



Rayner Stephens
HIGH SCHOOL

YEAR 9

KNOWLEDGE ORGANISERS

Autumn Term 2024/25



Year 9 English 'Salt To The Sea' Unit One Knowledge Organiser

Key Terms and Vocabulary:

1	Authorial Intent	The person who writes a piece of text will always have an aim or something they want to achieve, this is their authorial intent
2	Embodiment/ Embodies	To represent an idea/ thought/ feeling/ concept in a human form. Characters in the novel are embodiments of specific ideas.
3	Context	The background information that helped to inspire the author to craft the novel.
4	Flaw	Where something (or someone) isn't perfect and has something wrong with it (or them). Each character in the novel has a flaw that helps to drive them forward
5	Multifaceted	To have many different sides or parts, people can be multifaceted, which means that they aren't straightforward to understand, they can seem heroic, while also having parts of their character that are evil.
6	Refuge	the state of being safe or sheltered from pursuit, danger, or difficulty.
7	Salvation	preservation or deliverance from harm, ruin, or loss.
8	Perspective	a particular attitude towards or way of regarding something; a point of view.
9	Marginalisation	treatment of a person, group, or concept as insignificant or peripheral.
10	Symbolism	a word or object in a story representing something more than what it literally is.
11	Foreshadowing	be a warning or indication of (a future event).
12	Thematic development	All stories have big ideas in them, these are called themes, sometimes these themes can be quite complicated and can change and develop throughout the novel.

13. Context and Intent

Intent:

- A tribute to the people of Lithuania, Poland, and East Prussia.
- Replicate the experiences of individuals in more marginalised groups of history.
- Show how humanity can prevail, even in the darkest hours.
- Raise awareness of the disaster on the Wilhelm Gustloff

Context:

Historical Fiction about the Wilhelm Gustloff and WW2 Wilhelm Gustloff: A German military transport ship which was sunk in 1945 by Soviet submarine while evacuating civilians and military personnel from East Prussia and the German-occupied Baltic states. An estimated 9,00 people died.

14. Thesis statements:

Definition: Introductory statement to an extended piece of writing about the presentation of a character or a theme in a story. An opportunity to outline your impressions and the places the theme is shown which you will go on to write about

Character:

Author's surname + academic verb + character name + information about the character + three adjective impressions.

Theme:

Author's surname + academic verb + theme + purpose of the theme.

15. Multiple Interpretation Phrases

Step One: Choose a quotation

Step Two: Consider at least two inferences of key words, character presentation or techniques.

Step Three: Write up with Place, character, quotation and then exploration using linking phrases below:

Not only, but also...

Furthermore...

A second interpretation might be ...

16. Key characters:

Joana	Joana is primarily motivated by guilt. She is a young Lithuanian nurse, who repatriated to Germany when Soviet forces threatened to overtake the country. She blames herself for the capture and imprisonment of her cousin, Lina, and so dedicates herself to helping others'
Florian	Florian is driven forward by a sense of his own fate and destiny. He is a Prussian artist, who for many years worked with Erich Koch and Dr. Lange to restore European art that (unbeknownst to Florian) had been stolen by the Nazis.
Emilia	Emilia's driving emotion is shame. Emilia is Polish, but has spent the past several years in the German village of Nemmersdorf and both her mother and father have died. Emilia has experienced tremendous trauma during the war.
Alfred	Alfred's driving emotion is fear: fear of being inferior, fear of rejection. Alfred begins the book as a pompous, if misunderstood German soldier whose character deteriorates as we read on. He has no friends, and very little loyalty to anyone but himself, and Hitler.

17. Plot Summary:

The story takes place in East Prussia in 1945. The book follows a group as they evacuate their home countries.

Throughout the journey to the evacuation ships, the refugees get to know one another and grow closer as a group. It is revealed that Emilia is eight months pregnant from an assault by Russian soldiers; Florian, the restoration artist, is on the run for stealing a piece of art of the Amber Room; and Joana feels responsible for some of the deaths of her family. By the time the group reaches the evacuation ships, their relationships are solidified. It is clear that Joana and Florian have fallen in love, and Emilia sees Florian as a symbol for good men.

At this point, the group comes into contact with Alfred who is their only hope for getting tickets to the boats. They board the Wilhelm Gustoff when Emilia gives birth.

Russian torpedoes hit the Wilhelm Gustoff. Quickly, the ship sinks and thousands die. However, Joana, Florian, and Emilia's baby are able to escape on a lifeboat along with a boy named Klaus. Emilia, on the other hand, finds herself on a different lifeboat with Alfred, the Nazi who attempts to kill her.

