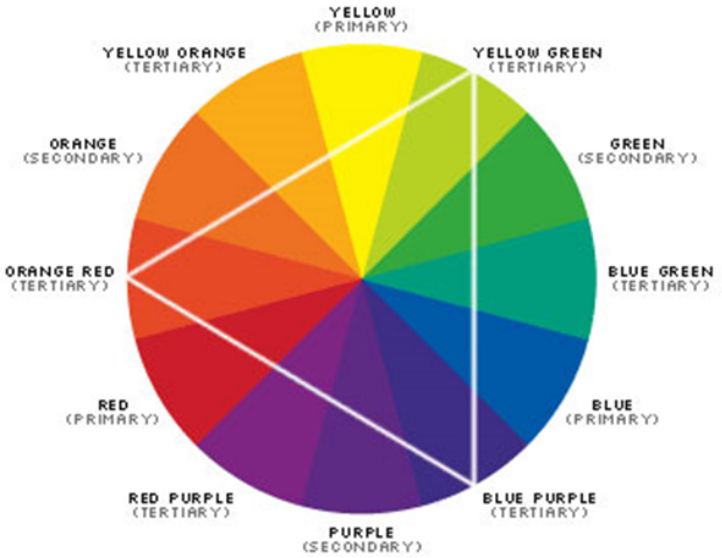
Key terms
The Eatwell Guide: A healthy eating model showing the types and proportions of foods needed in the diet.
Hydration: The process of replacing water in the body.
Dietary fibre: A type of carbohydrate found in plant foods.
Composite/combination food: Food made with ingredients from more than one food group.
Balanced Diet- A diet that provides adequate amounts of nutrients and energy- to have a balanced diet you need to eat a mixture of foods from each of the main food groups and the correct amount of energy to carry out daily activities.
Free Sugars -are sugars added to foods and drinks by the producers, cooks or consumers, they are also found naturally in Honey, Syrups and Fruit Juices.
Not Free Sugars are those found naturally in foods, i.e. Lactose in Milk, Sucrose in Apples.
5 a Day- To encourage us to eat more fruit and vegetables the government introduced the "5 a Day" campaign. This is to ensure that you get a variety of vitamins, minerals, trace elements and fibre in your diet. This will include the antioxidants and plant chemicals you need for good health.

Meals and snacks can be sorted into The Eatwell Guide food groups.

Composite/combination food - Lasagne

Pasta (lasagne sheets): **Potatoes, bread, rice, pasta or other starchy carbohydrates**
Onions, garlic and chopped tomatoes: **Fruit and vegetables**
Lean minced meat (or meat substitute): **Beans, pulses, fish, eggs, meat and other protein** –
Cheese sauce made with milk and cheese**: Dairy and alternatives**
Olive/vegetable oil used to cook onions and mince**: Oil and spreads**

Cutting down on Salt- Reducing the amount of salt we consume can reduce blood pressure, reduce the risk of heart disease, reduce the risk of a stroke. Adults should have no more than 6g of salt a day and children should have less, remember- Salt is added to many of the foods you buy so you need to check labels carefully. It is also used as a preservative in bacon and cheese.



NAME	ATTRIBUTES
BLACK	Prestige, value, timelessness, sophistication and formality
BLUE	Trustworthiness, dependability, security, integrity and calmness
GOLD	Elegance, affluence, quality, elite and idealistic
BROWN	Earthiness, natural, simplicity, durability and rustic
GRAY	Scientific, balance, calm, maturity and cold
GREEN	Wealth, health, serenity, prestige and abundance
ORANGE	Vitality, fun, playfulness, exuberance and youthfulness
PINK	Communicate, tenderness, sensitivity, friendship, beauty and compassion
PURPLE	Royalty, sophistication, nostalgia, mystery and spirituality
RED	Aggression, energy, provocativeness, passion and power
WHITE	Pure, noble, clean, soft and freshness
YELLOW	Positivity, light, warmth, creativity and motivation

Keyword	Principles of Design – read, cover, write, review	tick
Colour theory	Color theory is the collection of rules and guidelines which designers use to communicate with users through appealing color schemes in visual interfaces.	
Colour wheel	A color wheel is a tool that helps you to combine appropriately the colors, and its represented by a circle formed by primary, secondary, and tertiary colors.	
RGB	RGB Color model stands for Red, Green, and Blue and is mainly used for electronic displays including computers and smartphones, and is based on the additive color model of light waves.	
CMYK	CMYK Color model stands for Cyan, Magenta, Yellow, and Key (Black). CMYK is the colour model used for printing.	
Monochromatic	The monochromatic scheme as the name says combine different shades from one color to create an attractive design.	
Complimentary	A complimentary colour scheme uses colours opposite each other on the colour wheel to create a high contrast aesthetic.	
Hue	Hue either refers to is a pure colour or the dominant colour. If black is added to a hue it becomes a shade and if white is added it becomes a tint.	
Saturation	Saturation refers to the intensity of a colour. Highly saturated colours appear more vibrant and bold, whereas less saturation appears dull.	

