Beckfoot Upper Heaton

Knowledge Organisers

Year 7 – Half Term 5

Contents:

How to use a knowledge organiser – step by step guide

	Look, Cover, Write, Check	Definitions of Key Words	Flash Cards	Self Quizzing	Mind Maps	Paired Retrieval
Step 1	Look at and study a specific area of your KO. 	Write down the key words and definitions. 	Use your KO to condense and write down key facts or information onto flash cards. 	Use your KO to create a mini quiz. Write down your questions using your KO. 	Create a mind map with all the information you can remember from your KO. 	Ask a friend or family member to have the KO or flash cards in their hands. 
Step 2	Cover or flip the KO over and write down everything you can remember. 	Try not to use your KO to help you. 	Add pictures to help support. Then self-quiz using the flash cards. You could write questions on one side, and answers on the other! 	Answer the questions and remember to use full sentences. 	Check your KO to see if there are any mistakes on your mind map. 	They can test you by asking you questions on different sections of your KO. 
Step 3	Check what you have written down. Correct any mistakes in green pen and add anything you have missed. Repeat. 	Use your green pen to check your work. 	Ask a friend or family member to quiz you on the knowledge. 	Ask a friend or family member to quiz you using the questions. 	Try to make connections, linking the information together. 	Write down your answers, 

10 Influential Poets

William Wordsworth	An English Romantic poet. His most famous poem is 'Daffodils'.
William Shakespeare	In his lifetime he wrote over 150 poems. Shakespearean sonnets are still widely studied today.
Emily Dickinson	An American poet who lived most of her life in isolation.
Maya Angelou	A civil rights activist and poet whose most famous poem is 'Still I Rise'.
Rudyard Kipling	Author of 'The Jungle Book'. His most famous poem is 'If'.
Tupac Shakur	An American rapper, poet and actor. He was famously assassinated in his youth.
Carol Ann Duffy	She is the current poet laureate in the UK. One of her most famous poems is 'Valentine'.
Ted Hughes	Considered one of the greatest writers and poets of the 20th century. He was married to Sylvia Plath.
Sylvia Plath	American poet. She was married to Ted Hughes.
Wilfred Owen	One of the most famous poets from WW1. He wrote poetry about the horrors of war.

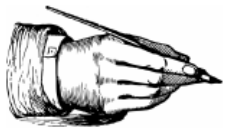
The Poet Laureate

The poet laureate is an honoured poet chosen by the government or monarchy who is expected to compose poems for special occasions. The poet laureate of Britain is usually appointed for life. Carol Ann Duffy became the first woman to hold the role of Britain's poet laureate. She was appointed in 2009.

Introduction to Poetry

Poetic Structures

Term	Definition
Ballad	Story poems– often 4 lines stanzas
Blank verse	Verse with no rhyme – usually 10 syllables
Epic	Tragic/heroic story poems
Free verse	No regular rhyme/rhythm
Haiku	3 lines, syllables 5/7/5. Often about nature
Ode	Lyrical poem often addressed to one person
Sonnet	14 lined love poem
Shape poem	Poem is in shape of the main subject
Rhyme scheme	The pattern of the lines that rhyme in a poem.
Rhyming couplet	Two lines next to each other that rhyme.



Poetic Techniques

Term	Definition
Alliteration	When words placed together start with the same sound. "She sells sea shells on the sea shore".
Metaphor	When you say something is something else but you know it can't be. "She is a star!"
Simile	When you compare two things using 'as' or 'like'. "As brave as a lion".
Oxymoron	When two words are placed together with opposite meanings. "Cruel kindness" or "silent scream".
Onomatopoeia	Words that sound like what they are. "Meow" or "crash".
Assonance	The repetition of a vowel sound "Go slow over the road".
Emotive language	Language used to create a particular emotion in the reader.
Figurative language	When writers use similes, metaphors or personification to describe something in a non-literal way.
Imagery	When something is described in way that appeals to our senses.
Structure	The way that the poem is arranged/organised.
Sibilance	A repeated 's', 'sh' or 'z' sound.
Semantic field	A group of words in the poem that are all about the same thing/idea.
Caesura	A pause in the middle of the line.
Enjambment	When one line runs into another without a pause.

Rhyme schemes

A rhyme scheme is just the pattern of rhyming in a poem.
To work out a rhyme scheme, look at the **last word** in each line and see which ones rhyme. Label them with the same letter.

Common rhyme schemes:

AABB (first line rhymes with second line)

ABAB (first line rhymes with third line)

Your poetry anthology

An anthology is a collection of different pieces of writing.
You will write an anthology of poetry that includes the following:

- ✓ AABB rhyming poem
- ✓ ABAB rhyming poem
- ✓ A selection of haikus
- ✓ A ballad
- ✓ A poem with natural imagery
- ✓ A poem with an extended metaphor
- ✓ A dramatic monologue
- ✓ A sonnet

Home-grown drama: Scriptwriting

Golden Rules of Scriptwriting:

1. Before the play begins, the playwright tells us where the scene is taking place and who is on stage.
2. The stage directions are in brackets.
3. Character names go at the left hand side.
4. Character names are followed by a colon.
5. New characters are introduced by writing the phrase 'Enter (character name).'
6. When characters leave, the playwright writes the word 'Exit (character name).'

Look for these rules in the example below:

The Bully

Scene: A school playground. Characters: JIM, a first-year pupil. EDDIE, a second-year pupil

(JIM is looking through his bag. EDDIE comes up and pushes him.)

JIM: (angrily) What do you think you're doing?

EDDIE: Oh, sorry, did I hurt you? I was just wondering what you had in that bag.

JIM: What's it to do with you?

EDDIE: I forgot my dinner money today. And I'm hungry.

(EDDIE grabs JIM's lunch and runs off.)

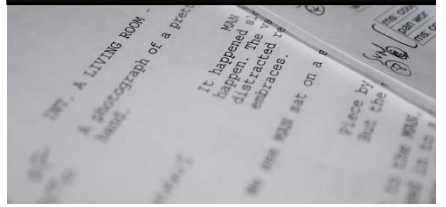
JIM: Hey you, come back!

(Enter the CARETAKER.)

CARETAKER: What's wrong, son?

Key Concept	Definition
Script	the written text of a film or play
Act	A main section of a play
Scene	A smaller section of a play
Stage Direction	An instruction given in the text of a play or film
Dialogue	The words spoken by actors in a play or film
Lines	the words and phrases of dialogue a character speaks (not always a whole line long)
Theatre	A place where plays are performed
Playwright	A writer of plays
Performer	the person on stage interpreting the script
Director	the person in charge of the whole performance
Tone (in dialogue)	the feeling being conveyed by the way something is said
Exposition	Including plot or background information in a narrative
Inference	Coming to a conclusion based on the evidence you have
Improvisation	When a scene is created without using a script
Subtext	a hidden message beneath the text that is not explicitly said

Year 7 Half Term 4: Scriptwriting



Scripts are written for…

Plays, films, television, advertising, speeches, video games

You will write…

A full script for a play or a film.

Your script must have:

A **plot outline**

A cast of at least **two characters**

At least **three scenes**

A specific **setting**

A specific **tone**

Dialogue

Stage Directions

Subtext

Descriptive Writing

SAMOSAP

Descriptive techniques

S	**imile**	**Describing something using 'like' or 'as'**	His eyes flickered **like** a broken television screen
A	**djectives**	Describing words	**Vicious**, **beautiful**, **kind**, **green**
M	**etaphor**	Describing something by saying it is something else	The school is prison
O	**nomatopoeia**	When words mimic sounds	**Crackling** thunder in the distance… Flies **hummed** together in unison.
S	**ense imagery**	Describing what can be seen, tasted, touched and smelled	A **spicy** fire burned **along his tongue** as he **heard** laughter. Blurred shapes were all he could **see**.
A	**lliteration**	When words start with the same sound	**R**umbling **r**ocks **r**olled **r**apidly.
P	**ersonification**	Describing a non-human thing like it is human	The sun **smiled happily** down onto the pleasant hills.

	Nouns to describe places
Forest 	forest, jungle, woodland, trees, treetops, trunks, branches, roots, logs sky, ceiling, canopy, umbrella, blanket floor, carpet, paths, tunnels leaves, buds, berries, blossoms, flowers, petals, stems, vines, creepers
Mountain 	top, peak, summit slope, climb, drop, ascent, descent rock-face, rocks, slabs, boulders, pillars, arches, ridges, humps snow, ice, clouds, mist, fog, blanket, cloak, veil streams, waterfalls, valleys, meadows
City 	cafes, restaurants, shops, malls, stalls, markets, art galleries, museums, skyscrapers, offices, hotels, factories, houses, flats streets, alleys, lanes, arcades, squares, centre, parks, village green graffiti, rubbish, smoke, fumes, soot, smog, damp, mould, grime, waste, chemicals, pollution

ISPACED

Sentence openers

I	**…ing,**	Opening with an –ing verb.	**Running**, the figure disappeared into the building.
S	imile	Opening with a simile	**Like a pyramid**, the sleek skyscraper towered over the city.
P	repositio n	Opening with a preposition. (At/Above/Below/Behind/In front of etc.)	**Beneath the mountain,** there was a small village.
A	dverb	Opening with an adverb (Quickly/Slowly/Confidently etc.)	**Coldly**, the wind blew across their faces.
C	onnective	Opening with a connective (However/Similarly/Therefore)	**However,** this was not a normal day.
E	…ed,	Opening with an –ed verb or phrase (Exhausted/Energised etc.)	**Exhausted**, I collapsed into the comfy chair.
D	ialogue	Opening with dialogue in speech marks	**"Where are we?"** I asked as I looked around the strange room.

	Adjectives to describe faces
Mouths 	Narrow, thin, tight, wide, thick, full, fleshy, flabby, plump, big-lipped, wrinkled, dry, flaking, drooping, beaming, excited, impish, stern, menacing, sneering, reptilian
Eyes 	blue, grey, green, brown, hazel, black, yellow, bloodshot, pink-rimmed dark, pale, transparent sapphires, emeralds, diamonds, charcoal, slate, velvet beautiful, brilliant, sparkling, gleaming, twinkling soft, gentle, calm laughing, impish, mischievous cold, icy, steely, piercing, fl inty, dangerous, mysterious
Noses 	Large, small, long, short thin, narrow, wide, broad, straight, flattened, pointed, curved, turned up, hooked, broken, crooked, pug, button, snub, triangle, beak-like
Ears 	Big, large, huge, enormous, small, tiny, droopy, dangling, prominent, protruding

UNIT 1F - NUMBER

CALCULATIONS - Videos 120,44,39,40

1	BIDMAS • Brackets • Indices • Division • Multiplication • Addition • Subtraction	$3 + (12 \div 3) \times 4$ $= 3 + 4 \times 4$ $= 3 + 16$ $= 19$
2	Ordering negative numbers	When using negative numbers, the further away you get from 0, the smaller the number is. eg. -300 is smaller than -2.
3	Adding and subtracting negatives	+ – and - + is the same as – (eg. 3 + - 5 = -2) - - and + + is the same as + (eg. 6 - - 4 = 10)

USE OF CALCULATOR - Videos 101

1	Squaring and Cubing numbers	
2	Square root and Cube root	

DECIMALS - Videos 56

1	Round to a given number of decimal places	Round 5.68 to 1dp = 5.7

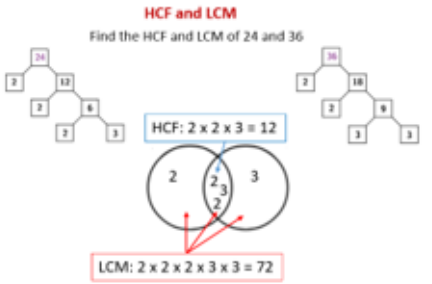
PLACE VALUE - Videos 130,131

2	Round to any significant figure	Round 346 to 1sf = 300
3	Estimate answers to calculations involving decimals	$\frac{7.19 \times 19.7}{0.46} = \frac{7 \times 20}{0.5}$ $= 280$

FACTORS AND MULTIPLES - Videos 27,33

1	Find the highest common factor (HCF) & lowest common multiple (LCM)	**LCM by Listing out the Multiples** Find the LCM of 5 and 6 Multiples of 5: 5, 10, 15, 20, 25, 30, 35, ... Multiples of 6: 6, 12, 18, 24, 30, 36, ... Least Multiple common in both numbers is 30 **HCF by Listing out the Factors** Find the HCF of 24 and 36 Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24 Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 Highest common factor is 12

PRIME FACTORS - Videos 32

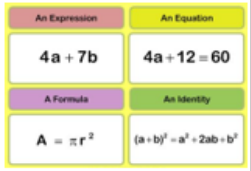
2	Express a number as a product of its prime factors	• Example: Write 84 as a product of its prime factors  • $84 = 2 \times 2 \times 3 \times 7$ • $84 = 2^2 \times 3 \times 7$
3	Use Venn diagrams to find the HCF and LCM	

Vocabulary

1	Square number	The product of a number being multiplied by itself
2	Cube number	The product of multiplying a number by itself twice
3	Square root	Finding what number has been multiplied by each other to get your number

UNIT 2F - ALGEBRA

USING EXPRESSIONS AND FORMULAE-Videos 155/287/154/279

1	Writing Formulae (Derive) **Substitute letters for words** in the question.	Bob charges £3 per window and a £5 call out charge. $C = 3N + 5$ Where N=number of windows and C=cost
2	Expression, Equation, Identity, Formulae	
3	Substitution: replacing letters with negative numbers	a = -3, b = 2 *and* c = 5. Find: 1. $2a = 2 \times -3 = -6$ 2. $3a - 2b = (3 \times -3) - (2 \times 2) = -13$
4	Rearranging formulae: Use inverse operations on both sides of the formula (balancing method) until you find the expression for the letter.	Make x the subject of $y = \frac{2x-1}{z}$ Multiply both sides by z $yz = 2x - 1$ Add 1 to both sides $yz + 1 = 2x$ Divide by 2 on both sides $\frac{yz+1}{2} = x$ We now have x as the subject.