Ultimately, both Emilia and Alfred perish.

The book concludes with a glimpse into the future. Joana and Florian live in the United States. They have Emilia's baby, the boy Klaus, and a child of their own.

Year 9 Mathematics – Knowledge Organiser – Brackets, Equations and Inequalities – Autumn Term

Key Vocabulary

1	Simplify	Grouping and combining similar terms.
2	Substitute	Replace a variable with a numerical value.
3	Equivalent	Something of equal value.
4	Coefficient	A number used to multiply a variable.
5	Product	Multiply terms.
6	Highest Common Factor	The biggest factor or number that multiplies to give a term.
7	Inequality	Compares values showing if one is greater than, less than or equal to another.
8	Expression	A sentence with a minimum of two numbers and one mathematical operation.
9	Equation	A statement that two things are equal.
10	Term	A single number or variable.
11	Identity	An equation where both sides have variables that cause the same answer. Includes the \equiv symbol.
12	Formula	A rule written with all mathematical symbols. E.g.: area of a rectangle. $a = b \times h$

13 Forming Expressions


For unknown variables, a letter is used in its place.

More than – **add** Less than – **subtract**

E.g.: 4 more than t \longrightarrow $t + 4$
 8 less than k \longrightarrow $k - 8$

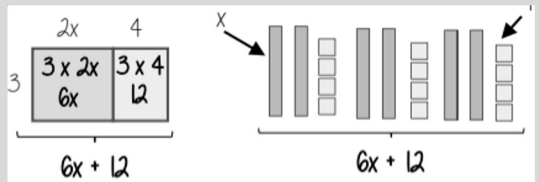
Only similar terms can be grouped together.

Only similar terms can be grouped together
 e.g. Find the perimeter of this shape
 (Perimeter = length around outside of shape)

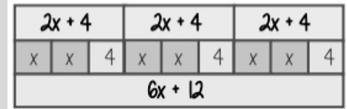
t  $t + 2t + 1 + t + 2t + 1 \longrightarrow 6t + 2$

14 Multiply Single Brackets

$3(2x + 4)$ can be represented as:




Different representations of $3(2x+4) = 6x + 12$



15 Factorise into a Single Bracket

$8x + 4$

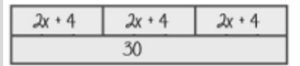


The two values multiply together (also the area) of the rectangle.


$8x + 4 \equiv 4(2x + 1)$

$8x + 4 \equiv 2(4x + 2)$ This is also factorised, but the HCF has not been used

16 Solve Equations with Brackets




$3(2x + 4) = 30$



$6x + 12 = 30$

-12 -12



$6x = 18$

-6 -6

17 Simple Inequalities

$<$ less than \leq Less than or equal to
 $>$ More than \geq More than or equal to

$x < 10$
 Say this out loud "x is a value less than 10"

$10 > x$
 Say this out loud "10 is more than the value"

Note:
 $x < 10$ and $10 > x$ represent the same values

$x + 2 \leq 20$
 "my value + 2 is less than or equal to 20"

$x \leq 18$
 The biggest the value can be is 18

18 Form and Solve Inequalities

Two more than treble my number is greater than 11

Form $x \rightarrow x \times 3 \rightarrow +2 \rightarrow 11$

$3x + 2 > 11$

Solve $x \leftarrow -3 \leftarrow -2 \leftarrow 11$

$x > 3$

Check
 This would suggest any value bigger than 3 satisfies the statement
 $3 \times 3 + 2 = 11 \checkmark$ $10 \times 3 + 2 = 32 \checkmark$

Year 9 Mathematics – Knowledge Organiser – Fractions and Percentages – Autumn Term

Key Vocabulary

1	Percent	Parts per 100 – written using the % symbol.
2	Decimal	A number in the base 10 number system. Numbers to the right of the decimal point are called decimals.
3	Fraction	A fraction represents how many parts of a whole value you have.
4	Equivalent	Of equal value.
5	Reduce	To make smaller in value.
6	Growth	To increase / to grow.
7	Integer	Whole number, can be positive, negative or zero.
8	Invest	Use money with the goal of it increasing in value over time (usually in a bank).