Bournemouth School music department

Year 9 Autumn Term 2

Historical periods

Music Theory

Component 3: Appraising

Historical Periods

Baroque Period—period in music history from 1600-1750

Basso Continuo—literally continuous bass line. Accompaniment played by a melodic bass instrument, often a cello, and a chordal instrument such as harpsichord, lute or organ

Figured Bass—system of notating chords for the continuo instruments. Numbers are written underneath the bassline to indicate the intervals to be played above the bass note.

Harpsichord—keyboard instrument in which the strings are plucked. Has no ability to sustain notes or to vary the dynamics

Diatonic harmony—when the chords use only notes from the key the music is in

Lute—family of plucked string instruments with a body shaped like half a pear. Sound is similar to a guitar

Terraced Dynamics—dynamics which use only piano and forte with no gradation (crescendo or diminuendo)

Polyphonic texture—a texture where 2 or more melodic lines of equal importance are played at the same time

Imitation—texture in which one melodic part imitates or

Component 3: Appraising

Ornaments—decorations of the melodic line

Trill—rapid alternation of the written note and the note above

Mordent—ornament where the main note is played followed rapidly by the one above and then the main note again.

Sequence—melodic or harmonic device where a short section is immediately played again at a higher or lower pitch

Tonality—the key of a piece of music. Tonal music is music which is in a key. In the Baroque period, the major and minor tonal system was established.

Classical Period—Period in music history from 1750–c1825

Melody and Accompaniment—musical texture in which the melody and the accompaniment can be clearly distinguished

Melody Dominated Homophony—texture in which the there is one melody dominating, and the parts all move in more or less the same rhythm

Periodic Phrasing—when the phrases of the music are of equal length

Harmonic Rhythm—the speed at which the chords change

Crescendo—when the dynamic gradually gets louder

Diminuendo—when the dynamic gradually gets softer

Romantic Period—Period in music history from c1825-1900

Irregular Phrases—when the phrases in the music are of different lengths

Chromatic Harmony—when the chords use notes which are not in the key of the music

Dissonant Harmony—harmony or chords in which the notes 'clash'

Programme Music—music which has an extramusical association attached to it such as a descriptive title, a story or a picture

This QR code will take you to a Spotify playlist with audio examples of many of the concepts covered on this sheet and in lessons. You will find it helpful to listen to these as you learn.

Bournemouth School

music department

Year 9 Autumn Term 2 —continued

Historical periods

Twentieth Century Music period of music history starting from 1900.

Extended techniques—using techniques which are beyond the normal playing techniques of the instrument to alter the sound in some way

Atonality—music which is not in any key

Non-Functional Harmony—harmony where the chords do not work to define the key

Nationalism—music which shows characteristics of the music of the country of the composer eg by using folk music, modes or dance rhythms associated with that country

Neoclassicism—music which is superficially of an earlier style, but contains twists such as extra beats or obviously dissononant chords which reflect the twentieth century

Electronic Music—music which uses electronic sounds and instruments as well as computer software to produce music

Postmodernism—music from the later part of the twentieth century which returns to a more listenable style following the atonality and modernism earlier in the century

Minimalism—style of postmodern music which makes use of motivic cells, repetition and very gradual change. Music has quite a static feel to it.

Music Theory

Theory of Music

Note Values

Notes	Name		Value
	Semibreve	Whole note	4 beats
	Minim	Half note	2 beats
	Crotchet	Quarter note	1 beat
	Quaver	Eighth note	½ beat
	Semi-quaver	Sixteenth note	¼ beat
	2 Quavers	2 Eighth notes	1 beat
	4 Semi-quavers	4 Sixteenth notes	1 beat

Time Signatures—way beats are grouped within a piece of music. Top number tells you how many, bottom number tells you what type of beat

4/4—4 crotchets per bar

3/4—3 crotchets per bar

2/4—2 crotchets per bar

6/8—2 dotted crotchets per bar

9/8—3 dotted crotchets per bar

12/8—4 dotted crotchets per bar

Scales

Major Scale — made up of 7 pitches. The bottom note is repeated an octave higher. Pattern of intervals is tone, tone, semitone, tone, tone, tone, semitone

Minor Scale—made up of 7 pitches. The bottom note is repeated an octave higher. In the harmonic minor, the interval pattern is tone, semitone, tone, tone, tone, augmented 2nd, semitone.