SUBSTITUTION – Videos 782/783

1	Collecting like terms • Collect all your different letters together	4a + 3b + 2a -2b 4a + 2a = 6a 3b – 2b = 1b Answer: 6a + 1b
2	Simplifying expressions	2a x 3a = $6a^2$ 4a ÷ 2a = 2
3	Substitution • Replace the letters with the numbers. • Multiply them as 2y is actually 2 times y.	If x = 2 and y = 3, what is the value of 4x + 2y? 4 x 2 = 8 **and** 3 x 2 = 6 8 + 6 = 14 14

Vocabulary

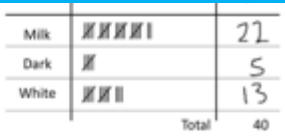
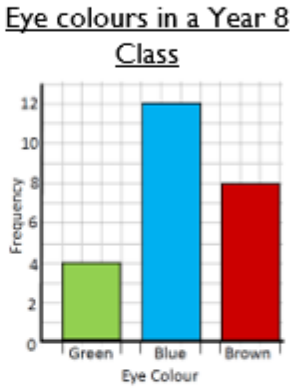
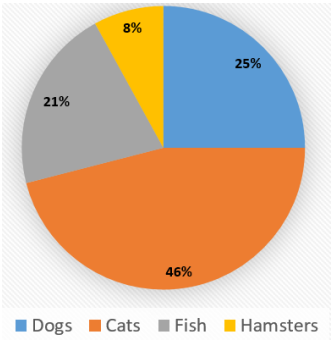
1	Equation	is an expression equaling another. Eg) 3b + 2 = 2d
2	Identity	is two expressions that always equal each other, regardless of the variables. Eg) 2(a + 5) ≡ 2a + 10
3	Formulae	shows the relationship between terms. Eg) 4a + b = c
4	Factorise	The reverse of expanding. Use common factors to put brackets back into an expression.

EXPANDING AND SIMPLIFYING EXPRESSIONS– Videos 156/157/158/159/160/161/162/168

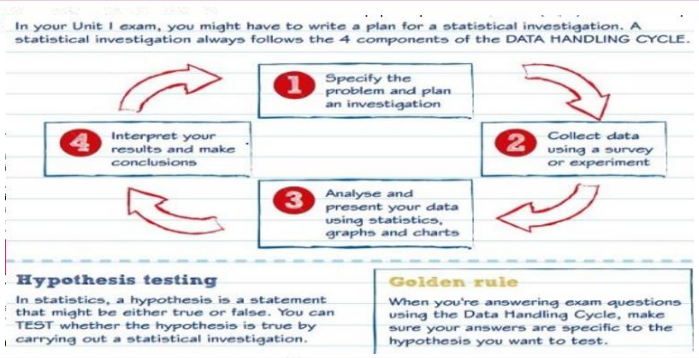
1	Like terms	Terms with the same variable. eg. $4x$ and $5x$ are like terms. $6a$ and $3b$ are not.
2	Expand single brackets	To expand a bracket, **multiply** each term **in the bracket** by the expression **outside** the bracket. $3(x + 7) = 3x + 21$
3	Expand double brackets	Multiply each term in the second bracket by each term in the first. $(x+7)(x+2) = x^2 + 9x + 14$
4	Factorise linear expressions	The **reverse** of **expanding**. Factorising is writing an expression as a product of terms by **'taking out' a common factor**. $6x - 15 = 3(2x - 5)$, where 3 is the common factor.

UNIT 3F – GRAPHS, TABLES AND CHARTS

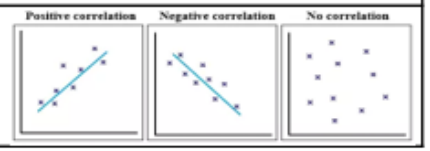
REPRESENTING DATA – Videos 401/425/427/428

	• Information you are collecting listed. • Column for tallies. • Column for frequency.	
2	**Bar Chart** • Frequency on y-axis. • Information you are collecting on the x-axis. • Bars same width. • Equal gaps between bars. • Title explaining what the chart shows.	
3	**Pie Chart** • Divided into sectors which shows the relative size of the data. • Needs a key or labels to clearly show what each sector represents. • Sectors calculated using parts of 360°.	

REPRESENTING DATA – Videos 392/393

1		
2	**Quantitative(number)** Data that is numbers Discrete or continuous	**Qualitative (worded)** Data that in word. Eg. people's favourite colour.
3	**Discrete** Data that can only take certain values.	**Continuous** Data that can take any value within a range. Eg. height.

SCATTER GRAPHS - Videos 453/454

1	Causality	When one variable influences another variable
2	Line of best fit	A straight line that best represents the data on a scatter graph
3	Positive, Negative or No Correlation	

TWO WAY TABLES- Videos 422/423

These are used to show how data falls into 2 different categories. For example gender and favourite sport to watch

What is your favorite sport to watch on television?			
	Football	Basketball	Baseball
Males	40	22	15
Females	12	16	45
Total	52	38	60

A two-way table divides data into groups in rows going across and columns going down the table

Vocabulary

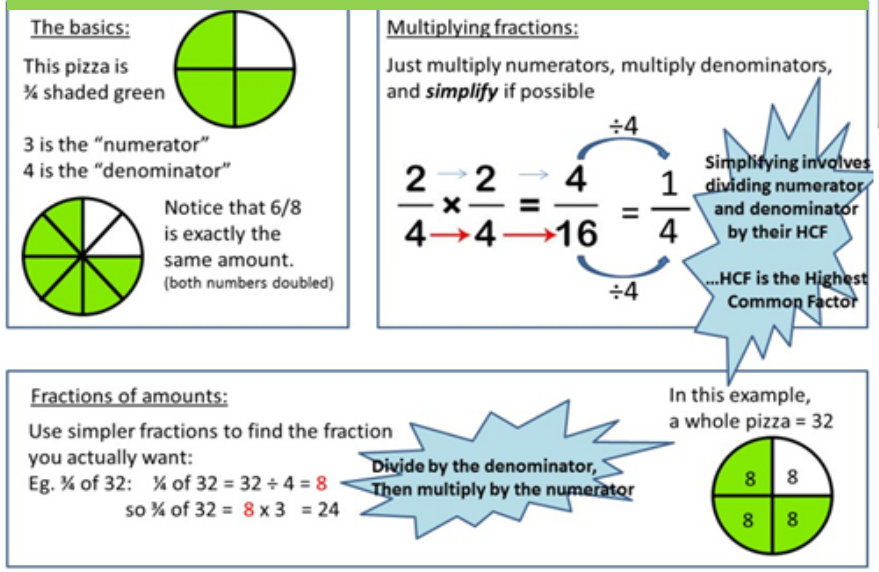
1	Data handling cycle	1) Specify the problem/ pick hypothesis 2) Collect data 3) Process the data and represent on a graph 4) Interpret and discuss the results
2	Correlation	The relationship between different sets of data.
3	Line of best fit	Shows the general direction a group of points seems to follow.
5	Frequency	The number of times something occurs.

UNIT 4F – FRACTIONS AND PERCENTAGES

PERCENTAGES –Videos 86/87/89/97/94

1	Find simple percentages of amounts	1% - Divide by 100 10% - Divide by 10 50% - Divide by 2 25% - Divide by 4
2	Use a multiplier to find a percentage	30% = multiply by 0.3 3% = multiply by 0.03
3	Find percentage change	$\frac{Changed\ by}{Original\ amount}\ x\ 100$
4	Use a multiplier to find percentage increase/decrease (calculator)	Increase 30 by 15% 30 x 1.15 = 34.5 Decrease 50 by 10% 50 x 0.9 = 45
5	Calculate compound interest	$A = P(1+i)^n$

FRACTIONS –Videos 77/68/69



OPERATION WITH FRACTIONS – Videos 66/72/68/69/70

1	Equivalent Fractions	$\frac{1}{2}$ is the same as $\frac{4}{8}$
2	Adding Fractions • The denominator has to be the same. • Add the numerator.	$\frac{1}{2}+\frac{3}{4}$ we can make the bottom 4 $\frac{2}{4}+\frac{3}{4}=\frac{5}{4}$
3	Subtracting Fractions • The denominator has to be the same. • Subtract the numerator.	$\frac{3}{4}-\frac{1}{3}$ We can make the bottom 12. $\frac{9}{12}-\frac{4}{12}=\frac{5}{12}$
4	Multiplying Fractions • Multiply both top and bottom	$\frac{3}{5}x\frac{2}{3}=\frac{6}{15}$ $\frac{6}{15}$ is the same as $\frac{2}{5}$
5	Dividing Fractions • KCF • Keep – Change - Flip	$\frac{4}{3}\div\frac{2}{5}$ becomes $\frac{4}{3}x\frac{5}{2}$ $\frac{4}{3}x\frac{5}{2}=\frac{20}{6}=\frac{10}{3}$

FRACTIONS,DECIMALS & PERCENTAGES –Videos 59/149

1	Equivalent fractions, decimals and percentages.	Decimal / Percentage / Fraction 0.5 / 50% / $\frac{1}{2}$ 0.25 / 25% / $\frac{1}{4}$ 0.75 / 75% / $\frac{3}{4}$ 0.2 / 20% / $\frac{1}{5}$ 0.1 / 10% / $\frac{1}{10}$ $0.\dot{3}$ / $33.\dot{3}\%$ / $\frac{1}{3}$
2	Ordering FDP • Convert them all into the same form and then compare	50% $\frac{6}{10}$ 0.45 0.5 0.6 0.45 0.45 0.5 0.6

Vocabulary

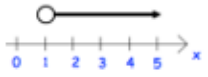
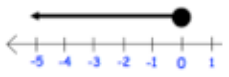
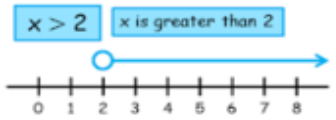
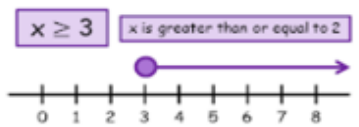
1	Numerator	Top of a fraction
2	Denominator	Bottom of a fraction
3	Multiplier	A number when multiplied finds the percentage of an amount

UNIT 5F – EQUATIONS, INEQUALITIES AND SEQUENCES

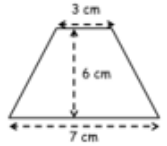
EQUATIONS- Videos 217

1	Solving one-step and two-step equations	Using **inverse (opposite) operations** to find out a missing number. Example 1: $x + 6 = 11$ (subtract 6) $x = 5$ Example 2; $3x - 2 = 10$ (add 2) $3x = 12$ (divide by 3) $x = 4$

INEQUALITIES- Videos 266/267/268

1	Greater than (>) Less than (<)	Greater than or equal to (≥) Less than or equal to (≤)
2	Representing inequalities on a number line	$x > 1$  $x \leq 0$ 
Inequalities on a number line	An open circle means that the value is not included: $x > 2$ x is greater than 2  A filled in circle means that the value is included: $x \geq 3$ x is greater than or equal to 2 	

USING FORMULAE- Videos 287

1	Substitute numbers into a formula	Eg. Substitute numbers into the formula for the area of a trapezium:  $\frac{(a+b)h}{2} = \frac{(3+7)\times 6}{2}$ $= 30$
2	Rearranging formula	Make a the subject of the formula $b = 5a + 21$ $-21 \quad -21$ $b - 21 = 5a$ $\div 5 \quad \div 5$ $\frac{b-21}{5} = a$

SOLVING INEQUALITIES- Videos 269/270/271/272

1. Solve inequalities

$-3 \leq 2x - 1 \leq 5$

$+1 \quad +1 \quad +1$

$-2 \leq 2x \leq 6$

$\frac{-2}{2} \leq \frac{2x}{2} \leq \frac{6}{2}$

$-1 \leq x \leq 3$

2. Find all the integer solutions which satisfy this inequality:

$-1 \leq x \leq 3$

-1. 0, 1, 2 , 3

3. Solve with unknown both sides

$4m - 3 < 2m + 6$

$-2m \quad -2m$

$2m - 3 < \quad + 6$

$+3 \quad +3$

$2m < 9$

$\frac{2m}{2} < \frac{9}{2}$

$m < \frac{9}{2}$

Vocabulary

1	Equation	is an expression equaling another. Eg) 3b + 2 = 2d
2	Substitution	Replace letters with numbers.
3	Formulae	Show the relationship between two or more variables
4	Inverse	The reverse of something else.

Beckfoot Upper Heaton

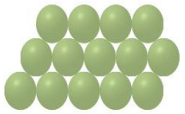
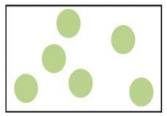
Science Knowledge Organiser: Y7 HT5

Half term 5

Part 1 – Matter

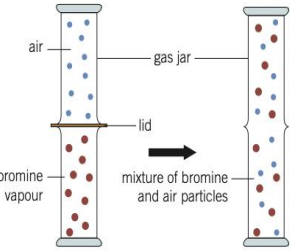
Key content:

Changes of state

changes of state		melting	boiling/evaporation
state of matter	solid	liquid	gas
how do the particles move?	Particles donot move around	Particles touching but can slide over each other	particles are spread out far away from each other
arrangement of particles			
can it be compressed?	No, becausethere is no space between the particles	No, because the particles are touching their neighbours	Yes, because there is space between the particles
can it flow?	No, because the particles can't move around	Yes, because the particles can move around	Yes, because the particles can move around
changes of state		freezing	condensation

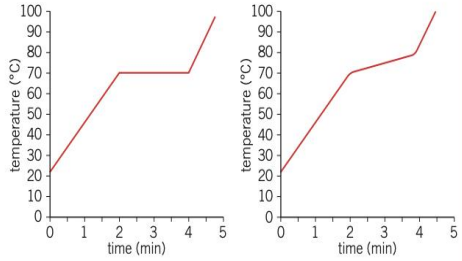
Diffusion

- **Diffusion** is the movement of particles from an area of high concentration (lots of the same particle) to an area of low concentration (not a lot of the same particle)
- It is a random process which does not need energy
- The speed of diffusion can be increased by:
  - A higher temperature
  - Smaller particles diffusing
  - A gas rather than a liquid
- Diffusion does not happen in a solid as the particles can't flow



Melting and boiling points

- The **melting point** of a substance is the temperature at which it turns from a solid to a liquid, or a liquid to a solid
- The **boiling point** of a substance is the temperature at which it turns from a liquid to a gas or a gas to a liquid
- **Pure substances** have a fixed (sharp) boiling or melting point, whereas **impure substances** have a range which appears as a diagonal line on a graph



Mixtures

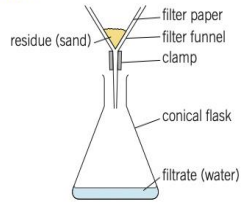
- **Mixtures** are different **substances** which are together, they are not chemically bonded and so are easy to separate
- The substances which make up a mixture keep their own **properties** unlike those in a compound
- A mixture is an **impure** substance as it does not have a fixed melting point, instead it has a range

- A **solution** is a type of mixture which is made up of two parts
- A **solute** is the part which has dissolved in the solution
- A **solvent** is the liquid part which the solute has dissolved into

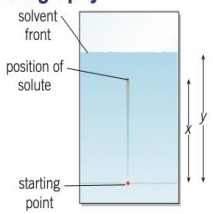
- The **solubility** of a substance is a measure of how much of it will **dissolve**
- Not all solutes will dissolve in all solvents
- Solutes which do not dissolve are known as **insoluble**
- Substances which do dissolve are known as **soluble**
- The **solubility** of a substance can be increased by increasing the temperature of the solution or by stirring the solution
- A **saturated solution** is one where the maximum amount of solute has dissolved in it, no more solute will be able to dissolve

Separating Mixtures

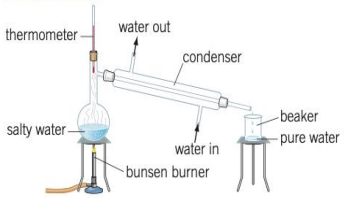
Filtration



Chromatography



Distillation



Evaporation

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Key words:

Key word	Definition
boil (boiling)	The change of state from liquid to gas that occurs when bubbles of the substance in its gas state form throughout the liquid. Boiling occurs at the boiling point of a substance.
boiling point	The temperature at which a substance boils.
change of state	The process by which a substance changes from one state to another.
chromatography	A technique to separate mixtures of liquids (often coloured) that are soluble in the same solvent.
condense (condensation)	The change of state from gas to liquid. It can happen at any temperature below the boiling point.
density	The mass of a material in a certain volume.
diffusion	The process by which particles in liquids or gases spread out through random movement from a region where there are many particles to one where there are fewer.
dissolve	The complete mixing of a solute with a solvent to make a solution.
distillation	A technique that uses evaporation and condensation to obtain a solvent from a solution.
evaporate (evaporation)	The change of state from liquid to gas that occurs when particles leave the surface of the liquid only. It can happen at any temperature. Evaporation can be used to separate a solid dissolved in a liquid.
filtrate	The liquid or solution that collects in the container after the mixture has passed through the filter paper.
filtration	A way of separating pieces of solid that are mixed with a liquid or solution by pouring through filter paper.
freeze (freezing)	The change of state from liquid to solid at the melting point of a substance.
gas	In the gas state, a substance can flow and can also be compressed.
gas pressure	The force exerted per unit area on the walls of a container. It is caused by collisions of particles with the walls.
liquid	In the liquid state, a substance can flow but cannot be compressed.
melt (melting)	The change of state from solid to liquid at the melting point of a substance.
melting point	The temperature at which a substance melts.
mixture	A mixture is made up of two or more pure substances that are mixed (not chemically joined) together. A mixture's properties are different from the properties of the individual substances that make it up.
particle	A very tiny object, such as an atom or molecule, that materials are made from. They are too small to be seen with a microscope.
particle model	A way to think about how substances behave in terms of small, moving particles.
property	A quality of a substance or material that describes its appearance, or how it behaves.
pure substance	A single material with no other substances mixed with it.
saturated solution	A solution in which no more solute can dissolve.
solid	In the solid state, a substance cannot be compressed and it cannot flow.
solubility	The maximum mass of solute that dissolves in a certain volume or mass of solvent.
solubility curve	A graph showing the change in solubility of a substance with temperature.
soluble (insoluble)	A soluble substance can dissolve in a given solvent. An insoluble substance cannot dissolve in a given solvent.
solute	The solid or gas that is dissolved in a liquid.
solution	A mixture of a solute dissolved in a solvent. All parts of the mixture are the same.
solvent	A substance, normally a liquid, that dissolves another substance.
states of matter	The three forms in which a substance can exist – solid, liquid, and gas.
sublime (sublimation)	The change of state from solid directly to gas.
substance	A material that is not a mixture. It has the same properties all the way through.

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Part 1 – Reactions

Half term 5

Key content:

Chemical reactions

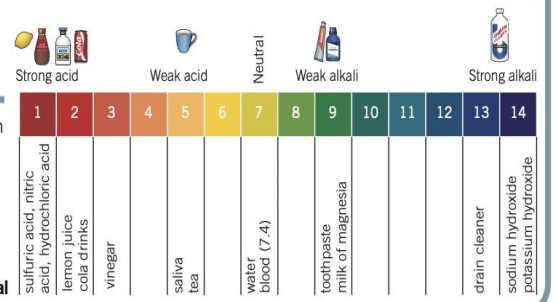
- A **chemical** reaction is a change in which atoms are rearranged to make new substances
- A **reversible** reaction is one where the products can react to get back the substances which you started with, most chemical reactions are not reversible
- You can look for signs that a chemical reaction has taken place such as flames, smells, heat change, a loud bang or gentle fizz

Acids and alkalis

- **Acids** and **alkalis** are the chemical opposites of one another
- Both acids and alkalis can be **corrosive** and **irritants**

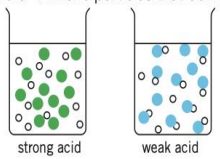
To see whether a substance is an acid or an alkali, we can use an **indicator**. Indicators show how acidic or how alkaline a solution is by showing its position on the **pH scale**, one example of this is **universal indicator**

- If the solution has a pH value of 1–6 it is **acidic**
- If the solution has a pH value of 8–14 it is **alkaline**
- If the solution has a pH value of 7 it is known as **neutral**



Acid strength

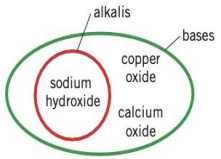
- The strength of an acid depends on how much of the acid has broken apart when it has dissolved in water
- Hydrogen chloride dissolves in water to form hydrochloric acid, this is a **strong acid** as all of the particles split up
- A **weak acid** will have particles that do not all split up



- The **concentration** of the acid is the amount of acid which has dissolved in 1 litre of water
- The more concentrated the acid, the lower the pH

Neutralisation

- **Neutralisation** reactions are any reaction in which acids react with a **base** to cancel out the effect of the acid
- These reactions form a neutral solution with a pH of seven
- A **base** is any substance which neutralises an acid
- An alkali is a base which has been dissolved in water



Salts

Salts are substances which are formed when an acid reacts with a metal or metal compound

Different acids form different types of salts:

- Hydrochloric acids form chloride
- Sulphuric acids form sulphates
- Nitric acids form nitrates

Metal reactions

When a metal reacts with an acid it will produce a salt and hydrogen gas, the fizzing that you see is the hydrogen gas being given off

metal + acid ➞ salt + hydrogen

magnesium + hydrochloric acid ➞ magnesium chloride + hydrogen

When a metal reacts with oxygen a metal **oxide** is formed, this process is known as **oxidation**

metal + oxygen ➞ metal oxide

aluminum + oxygen ➞ aluminum oxide

- When a metal reacts with water it forms a metal **hydroxide** and hydrogen gas.
- The alkali (group 1) metals react most vigorously, giving off a brightly coloured flame

metal + water ➞ metal hydroxide + hydrogen

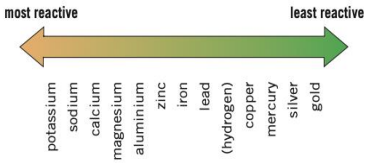
sodium + water ➞ sodium hydroxide + hydrogen

When a more reactive metal reacts with a compound containing a less reactive metal, it can take it's place, this is known as a **displacement** reaction

- If the metal on it's own is higher in the **reactivity series** than the metal in the compound a reaction will take place
- If the metal on it's own is lower in the reactivity series than the metal in the compound, a reaction will not take place

The reactivity series

- The **reactivity series** describes how reactive different metals are compared to one another
- The higher the metal is in the reactivity series the more reactive it will be this means that it will react much more vigorously



Key words:

Key word	Definition
acid	An acid is a solution with a pH value less than 7.
alkali	An alkali is a soluble base.
base	A substance that neutralises an acid – those that dissolve in water are called alkalis.
chemical property	How a substance behaves in its chemical reactions.
chemical reaction	A change in which atoms are rearranged to create new substances.
concentrated	A solution is concentrated if it has a large number of solute particles per unit volume (litre or cubic metre).
concentration	A measure of the number of particles in a given volume.
corrosive	A substance is corrosive if it can burn your skin or eyes.
dilute	A solution is dilute if it has a small number of solute particles per unit volume (litre or cubic metre).
displacement	Reaction where a more reactive metal takes the place of a less reactive metal in a compound.
element	A substance that cannot be broken down into other substances.
indicator	Substances used to identify whether unknown solutions are acidic or alkaline. The colour of an indicator is different in acidic and alkaline solutions.
irritant	A substance that makes your skin itch or swell up a little.
neutralisation	In a neutralisation reaction, an acid cancels out a base or a base cancels out an acid.
oxidation	A chemical reaction in which a substance combines with oxygen.
oxide	A substance made up of a metal or non-metal element joined to oxygen.
Periodic table	A table of all the elements, in which elements with similar properties are grouped together.
pH scale	The pH scale shows whether a substance is acidic, alkaline, or neutral. An acid has a pH between 0 and 7. An alkaline has a pH between 7 and 14. A solution of pH 7 is neutral.
physical change	A change that is reversible, in which new substances are not made. Examples of physical changes include changes of state and dissolving.
physical property	A property of a material that you can observe or measure.
product	A substance that is made in a chemical reaction.
reactant	A starting substance in a chemical reaction.
reactive	A substance is reactive if it reacts vigorously with substances such as dilute acids and water.
reactivity series	A list of metals in order of how vigorously they react.
reversible	A change in which it is possible to get back to the original substances. Examples include dissolving and changes of state.
salt	A salt is a compound in which the hydrogen atoms of an acid are replaced by atoms of a metal element.
strong acid	An acid in which all of the acid particles split up when it dissolves in water.
weak acid	An acid in which only some of the acid particles split up when it dissolves in water.
word equation	A way of representing a chemical reaction simply. The reactants are on the left of an arrow, and the products are on the right. The arrow means <italic>reacts to make</italic>.