Relative major/ minor—two scales which share the same key signature

Intervals

Interval—the distance between two notes. Intervals are always defined as an adjective and a number

Chords

Chord—two or more notes sounding together. The most common chords are triads with 3 notes. Chords are named after their bottom or root note and by whether they are major or minor

Perfect Cadence—Chord V-I Sounds finished

Imperfect Cadence—Chord I, IV or II –V sounds unfinished

Plagal Cadence—Chord IV-I sounds finished, sometimes called Amen cadence

Interrupted Cadence—Chords V– VI—sounds unfinished. In the major scale, chord VI is minor

This QR code will take you to a Spotify playlist with audio examples of many of the concepts covered on this sheet and in lessons. You will find it helpful to listen to these as you learn.

Keyword	Learn	✓
Post-16 opportunities	Education or training beyond Year 11.	
County Lines	Where illegal drugs are transported from one area to another, often across police and local authority boundaries, usually by children or vulnerable people who are coerced into it by gangs.	
Disenchantment	A feeling of no longer believing in the values of society	
Trap House	Abase used for drug operations, usually a person's home who has been bribed or threatened into the situation.	
Identity	Refers to our sense of who we are as individuals and as members of social groups.	
Healthy lifestyles	Have a combination of a balanced diet, good sleep habits, daily exercise and hobbies for relaxation.	
Free Sugar	Any sugar added to a food or drink. Or the sugar that is already in honey, syrup and fruit juice. These are free because they're not inside the cells of the food we eat.	
Endorphines	Are a type of "feel-good" brain chemical. They act as natural pain and stress relievers.	

County Lines – the risks

A criminal record, prison, addiction, isolation from society and family.
Any rewards are ultimately outweighed by the risks.
Remember these gangs prey on vulnerable people and have only their interests at heart.

Tips for a healthy lifestyle:

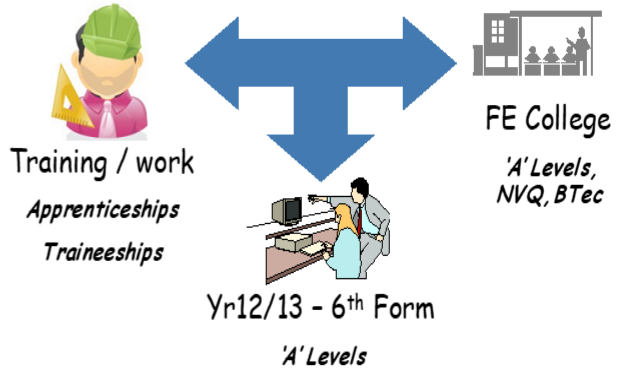
Relaxing –
Try hobbies out, then do what you enjoy.
Hobbies that calm are good.
Hobbies that offer challenge and development are good.

Sleep –
Get at least 7-9 hrs
No devices or social media before bed.
Establish a relaxed routine
Sleep in a cool dark room

Exercise –
Daily exercise is good.
Participate in team sports.
Skill development, challenge and shortterm rewards are best.

Diet –
Eat 5 portions of fruit and veg a day.
Base meals on starchy carbohydrates (potatoes, bread, rice, pasta – even better if wholegrain).
Have some 'dairy' choosing lower fat & sugar options.
Eat some beans, pulses, fish, eggs, meat and other proteins (2 portions of fish per week, one should be oily).
Choose unsaturated oils and spreads.
Drink 6-8 cups/glasses of fluid a day.
Avoid free sugars.

Post-16 and the law: You may leave school at the end of June 2026 when you are 16 years old BUT you must remain in education or training until you are 18.



How long should I spend on my homework?

Monday		Tuesday		Wednesday		Thursday		Friday	
Maths	15	Science	15	Free choice	15	Maths	15	Free Choice	15
English	15	Free Choice	15	Free Choice	15	English	15	Free Choice	15
Reading	30	Reading	30	Reading	30	Reading	30	Reading	30

- You should spend a maximum of 30 minutes revising each day.
- You should spend a maximum of 30 minutes Reading each day.
- You can decide what you revise in each slot that is called Free Choice. You can do this at the start of the year and have a fixed plan or you can decide on each day based on how well you feel you know your Knowledge Organisers. An example is provided below.

Monday		Tuesday		Wednesday		Thursday		Friday	
Maths	15	Science	15	RS / Personal Dev	15	Maths	15	Art / Tech	15
English	15	History / Geography	15	Computing / Music	15	English	15	French	15
Reading	30	Reading	30	Reading	30	Reading	30	Reading	30

NOTES:

Timetable

	1Mon	1Tue	1Wed	1Thu	1Fri	2Mon	2Tue	2Wed	2Thu	2Fri
Reg										
1										
2										
Break										
3										
4										
Reg										
Lunch										
5										
6										