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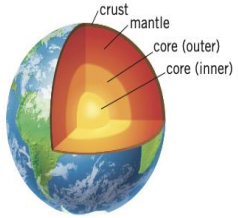
Half term 5

Part 1 – Earth

Key content:

The Earth

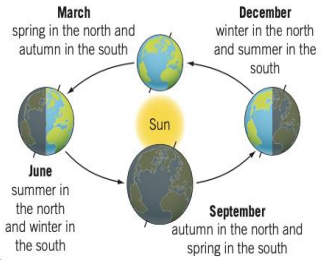


The Earth has three main layers:

- The **crust** is rocky and solid
- The **mantle** is made from mainly solid rock but this can flow
- The **outer core** is liquid metal and the **inner core** is solid

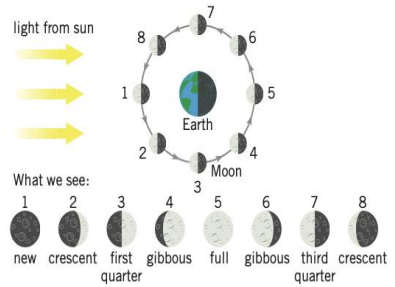
The spinning Earth

- The Earth takes 365 days to **orbit** the Sun, this is one Earth **year**
- The Earth takes 24 hours to spin on it's axis, that is why we have day and night
- The Earth's **axis** has a tilt of 23.4° which gives rise to our **seasons**



The Moon

- The Moon is a **natural satellite** which orbits the Earth
- One orbit of the Earth takes 27 days and 7 hours, this causes us to see the **phases of the moon**
- The different phases of the moon are caused by different parts of the Moon being lit by the Sun



The night sky

- A **galaxy** is a collection of **stars**, our galaxy is known as the **Milky Way**
- **Stars** produce their own light
- **Planets** are large objects which do not produce their own light but orbit stars
- **Natural satellites** include moons which can orbit planets
- **Artificial satellites**, such as the International Space Station, are man made structures which can orbit planets

The Universe → contains billions of → Galaxies → contain billions of → Stars → are orbited by → Planets, asteroids, and comets → planets may have → Moons

Types of rock

Type of rock	How it is formed	Properties	Uses
sedimentary rock	• sediment piles up in one place and, over many years, sticks together by compaction or cementation • **compaction:** weight of sediments above squeeze them into rocks • **cementation:** another substance sticks the sediments together	• **porous:** made of small grains stuck together so there are holes that water can pass through • soft: easy to break apart the sediments	building materials (e.g. *sandstone* and *limestone*)
igneous rock	• when liquid rock cools it turns into igneous rocks these are made of crystals locked tightly together • **magma:** liquid rock underground-cools slowly and forms large crystal • **lava:** liquid rock above the ground-cools quickly and forms small crystals	• **durable** and hard (difficult to damage): the crystals are locked tightly together • not porous: there is no space between crystals	pavement rail tracks
metamorphic rock	• other rocks under that Earth are heated and put under pressure • over time, these rocks become metamorphic	• not porous: there is no space between crystals	marble used for kitchens slate used for roofing tiles

The Solar system

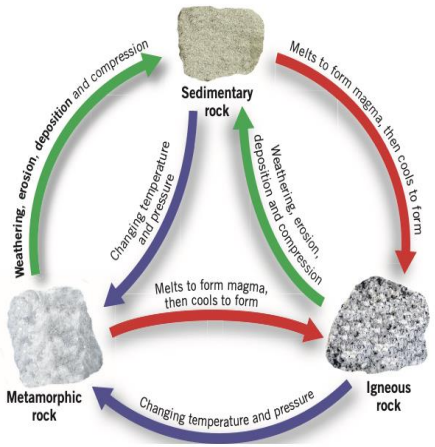
Our **solar system** consists of eight planets which orbit the Sun, four inner and four outer planets

Inner planets	Outer planets
Small and rocky planets ***(dwarf planets)***	*Gas giants*
Mercury, Venus, Earth, Mars	Jupiter, Saturn, Uranus, Neptune

- Between the inner and outer planets, between Mars and Jupiter, there is the **asteroid belt**
- The planets all orbit the Sun , but the path of their orbits are all slightly different, giving them the look of 'wandering' in the sky

The rock cycle

The **rock cycle** shows how rocks change and how their materials are recycled over millions of years



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Key words:

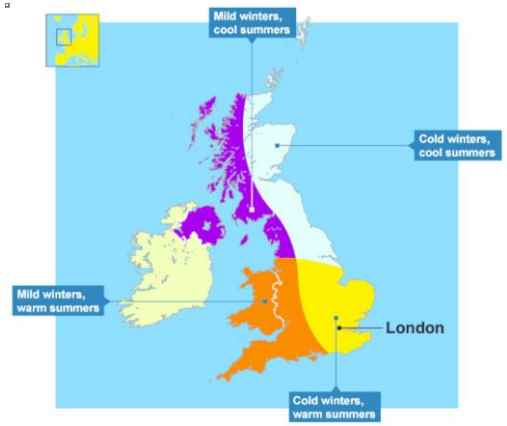
Key term	Definition
artificial satellite	A manmade spacecraft.
asteroid	Lumps of rock orbiting the Sun left over from when the Solar System formed.
ceramic	A compound such as a metal silicate or oxide that is hard, strong, and has a high melting point.
constellation	A collection of stars that make a pattern in the sky.
day	The time it takes a planet to make one full spin on its axis.
deposition	The settling of sediments that have moved away from their original rock.
durable	A property of a material meaning it is difficult to damage.
erosion	The breaking of a rock into sediments and their movement away from the original rock.
galaxy	Collection of stars held together by gravity. Our galaxy is called the Milky Way.
geocentric model	A model of the Solar System with the Earth at the centre.
heliocentric model	A model of the Solar System with the Sun at the centre.
igneous rock	Formed when liquid rock (lava or magma) cools or freezes. Their minerals are arranged in crystals. Examples are granite, basalt, and obsidian.
lava	Liquid rock that is above the Earth's surface.
light year	The distance light travels in a year (over 9 million, million kilometres).
magma	Liquid rock below the Earth's surface.
metamorphic rock	Formed from existing rocks exposed to heat and/or pressure over a long time. Examples are marble, slate, and schist.
Milky Way	Galaxy containing our Sun, Solar System, and billions of other stars and planets.
mineral	Chemicals that rocks are made from.
Moon	A rocky body orbiting the Earth, it is Earth's only natural satellite.
natural satellite	A moon in orbit around a planet.
night	The period on one section of the Earth, or other planet, when it is facing away from the Sun.
obsidian	An example of an igneous rock.
orbit	Path taken by one object moving around another larger object, such as a satellite around the Earth. Earth completes one orbit of the Sun every year.
phases of the Moon	Shape of the Moon as we see it from Earth because it reflects light from the Sun.
planet	Any large body that orbits a star in a Solar System.
porous	A porous material has small gaps that may contain substances in their liquid or gas states. Water can soak into a porous material.
rock cycle	Sequence of processes where rocks change from one type to another, over a timescale of millions of years.
season	Changes in temperature during the year as the Earth moves around its orbit.
sediment	Pieces of rock that have broken away from their original rock.
sedimentary rock	Formed from layers of sediment, which can contain fossils. Examples are chalk, limestone, and sandstone.
Solar System	The Sun and the planets and other bodies in orbit around it.
star	Bodies that give out light and that may have a Solar System of planets.
strata	Layers of sedimentary rock.
Sun	The star at the centre of our Solar System.
transport	Movement of sediments far from their original rock.
uplift	Uplift happens when huge forces from inside the Earth push rocks upwards.
weathering	The breaking down of rock into smaller pieces by physical, chemical or biological processes.

Year 7 Weather and Climate

Weather or Climate?

Weather - Short term conditions in the atmosphere e.g. rain, snow.

Climate - Long term conditions in the atmosphere – patterns of weather



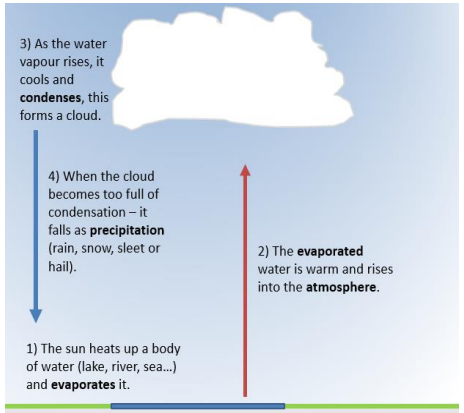
Why does it rain?

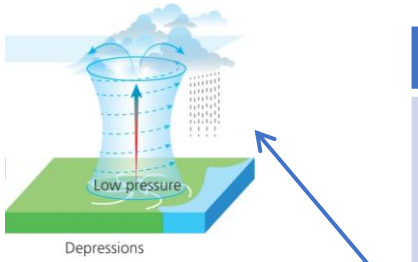
Water droplets are held in the air by warm air which is rising.

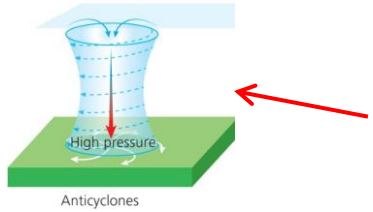
This process continues over time and the clouds become bigger and heavier as the water droplets join together.

The clouds become darker as more water droplets form.

Eventually the clouds become too heavy so the droplets fall to Earth as one of the forms of precipitation.







Anticyclones and Depressions

The air around you has weight, and it pushes down on the earth. This pressure is called **air pressure**.

The weather is strongly influenced by air pressure.

Depressions occur when air pressure is **low** (less than 1016 mb) this is because **warm air near the ground** is rising. **Depression** conditions lead to wetter and more turbulent weather.

Anticyclones occur when air pressure is **high** it is because **colder air in the atmosphere is sinking** towards the ground. **Anticyclone** conditions lead to drier, settled and warmer weather.

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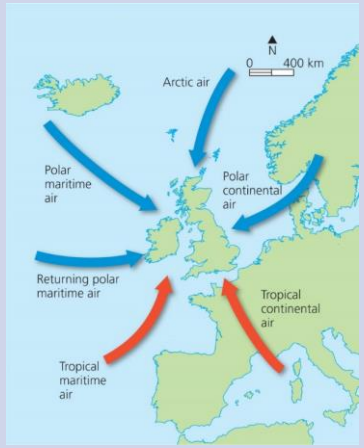
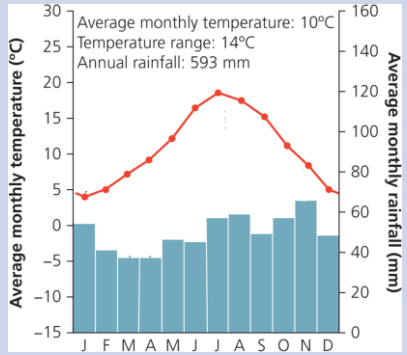
Climate of the UK

The UK is influenced by a number of air masses because it is almost halfway between the cold North Pole and hot Equator.



The climate of the UK is variable – it changes a lot, day to day. The UK has cool summers, mild winters and rainfall spread evenly throughout the year. The climate type is classified as temperate, which means we rarely experience extreme weather conditions e.g. serious storms.



Above is a climate graph which shows the climate of London over the course of a year.
We can see that the blue bars show rainfall from January to December – this ranges between 38mm and 65mm a year.
The red line shows temperature through the year – this ranges from 3°C and 20°C on average.

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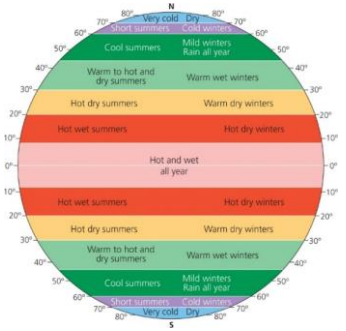
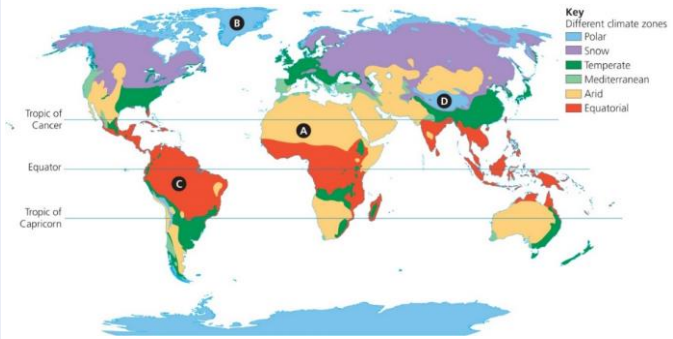
Climates across the world

Here in the UK we have a temperate climate but you will notice that depending on where in the world a country is in the world, there are different climates.



Places nearer the Equator are much warmer than places nearer the Poles. This is because of the angle at which the Sun shines. At the Equator, the Sun is at a high angle and shines directly at a small area making it very hot. As a result, equatorial areas remain hot and dry all year round.

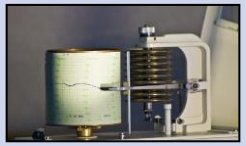


Factor	How does this affect climate?
Prevailing winds	Prevailing winds are the dominant wind direction in an area. The temperature of the wind and the amount of rainfall **partly depend on where the air has come from**.
Altitude	Temperatures decrease by about 1°C for every 100 m increase in height above sea level because at higher altitudes air becomes less dense so it is less able to retain heat.
Latitude	Places nearer the **Equator** are **warmer** than places nearer the Poles. At the **Equator**, the Sun is at a **high angle** and shines **directly** at a **small area** making it **very hot** this makes these areas **hot and dry all year round**.
Distance from the sea.	The sea takes longer to warm up than the land but keeps its heat longer. In the winter, the sea keeps coastal areas warm and in summer, it cools them down. The further away from the sea a place is, the wider the range of temperatures found there

How do we measure the weather?

The Stevenson screen is a slatted box (painted white to reflect the suns heat) which air passes through and allows us to accurately measure the temperature of air in the shade.

Thermometers are used to measure the current temperature.
The liquid inside the thermometer is very sensitive to temperature. When the temperature increases, the liquid expands and when the temperature drops the liquid contracts.
Temperatures is measured in degrees Celsius (°C)



Air pressure is measured by a **barometer**. A barometer works similarly to a thermometer. When air pressure increases a liquid (mercury or water) expands and contracts again when air pressure drops. Air pressure is measured in millibars.

Campbell Stokes Sunshine recorder is a glass sphere which concentrates the rays of the Sun onto a card which is scorched by the Sun. The card is marked off in hourly intervals. As the Sun travels across the sky, the rays scorch different sections of the card. This allows us to calculate the hours of sunlight.

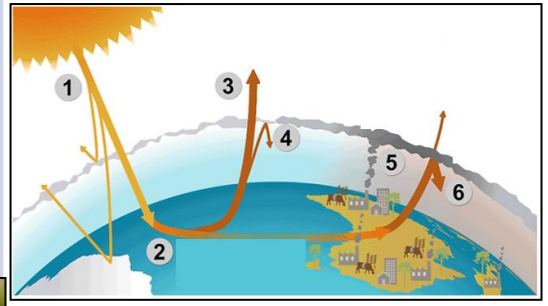
Anemometers are used to measure wind speed and direction.
Wind speed is recorded on an anemometer. The faster the wind blows the faster the cups on the anemometer turn. **Wind direction** is shown by a wind vane attached. The arrow points in the direction the wind is coming from.

Rainfall is measured using **rain gauge**. This is a metal cylinder is sunk part way into the ground. Any rain that falls is collected in a container and measured.

The Greenhouse Effect

The gases act as like the glass in a greenhouse – trapping the heat in and keeping the inside warm.

1. Heat radiates from the sun to the Earth.
2. The Earth absorbs (takes in) some heat.
3. Most heat is reflected back into space.
4. Greenhouse gases such as (carbon dioxide) in the atmosphere block some of that heat from leaving the atmosphere.
5. More and more greenhouse gases build up in the atmosphere because of human processes e.g. factories and car exhausts.
6. This means that an increasing amount of heat is trapped over time causing the greenhouse effect.



Human causes of climate change	Physical causes of climate change
More countries are using fossil fuels (coal, oil and gas) to make electricity. When these are burnt they release greenhouse gases.	Volcanoes erupt releasing large amounts of volcanic dust- this can lower the temperature.
Rice fields (growing rice) produces methane, which is a greenhouse gas.	Sometimes there are sunspots which sends more heat than usual.
Cars produce air pollution -gases such as carbon dioxide and nitrous oxide	The Earth is tilted and sometimes we are closer to the sun than others.
Rubbish, when its left to rot and break down and releases greenhouse gases.	Cutting down trees means there are less trees to take in greenhouse gases.

Extreme Weather UK:

Extreme weather is weather which is not the norm / exceptional / breaks (Met Office) records. It occurs relatively rarely and may last for longer than expected.

The Beast from the East

- 50cm of snow fell in some places but strong winds blew much of the snow into large 'drifts'.
- Red warnings were issued by the MET Office which means there is a 'risk to life'.
- Some areas in the UK experienced temperatures as low as -15°C.
- Thousands of drivers were stranded in vehicles, some having to sleep in their cars in freezing temperatures.
- Shelves were left empty as normal deliveries couldn't be made.

Summer 2018

- There were 1000 more deaths than average for that time of year – mainly elderly people.
- in June just 15 mm of rain fell across the country - 75 per cent less than usual.
- There was an 80% rise in last minute trip bookings for holidays over the three month period.
- Heat damage to road surfaces in Oxfordshire in 2006 cost an estimated £3.6m to repair.
- A wildfire on the moors on Winter Hill in Bolton raged for five days

Extreme Weather across the world

Wildfires – Summer 2018

- California – 38,000 deaths, 17 missing people, 3400 firefighters were sent out to fight the fire.
- Manchester – Schools closed, soldiers and firefighters were sent out to help.
- Greece – 74 deaths, 150 injured, People had to be rescued by boat as they were cut off.
- Sweden – 13 water bomber planes were brought in (each carrying 6000 litres of water) to put out the flames

Typhoon Haiyan

- Typhoon Haiyan formed in the Pacific ocean in November 2016 – the Philippines was the worst affected.
- Typhoon Haiyan was a category 5 tropical storm with winds reaching speeds of 195mph
- A total of 6340 people were killed
- A total of $2.9billion of damage was caused – Philippines is a NEE country so this will be difficult to repair quickly.

Climate change and extreme weather

If an extreme weather event is linked to warm weather (e.g. wildfires or heatwaves) then the frequency and intensity of these events will increase.
If an extreme weather event is linked to cold conditions then jt is likely that the frequency will decrease but when they do happen, it will be much more intense.

		Changes in frequency/ intensity so far?	Is this likely linked to climate change?	What is most likely in future?
UK	UK Warm Spells	Increase	Yes	Increase
	UK Cold Spells	Decrease	Yes	Decrease
	UK Heavy Rain	Increase	Inconclusive	Increase
	UK Dry Spells	No trend detected	Inconclusive	Increase (summer)
	UK Wind Storms	No trend detected	Inconclusive	Inconclusive
Global	Global Heatwaves	Increase	Yes	Increase
	Global Cold Events	Decrease	Yes	Decrease
	Global Heavy Rain	Increase	Yes	Increase
	Global Drought	Increase*	Yes*	Increase
	Global Tropical Storms	No trend detected	Inconclusive	Increase and decrease**

Knowledge Organiser: The Tudors

Armada – A fleet of warships	**Merchant** – A person whose job is to but and sell goods in order to make a profit.
Catholic – A follower of the Catholic religion, one of the main Christian religions.	**Monarch** – A king and queen. A country ruled by a king or queen is called a monarchy.
Crescent – A half-moon shape	**Treason** – A crime against the king or queen.
Dissolution – The act of officially breaking up an organisation. It is the word used the describe the time when Henry VIII closed all the monasteries in England and Wales.	**Reformation** – The name used to describe the change or reforms made to the sixteenth century, mainly by Henry VIII and his son later King Edward VI.
Divine right – The belief the kings and queens could do as they wished because they were appointed by God.	**Renaissance** – The period between the fourteenth and sixteenth centuries in Europe when there was a rebirth in art, literature and learning.
Excommunicated – Expelled from the Catholic church. A very serious religious punishment.	**Protestant** – A person who protested against the beliefs of the Catholic church. They believed in changing the ways in which God was worshipped.

1. Henry VIII

Henry VIII became king in 1509. His father had left him lots of money. He was a glamorous '**Renaissance** Prince' and wanted to be the greatest king England ever had.

He went to war with France in 1513 and built more warships. In 1536 he united Wales with England, and in 1541 he declared himself King of Ireland.
Henry VIII is most famous for divorcing his first wife, Catherine of Aragon, because she could not give him a male heir, and then marrying five times more!

2. Henry Vs the Pope

Henry needs a divorce from Catherine because he wants to marry Anne Boleyn.

Henry needs an heir and it needs to be a boy,

The Pope will not grant Henry a divorce because divorce was not allowed in the Catholic faith.

Henry decides to start his own church, the Church of England, so he can divorce his wife legally.

Henry simply imprisoned or executed anyone who didn't support him – these included any monks or nuns

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3. The English Reformation

Why did Henry dissolve the Monasteries?

Since the invention of the printing press, monasteries were no longer useful as monks wee no longer needed to copy out books	Henry VIII was afraid that he might have to fight expensive wars with other Catholic countries once he broke with Rome.
Monasteries were very wealthy and Henry VIII was short of money to pay for his expensive court.	Monks and nuns in some monasteries and abbeys no longer obeyed their vows and led immoral lifestyles.
The monks were loyal to the Pop and opposed Henry VIII becoming Head of the Church of England so that he could get a divorce.	Cromwell, who was in charge of Henry VIII's government, was a Protestant who didn't believe in the monk's way of life and the worship of relics.
Monasteries reminded ordinary people of the importance of the pope and encouraged them the see the Pope as their leader rather than Henry VIII.	Henry could use the income from the land he took from the monasteries to make himself a powerful king and to rebuild the English navy.
Every year the monasteries sent money to the Pope In Rome. This money could be spend in England instead.	The people who bought monastic land from henry VIII would support his new church and be loyal to him.
Some monasteries had hardly any monks left in them	Many people in England were listening to the new Protestant ideas from Germany.

4. Changing Church

Catholic Church	Protestant Church
The Priest stands with his back to the people.	Priest stands facing the congregation.
The church has lots of fancy ornaments	The church is very plain and has no ornaments or
The altar is very fancy.	The altar is very plain
The service is in Latin	The service is in English
The Bible is in Latin	The Bible is in English
There are stained glass windows.	The windows are simple.

5. Edward to Mary

•Edward VI was only a child when Henry VIII died. He was brought up a **Protestant**, but most people in England were still **Catholics**. The country was ruled by 'Protectors' on his behalf. They passed laws – with Edward's agreement - which made the Church Protestant, such as A Book of Common Prayer was introduced. It was written in English.

•Priests were allowed to marry.

From Edward VI to Mary I

England becomes a Catholic country again

Mary I was a devout Catholic and she tried to make England a Catholic country again: ->

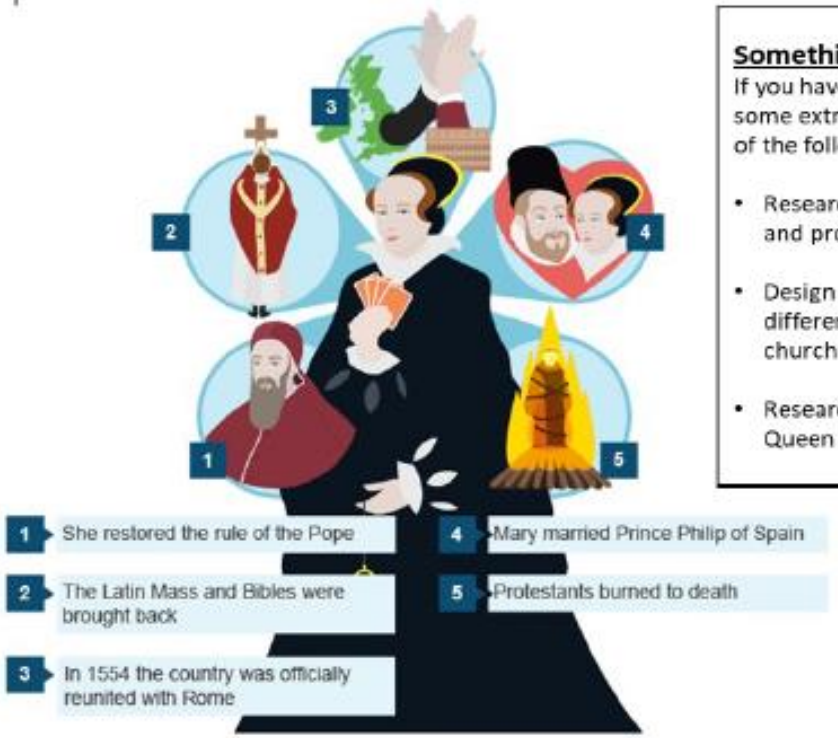
6. Spanish Armada Causes

In 1588, Philip II of Spain sent a massive fleet of Spanish ships (the Armada) to invade Elizabeth I's Britain because of...

- **Religion**: Philip II was a strong Catholic who strongly opposed protestants like Elizabeth.
- **Piracy**: For years, English sailors had been stealing gold and silver from Spanish ships.
- **Raids on Cadiz**: Sir Francis Drake had sailed into the Cadiz harbour and set fire to 30 of Spain's royal warships.
- **Plots**: Philip II was clearly involved in Catholic plans to bring Elizabeth down.

7. Spanish Armada Events

1. In 1588, Philip's Armada finally set sail.
2. When the Armada anchored at Calais, the English used fireships to scatter the Spanish fleet and then attack it at the Battle of Gravelines in July 1588.
3. The Armada was forced to abandon its invasion attempt and was destroyed by storms, which Philip I called the Protestant Wind, whilst trying to sail home round the north of Scotland.
4. Queen Elizabeth had a portrait painted to publicise her 'famous victory'.



Something Extra:

If you have enjoyed the topic and want to do some extra research you could have a go at any of the following tasks:

- Research Henry VII and The war of the roses and produce a fact sheet.
- Design a poster which informs people of the difference between the Roman Catholic church and The Protestant church.
- Research and make a detailed fact file about Queen Elizabeth.

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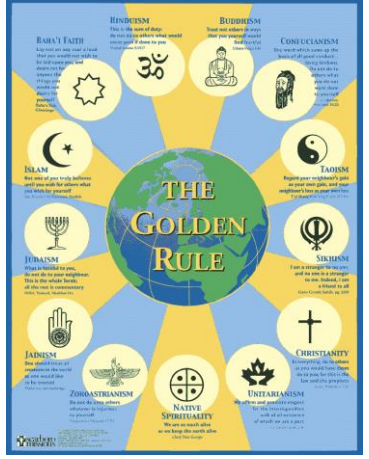
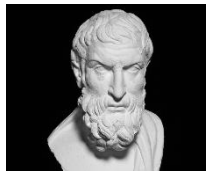
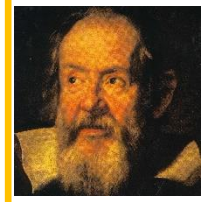
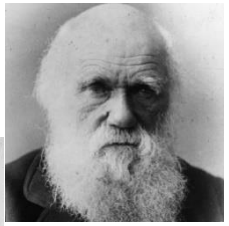
Humanist Thinkers

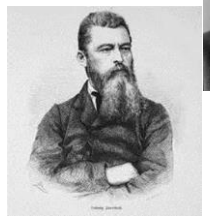
- Charles Darwin proposed the theory of evolution. Although he started as a Christian who believed that God was the driving force behind evolution, the more he researched and the more evidence he found of evolution, he realised that he could not see any traces of God in the world and therefore became an atheist.
- Copernicus lived in a very Christian world, where scientific thinking was not valued as people believed that all truth came from the Bible. He stated that, by looking at outer space, he could tell the earth revolved around the sun– rather than all planets revolving around the earth. This meant that the Bible, which suggested the Earth to be the centre of the universe, was wrong or shouldn't be taken literally.
- Galileo Galilei created a really good telescope that showed him the same as Copernicus and backed up the theory of a heliocentric model of the universe (with the sun at the centre) rather than a geocentric (Earth centred) model. He was sentenced to life imprisonment for disagreeing with the Bible.
- Einstein, although a devout Jew, was one of the most important scientific thinkers of recent times. He made lots of advances in our understanding of the physical world based on reason, evidence and experiments.
- Comte created Positivism, which suggested that only things that are provable should be considered scientific truth and that scientific truth should be used over religious truth. He start the religion of humanity which involved being good to one another and making intellectual progress.
- Hume said we know what is true from our experiences in the world and argued a lot against miracles. He said we should base truth on lots of evidence and experience– not exceptions and stories.
- Feuerbach said that humans invented God but that they were really describing (potential) human nature when they talked about God– Africans had black gods, Europeans white. God is supposed to be loving, forgiving, powerful and kind.

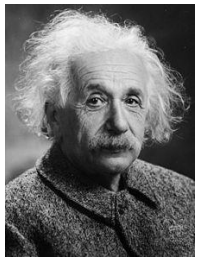


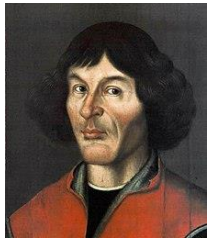


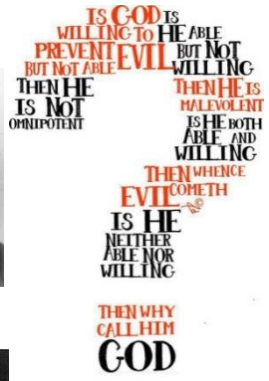












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THE PROBLEM OF EVIL

- Epicurus, a Greek philosopher, looked at the world and could not see God's existence and so he set out to prove that God did not exist.
- He said that if God were loving, he would try to stop humans (his creations) from suffering. If God were loving and did not want us to suffer, then he would use his power to stop our suffering. However, people suffer greatly every day, so therefore God must not exist .
- Religious people have tried to argue against this in many different ways but many people, like modern day Stephen Fry, will argue the same thing with more modern detail such as:
- God cannot exist because of the suffering we see in today's world. If the world developed naturally so many cruel or awful things would make sense– they are totally random! However, for example bone cancer in children or bugs who eat the eyes of infants in Africa just do not make sense in a world created by a benevolent, omnipotent, omniscient God.

RS Knowledge Organiser: Y7 HT5 - Humanism

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THE GOLDEN RULE– treat others how you want to be treated:

- Right to belief– everyone should be allowed to practice their religion or lack of religion equally as long as it does not impact on others
- Human rights– Humanists will often right for justice and that everyone should be treated equally. They often volunteer with organisations like Amnesty International or even work for animal rights. They do this because it can bring them happiness to help others.
- While they know this can be found in many religious texts as well, they think it is the best way to live but with no need for God to tell them that.

Moral Dilemma	A situation where there is more than one option of what might be moral	The Problem of Evil	Philosophical argument disproving the existence of God
Science	Study of the structure of the natural world based on evidence and proof	Empathy	Ability to understand and share the feelings of someone else
Evidence	Facts and proof that something is true or false	Respect	To consider the thoughts, beliefs and feelings of others
Atheism	Belief that God does not exist	Compassion	Sympathy and concern for the suffering of others
Agnosticism	Belief that proof in God cannot be proved either way	Dignity	Being worthy of respect and compassion
Critical Thinking	Analyse something, using evidence and reason	Responsibility	Obligation or need to do something
Materialism	Belief that nothing exists outside the material world	Altruism	A belief system which shows selfless concern for others
Reason	The power of the mind to think, understand and form judgements logically	Sentient Being	A thinking or feeling being (people, animals)
Proof	Evidence	The Golden Rule	Treat others how you want to be treated
Natural Evil	Suffering caused by nature– like natural disasters	Humanism	A way of living with morals but rejects the existence of a need for God
Moral Evil	Suffering caused by people– can be intentional or unintentional	Happy Human	Symbol for humanists
Ethics	What you believe to be right or wrong (morals)	Happiness	State of feeling pleasure and contentment
Morals	What you believe to be right or wrong (ethics)	Hedonism	Pursuit of physical pleasure (food, sex, etc.)
Omnipotent	All powerful	Eudaimonia	Live a fulfilling and satisfying life
Benevolent	All loving	Eulogy	Speech given about a deceased person at their funeral
Naming Ceremony	Celebration of the birth of a child	Celebrant	Person who leads a funeral, naming ceremony or wedding
Rites of Passage	Important life events (birth, coming of age, marriage, death)	Handfasting	Tying ribbons around the hands of bride and groom
Truce Bell	A bell married couples use to call for a truce	Evolution	Belief that life changed over many generations due to genetic mutations
Big Bang	The universe started when a hot, dense ball of matter, which was unstable, exploded and expanded into our universe today	Survival of the fittest	Those with the best genetic mutations will survive to have more offspring and pass on their genes
Single Celled Organisms	All life started on the world as just one celled organisms like bacteria	Natural Selection	Those with the best genetic mutations will survive to have more offspring and pass on their genes
Genetic Mutation	When there are changes in the genetic code of offspring from their parents	Enlightenment	A time in the 18th century focusing on intellectualism and reason, rather than religion
Rationalism	The practice of basing opinions and actions on reason and knowledge rather than on religious belief or emotional response	Burden of Proof	Obligation to prove what you believe
Freedom of Expression	Right to express your opinion, so long as it does not incite hatred or cause harm to someone else	Democracy	System of government where all citizens get a say through voting and elected representatives
Social Justice	When everyone in society get the same rights and are treated equally	Equality	All should be treated the same and given the same rights
Prejudice	Judging someone before you know them on their race, religion, etc.	Discrimination	Treating someone differently because of race, religion, sexuality, etc.

HA French Knowledge Organiser: Y7 HT5 - Food

LA NOURRITURE

Le pain - Bread

Une baguette - baguette

Les pommes de terre - potatoes

Les frites - chips

Le riz - rice

Les pates – pasta

Un sandwich – sandwich

Le fromage - cheese

La Viande – Meat

Le poulet - chicken

Le boeuf - beef

Le canard - duck

Le porc - pork

La dinde - turkey

Les saucisses – sausages

Le bacon – bacon

L'agneau - lamb

Les légumes - Vegetables

Les petits pois - peas

Les carottes - carrots

Le chou - cabbage

Le chou-fleur - cauliflower

Les oignons - onions

Le broccoli – broccoli

La salade – salad

Les tomates - tomtoes

Au café - At the café

Bonjour – Hello

Qu'est ce que tu voudrais?- What would you like?

Je voudrais – I would like

C'est tout? – is that everything?

L'addition s'il vous plait – The bill please

Merci – Thank you

Au revoir – Goodbye

Un peu – a bit, aussi – also, trop de – too many

Le fast-food

Le burger – burger

Les frites – chips

La pizza – pizza

Les chips – crisps

Le poisson – fish

Drinks

un café - coffee

un jus d'orange – orange Juice

une lemonade – a lemonade

un thé - tea

l'eau - water

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Dans la cuisine – In the Kitchen

L'assiette – plate

La forchette – fork

Le couteau – knife

La cuillere – spoon

La table – table

le four - oven

l'évier - sink

le micro-onde - microwave

le placard - cupboard

le tiroir - drawer

Sentence Builders

J'adore les…….. parce que c'est……..

Je n'aime pas les…….car ce sont…..

Selon moi – je crois que…….

A nourriture préférée est…….

Pour mon déjeuner je mange…..

A l'école je bois……

Les Verbes

Je mange – I eat

Je bois – I drink

Je prends – I get

J'ai – I have

Nous mangeons – We eat

Nous buvons – We drink

Additional Grammar

Tous les jours – everyday

Chaque jour – each day

Quelquefois – sometimes

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Tense Formation

J'ai mangé – I ate

Je mangeais – I used to eat

Je vais manger – I am going to eat

J'ai bu – I dranl

Je buvais - I used to drink

Je vais boire – I am going to drink.

LA French Knowledge Organiser: Y7 HT5 - Food

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Au café - At the café

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Je voudrais – I would like

C'est tout? – is that everything?

Une table pour …..personnes – A table for ….. people

L'addition s'il vous plait – The bill please

Merci – Thank you

Au revoir - Goodbye

Dans la cuisine – In the Kitchen

L'assiette – plate	le four - oven
La forchette – fork	l'évier - sink
Le couteau – knife	le micro-onde - microwave
La cuillere – spoon	le placard - cupboard
La table – table	le tiroir - drawer

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Le fast-food

Le burger – burger

Les frites – chips

La pizza – pizza

Les chips – crisps

Le poisson – fish

FACT – French meals traditionally last for up to six hours and can be up to 6 courses.

Le petit – déjeuner -= breakfast

Le déjeuner = dinner

Les Verbes

Je mange – I eat

Je bois – I drink

Je prends – I get

J'ai – I have

Nous mangeons – We eat

Nous buvons – We drink

Additional Grammar

Le, la, les - The for a masculine, feminine and plural item.

Du, de la, des – some for a masculine, feminine and plural item.

L' = the for a noun that starts with a vowel

De l' = some for a noun that starts with a vowel

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Drinks

Un thé – a tea

Un café – a coffee

Une lemonade – a lemonade

Un jus d'orange – orange juice

Un eau – a water

Un lait - milk

Key Ideas

آپ اپنے کے بارے میں کچھ بتائیں؟
آپ اپنے خاندان کے ساتھ ماضی اور حال کے تعلقات کے بارے میں بتائیں؟
اچھے دوست / سہیلی کی خوبیاں
عام طور پر آپ اپنے خاندان کے ساتھ کیا کرتے ہیں؟
آپ اپنے دوست یا سہیلی کے ساتھ آئندہ ویک اینڈ کو کیا کریں گے؟
کیا آپ شادی کرنا چاہتے / چاہتی ہیں کیوں / کیوں نہیں؟

I have a brother/sister who...	میرا ایک بھائی / بہن ہے جو کہ
my father/my mother/my friend (m/f) who is called...	میرے ابو / امی / دوست / سہیلی جس کو
my parents are called...	میرے والدین کے نام
a friend (m/f) is someone who...	میری سہیلی / دوست
a friend (m/f) is someone that I...	
we get on	ہمارے تعلقات بہت بہتر ہیں
I look like	میں لگتا / لگتی ہوں
we look like each other	ہم ہم شکل ہیں
I want to get married	میں شادی کرنا چاہتا / چاہتی ہوں
I don't want to get married	میں شادی نہیں کرنا چاہتا / چاہتی

Key Vocabulary

ring	انگوٹھی
spot, pimple,	تل۔
trust	بھروسہ۔
mind	ذہین۔
engagement	منگنی۔
twin	جڑواں۔
youth	جوان۔
nephew	بھانجا / بھتیجا۔
niece	بھانجی / بھتیجی۔
wedding	شادی

understanding	اعتماد / بھروسہ
bad-tempered	غصے والا / والی
amazing	عمدہ
stranger	اجنبی
proud	فخر
mad/crazy	بے وقوف
jealous	حاسد
wavy	ناقابل اعتماد
lively	زندہ دل

Key adjectives

Future	Past	Present
میں کروں گا / گی	میں نے کیا۔	میں کرتا ہوں۔
وہ کرے گا / گی	اس نے کیا	وہ کرتا / کرتی ہے
میں جاؤں گا / گی	میں گیا / گئی۔	میں جاتا / جاتی ہوں
وہ جائے گا / گی	وہ گیا / گئی۔	وہ جاتا / جاتی ہے۔
ہم جائیں گے	ہم گئے۔	ہم جاتے ہیں

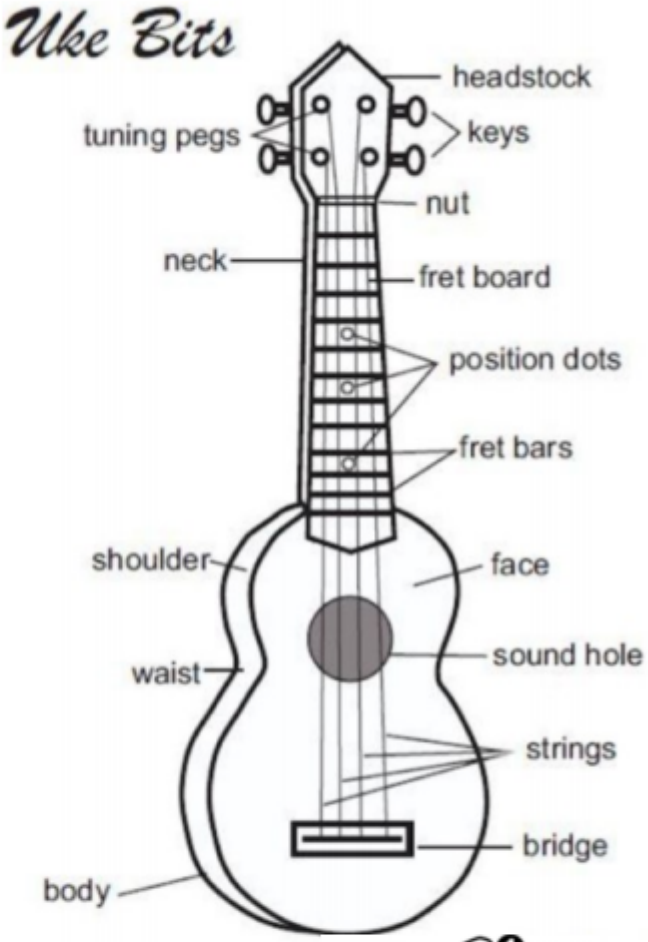
Tier 2 Vocabulary:

List – say or write things one after another
Participate – take part in something
Compose - to make
Record – make a version that can be looked at/listened to in the future
Recall – remember something
Explain – give your reasons
Demonstrate – show
Rearrange – change the place
Diagram – simple pictures or shapes

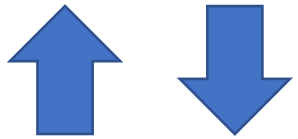
Section 1: Key Words

Articulation	Strumming: brushing fingers over the strings Picking/Plucking: plucking individual strings
Structure	The sections of a piece of music e.g. verse/chorus
Introduction	The section of music before the singing starts
Verse	A part of a song—the lyrics change for each verse but the melody stays the same.
Chorus	A part of a song—the lyrics and melody are repeated in each chorus.
Bridge	A section which links the verse to the chorus
Middle 8	A section in the middle of a song which contrasts the verse and chorus
Instrumentation	The instruments used in a piece of music. In pop music these would include drum kit, guitar, bass and piano
Melody	The main tune (usually sung by the singer)
Chord	Two or more notes played at once
Bass line	The lowest pitched part
Riff	A repeated pattern
Improvisation	Making it up as you go along
Melody and accompaniment	The typical texture used in pop songs
Lyrics	The words in a song

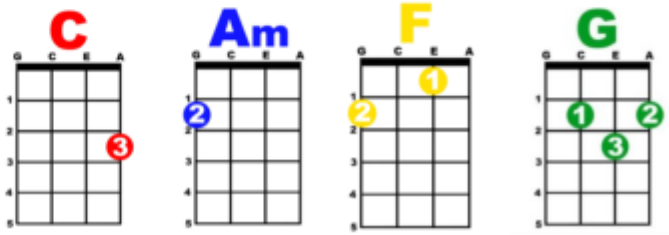
Section 2: Ukulele Diagram and finger positions



Section 3: Ukulele chords



Strum patterns; upwards or downwards.



Plectrum/pick

Knowledge Organiser: Year 7 Superhero Torch

Soldering a circuit.

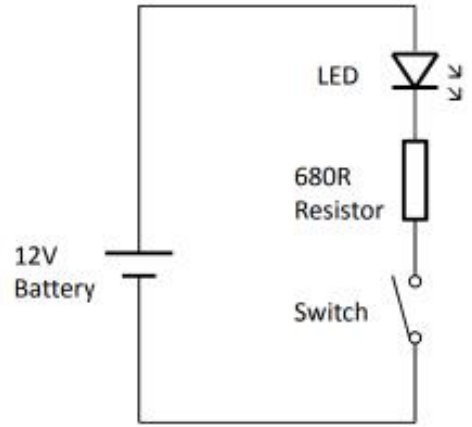
Creating a CAD/CAM superhero logo label using the CriCut.

LED : Light Emitting Diode

CAD : Computer Aided Design

CAM : Computer Aided Manufacture

How the Torch Works



The circuit diagram for the torch is shown above. It is a very simple circuit, powered by a 12 Volt battery.

The LED would be damaged if the current through it was not limited. A 680Ω resistor has been selected to limit the current through the LED. This allows approximately 10mA to flow through the LED so that it is at a good brightness.

Finally the on / off switch allows the circuit to be opened, when the LED will be off, or completed, when the LED wil be on.

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Resistor Values

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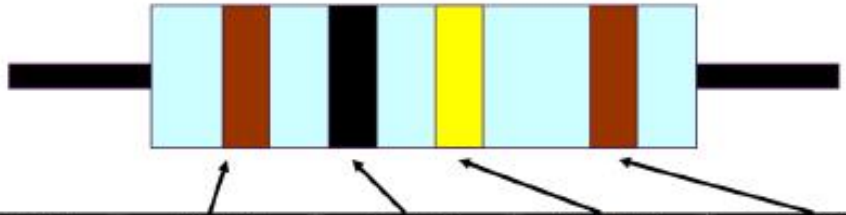
A resistor is a device that opposes the flow of electrical current. The bigger the value of a resistor, the more it opposes the current flow. The value of a resistor is given in Ω (ohms) and is often referred to as its 'resistance'.

Identifying resistor values



Band Colour	1st Band	2nd Band	Multiplier x	Tolerance
Silver			÷ 100	10%
Gold			÷ 10	5%
Black	0	0	1	
Brown	1	1	10	1%
Red	2	2	100	2%
Orange	3	3	1000	
Yellow	4	4	10,000	
Green	5	5	100,000	
Blue	6	6	1,000,000	
Violet	7	7		
Grey	8	8		
White	9	9		

Knowledge Organiser: Year 7 Superhero Torch

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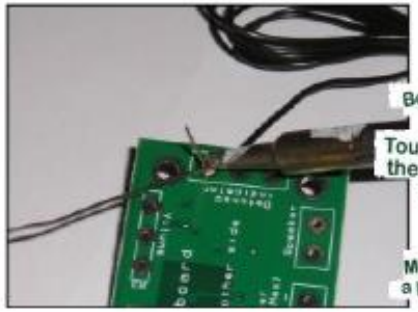
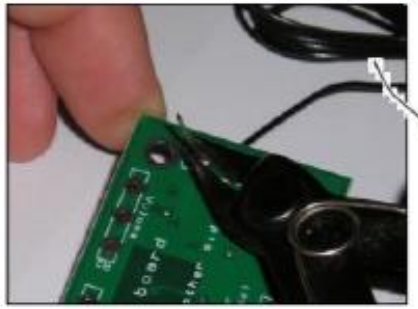
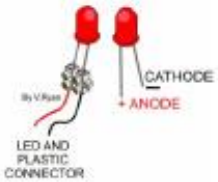
Soldering in Ten Steps

1. Start with the smallest components working up to the taller components, soldering any interconnecting wires last.
2. Place the component into the board, making sure that it goes in the right way around and the part sits flush against the board.
3. Bend the leads slightly to secure the part.
4. Make sure that the soldering iron has warmed up and if necessary, use the damp sponge to clean the tip.
5. Place the soldering iron on the pad.
6. Using your free hand, feed the end of the solder onto the pad (top picture).
7. Remove the solder, then the soldering iron.
8. Leave the joint to cool for a few seconds.
9. Using a pair of cutters, trim the excess component lead (middle picture).
10. If you make a mistake heat up the joint with the soldering iron, whilst the solder is molten, place the tip of your solder extractor by the solder and push the button (bottom picture).





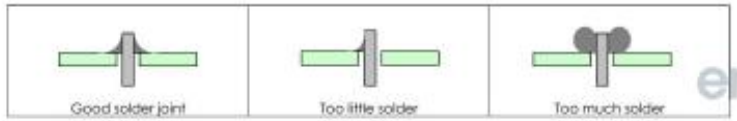


Light Emitting Diode..... are very rugged, they last a very long time and they are an optical source. (A LIGHT SOURCE)
LEDs produce red, green, yellow, or orange light. They are used in a range of products. Can you name any ?
Infared LEDs are also available although light from this type cannot be seen by the human eye. These are used in security devices.
LEDs are part of the diode family, consequently they must be connected the right way round or current will not pass through. They are usually protected by a resistor. (See DIODE information sheet).

A SELECTION OF THE MOST POPULAR COLOURS

ENLARGED LED - NOTICE THE LONG AND SHORT LEG

Solder joints



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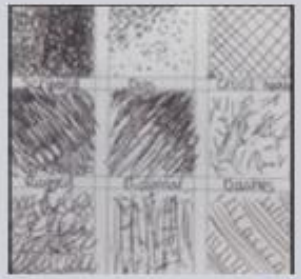
Knowlege Organiser: Year 7



1.Experiment with a range of mark making techniques in pen and pencil

2. Produce a range of observational studies of insects from secondary sources.

3. Experiment with coloured pencil shading and blending techniques

4. Complete a series of monoprints looking at insects.

5. Complete a colour theory A3 sheet using block paints.

6.Paint a small section inspired by your chosen artist.

7. Plan and design four thumbnail compositions.

9. Complete a final painting using paint, with at thoughtful and considered composition

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Year 7 Diet and Nutrition Knowledge Organiser

Check how much fat, sugar and salt is in your food

Remember that the amount you eat of a particular food affects how much sugars, fat, saturates and salt you will get from it.

Food Shopping Card

	Sugars	Fat	Saturates	Salt
What is HIGH per100g	Over 15g	Over 20g	Over 5g	Over 1.5g
What is DIUM per100g	Between 5g and 15g	Between 3g and 20g	Between 1.5g and 5g	Between 0.3g and 1.5g
What is LOW per100g	5g and below	3g and below	1.5g and below	0.3g and below

Stay hydrated

6 – 8 glasses a day

1. Base your meals on starchy foods
2. Eat lots of fruit and veg
3. Eat more fish – including a portion of oily fish each week
4. Cut down on saturated fat and sugar
5. Try to eat less salt – no more than 6g a day for adults
6. Get active and try to be a healthy weight
7. Drink plenty of water
8. Don't skip breakfast

Name of the Nutrient	Sources	Function	
Carbohydrates (energy giving food)	Rice, potato, wheat, sugar	Provides energy	
Fats (energy giving food)	Butter, ghee, milk, cheese	Gives more energy compared to carbohydrates	
Vitamins and Minerals (protective food)	Fruits and vegetables	Required for normal growth and development	
Proteins (body building food)	Milk, eggs, meat, fish, soybean	Helps in building and repair of body	

Foods high in fat, salt and sugars should be eaten less often and in smaller amounts.

= 6g

60 active minutes

do you get yours everyday?

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Year 7 Safety and Hygiene Knowledge Organiser

H Tie your **h**air back. Wash your **h**ands.

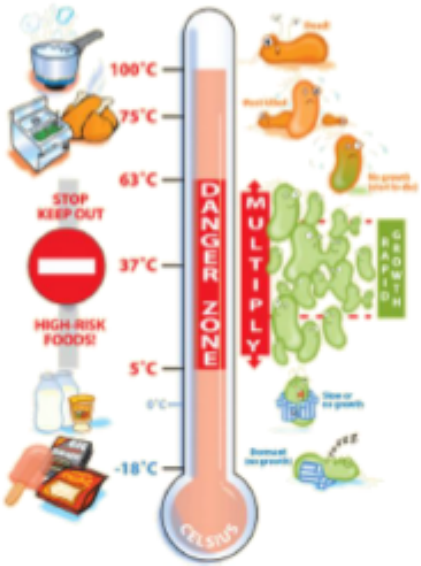
A Put an **a**pron on.

T Clean your **t**able with antibacterial spray.

T Collect a **t**ray to keep all your ingredients together.

I Collect all the **i**ngredients you need.

E Collect **e**quipment you need; prepare any tins/baking sheets.



DEAD! – Bacteria is destroyed

TOO HOT – Bacteria starts to die

PERFECT – Bacteria grows rapidly

SLOW DOWN – most bacteria grow slowly

DORMANT – Bacteria stops growing but is not dead

Cleaning

- Cleaning the kitchen is important to keep food safe and prevent bacteria from spreading.
- 'Clean as you go' means you make sure that you clean the area and utensils you have been working in or with, as you prepare food.
- Always wash worktops before food preparation begins.
- Wipe up any spilt food straight away.
- Do not put ready to eat food, such as bread, salad or fruit on a worktop or chopping board that has been touched by raw meat, unless it has been washed thoroughly first.

Cooking

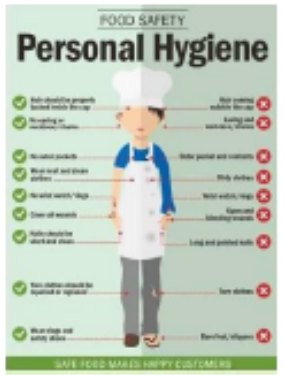
- Bacteria will begin to die when the temperature rises above 60°C.
- Cooking or reheating food properly kills most of the harmful bacteria which can cause food poisoning. Food should be cooked until it is steaming hot (at least 70°C).
- Some foods change colour when they are cooked.
- Always pre-heat the oven before cooking and follow the cooking times on labels or in recipes.
- Never reheat cooked food more than once and make sure to reheat until it is piping hot all the way through.

Chilling

- Fridges should be kept at a temperature below 5°C - this slows the growth of bacteria, helping to reduce the risk of food poisoning.
- Food in the fridge should be stored: Top shelf: Dairy products; Next shelf: Cooked meats; Next shelf: Raw meats (covered to prevent drips); Bottom: Salad and vegetables.
- You do not put hot food straight into the fridge as it will raise the temperature potentially causing bacterial multiplication in other foods.
- Ensure the freezer is working at a temperature below -18 °C.
- Never refreeze defrosted food, as this increases the growth of bacteria.

Cross-contamination

- Cross contamination occurs when bacteria are transferred from food or surface to another.
- Contamination can be:
  - Direct – where food touches or drips onto another food transferring bacteria
  - Indirect – where bacteria on hands, work surfaces or equipment are spread to food.
  - Pets and pests should be kept away from food and food preparation areas.
- Roll long sleeves up and wear a clean apron to stop bacteria from being transferred from your clothes to the food.



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Knowledge Organiser: Yr7 Textiles—Henri Matisse Pencil case—Theory

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Key words/ terms:	
Tie dye	A resist method of dying (colouring) fabric to create surface pattern
Applique	A decorative technique where additional shaped fabrics are sewn on to create a pattern or decoration
Embellishment	An additional decorative feature. I.e: beads, sequins, ribbons etc.
Embroidery	Stitches that create a pattern/design on the surface of fabric – by hand or machine
Seam Allowance	The distance from the edge of the fabric to where you sew the fabric together
Pressing	Use of a hot iron to add creates or folds in fabric, usually to create a neat finish to hems and seams
Hem	The folded and sewn edge of fabric
Seam	Where two pieces of fabric join together by stitching
Pin	A thin piece of metal with a flat and pointed end to temporarily join things together
Needle	A thin piece of metal with a point at one end and an 'eye' at the other for thread to attach – then used to sew
Zip	A fastening that can be used to temporarily join two pieces of fabric together
Sewing	The process of passing thread through a fabric to join together or add decoration
Thread	A piece of spun polyester or cotton to sew with
'Bagging out'	The process of sewing the 'right sides' of fabrics together and then turning inside-out to hide the seams, hems and raw edges
Cotton poplin	A fabric made by weaving natural cotton fibres together
Felted fabric (felt)	A non-woven fabric where woollen fibres are pressed and matted together
Colourway	A range of colours that are used within a design, often showing a theme

COMPLEMENTARY

Uses a pair of colours that are opposite each other on the colour wheel. The pairs are: Green/Red; Blue/Orange; Yellow/Purple.

Design Process	
Design brief	A statement outlining what is to be designed and made
Artist research	Sourcing information on a specific artist, designer or movement to help with design work
Design ideas	A range of potential solutions to the problem
Final design	A presentation drawing of chosen idea
Production diary	A record of the making/ practical work
Evaluation	Reviewing strengths and weaknesses of final product and design work

Useful links/ further reading:
10 Amazing Facts about French Painter Henri Matisse - Bing video
Henri Matisse for kids part 1 - YouTube

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Knowledge Organiser: Yr7 Textiles—Henri Matisse Pencil case—Practical

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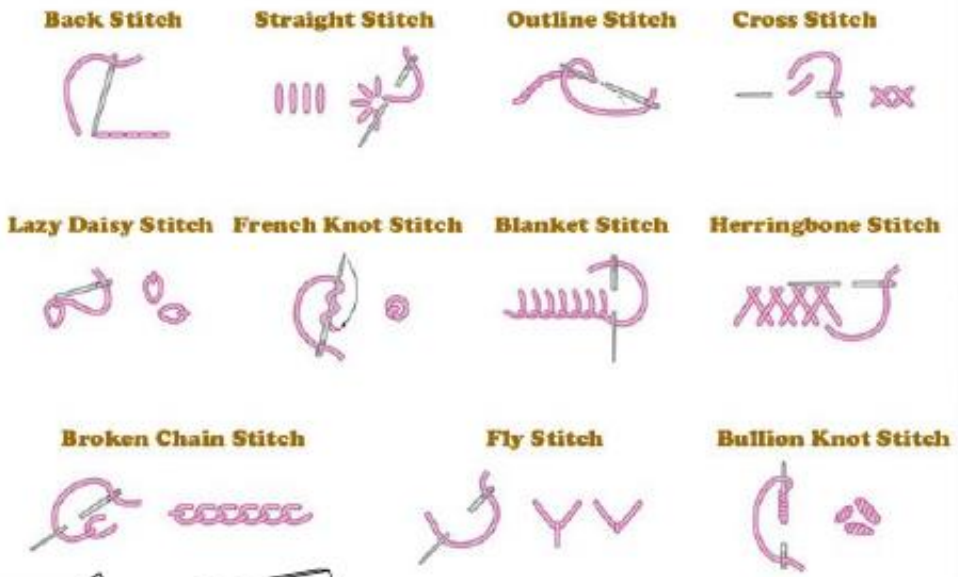
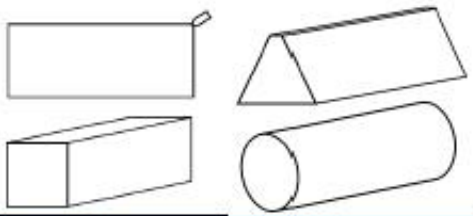
Tie Dye

Hand Embroidery Stitches



Technical skills covered:
Tie Dye
Felt applique (hand)
Embellishment (embroidery, beading, etc.)
Fabric cutting/ use of patterns
Seam Allowances
Ironing/ pressing hems
Inserting zip
'Bagging out'



Useful links/ further reading:

Hand Embroidery for Beginners - Part 2 | 10 Basic Stitches | Handi-Works #52 - YouTube

50 Hand Embroidery Stitches: Beginners Tutorials by HandiWorks - YouTube

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What we will use:	
Practical Equipment	**Materials**
Fabric dye	Cotton poplin
Pins	Felt
Hand needles	Closed-end zip
Fabric scissors	Embroidery thread
Iron/ Ironing board	
Pattern pieces	

Physical Components of Fitness (FAMMSB)

Skill components of Fitness (ABCPR)

PRINCIPLES OF TRAINING

FITT PRINCIPLES

FREQUENCY

HOW OFTEN YOU EXERCISE

E.G. 3 X PER WEEK

INTENSITY

HOW HARD YOU EXERCISE

E.G. 60-85% OF MAXIMUM HEART RATE (MHR)

TIME

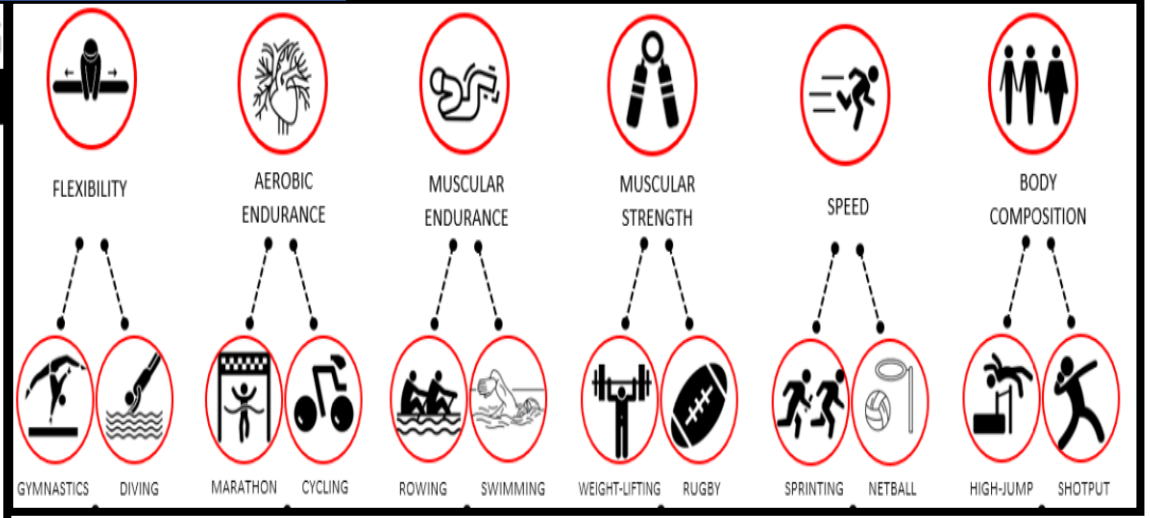
HOW LONG YOU EXERCISE FOR

E.G. A 40-MINUTE EXERCISE SESSION

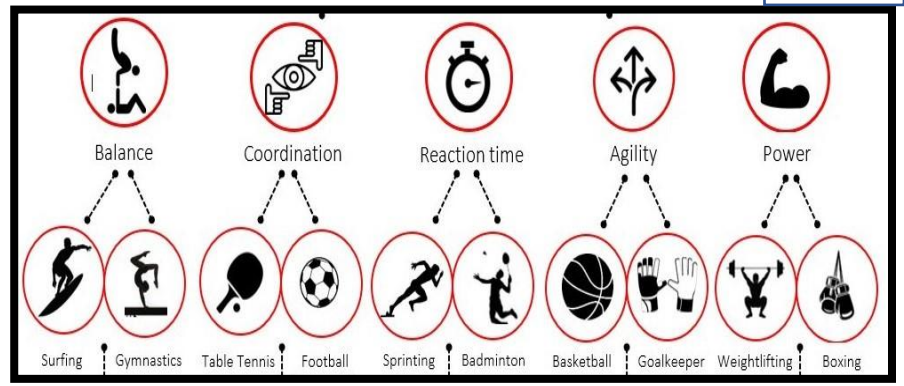
TYPE

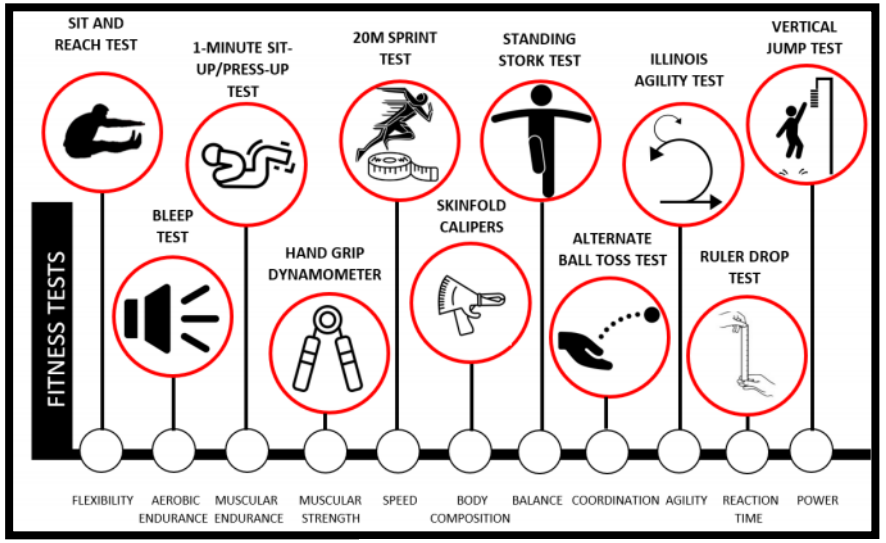
WHAT KIND OF EXERCISE YOU DO

E.G. CIRCUIT OR PLYOMETRICS



Method of Training	Component of Fitness
Continuous Training	Aerobic Endurance
Fartlek	Aerobic Endurance
Interval Training	Aerobic Endurance/Speed
Circuit Training	Aerobic Endurance/Muscular Strength/Muscular Endurance
Hollow Sprints	Speed
Accelerative Sprints	Speed
SAQ	Speed/Agility
Plyometrics	Power/Muscular Strength
Resistance Training	Power/Muscular Strength/Muscular Endurance
Free Weights	Power/Muscular Strength/Muscular Endurance
Static Stretching	Flexibility
Dynamic Stretching	Flexibility
Proprioceptive Neuromuscular Facilitation (PNF)	Flexibility





THE MATHS

WHAT HEART RATE (HR) DOES A 38 YEAR OLD NEED TO BE WORKING BETWEEN TO BE EXERCISING AEROBICALLY?

REMEMBER AEROBIC ZONE = 60-85% MAXIMUM HEART RATE (HR MAX)

STEP 1 - WORK OUT MAX HR

220 – 38

ANSWER = **182**

→

STEP 2 - WORK OUT 60% OF HR MAX

182 X 0.6 (60/100)

ANSWER = 60% = **109**

→

STEP 3 - WORK OUT 85% OF HR MAX

182 X 0.85 (85/100)

ANSWER = **155**

→

AEROBIC TRAINING HR ZONE FOR A 38 YEAR OLD:

109-155 bpm

Borg Scale – Rate of Perceived Exertion (RPE) – value x 10 to find out heart rate.

Max Heart Rate – 220 - age

6	No exertion
7	
8	
9	
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard (heavy)
16	
17	Very hard
18	
19	
20	Maximal exertion