9 Convert Fractions, Decimals and Percentages

$\frac{70}{100}$ → This also means 70 - 100 → 70 out of 100 squares → 70 hundredths → - 70%

Using a calculator → $\frac{70}{100} = 0.7$ → 70 hundredths = 7 tenths = 0.7

Be careful of recurring decimals
 e.g. $\frac{1}{3} = 0.3333333$
 $\frac{2}{3} = 0.6666666$
 The dot above the 3

This will give you the answer in the simplest form → $\times 100$ converts to a percentage

10 Fraction / Percentage of an Amount

Find $\frac{3}{5}$ of £60

$\frac{3}{5}$ of £60 = £36

Remember

$\frac{3}{5} = 60\%$
 10% of £60 = £6
 50% of £60 = £30
 60% of £60 = £36

Remember

$\frac{3}{5} = 60\% = 0.6$
 60% of £60 = $0.6 \times 60 = £36$

11 Convert Fractions, Decimals and Percentages

100 hundredths (10 tenths) = 100%
 40 hundredths (4 tenths) = 40%
 140 hundredths (14 tenths) = 140%

$100\% + 40\% = 1 + 0.40 = 1.40$

12 Percentage Multipliers

Percentage decrease: Multipliers

100% → Decrease by 58% → 42%

$100\% - 58\% = 42\%$ ← Multiplier Less than 1
 $100 - 58 = 42$

Percentage increase: Multipliers

100% → Increase by 12% → 112%

$100\% + 12\% = 112\%$ ← Multiplier More than 1
 $100 + 0.12 = 1.12$

13 Express as a Percentage

Express as a % - Non-calculator

Percent – per hundred

$\frac{7}{10}$ → 7 per every 10 are orange → This means that 70 per every 100 are orange → $\frac{70}{100} = 70\%$

$\frac{27}{50}$ → 27 per every 50 shaded → 54 per every 100 shaded → $\frac{54}{100} = 54\%$

Denominator 100 Equivalent fractions

Express as a % - Calculator

Rosie

$\frac{13}{30}$ → $\frac{13}{30}$ → $\times 100$ → $43.3333... = 43\%$

This is the same as $\frac{13}{30}$

Can't use equivalence easily to find 'per hundred'

Decimal percentages are still a percentage.

14 Percentage Change

I bought a phone for £200. A year later sold it for £125.

100%
 £200
 £125

Percentage loss

$\frac{75}{200} \times 100 = 37.5\%$

All values of change compare to the ORIGINAL value

$\frac{\text{Difference in value}}{\text{Original value}} \times 100$

Year 9 Mathematics - Knowledge Organiser - Standard Index Form – Autumn Term

Key Vocabulary:

1	Standard Index Form	A system of writing very big or very small numbers. Always written in the form $A \times 10^n$ where A is at least 1 and less than 10, and n is a whole number.
2	Commutative	An operation is commutative if changing the order does not change the result. E.g. $2 + 3 = 5$ is commutative but $3 - 2 = 1$ is not because $2 - 3 = -1$
3	Base	The number that gets multiplied by a power.
4	Power/ Exponent	The exponent – this is written as a small number to the right and above the base number. It indicates how many times to use the number in the multiplication. E.g. the 5 in 2^5 .
5	Index/Indices	The power or exponent. E.g. 3^2 is the index number.
6	Negative	A value below zero.
7	Reciprocal	The reciprocal of a number is 1 divided by the number. E.g. the reciprocal of 2 is $\frac{1}{2}$ (half) It can be shown with a little “-1” as the index number $4^{-1} = \frac{1}{4} = 0.25$
8	Root	The root of a number is a number that when multiplied by itself produces the original number. E.g. The square root of 49 ($\sqrt{49}$) is 7 because $7 \times 7 = 49$ The cube root of 27 ($\sqrt[3]{27}$) is 3 because $3 \times 3 \times 3 = 27$
9	Place Value	Place value is the value of a digit depending on its position within a number. E.g. in 378, there are 3 hundreds, 7 tens and 8 ones.

10 Positive Powers of 10

Positive powers of 10

1 billion – 1 000 000 000

$$10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^9$$

$$\text{Addition rule for indices } 10^a \times 10^b = 10^{a+b}$$

$$\text{Subtraction rule for indices } 10^a \div 10^b = 10^{a-b}$$

11 Numbers Greater than 1 in Standard Form

Standard form with numbers > 1

Any number between 1 and less than 10 $\rightarrow A \times 10^n$ ← Any integer

Example

$$3.2 \times 10^4$$

$$= 3.2 \times 10 \times 10 \times 10 \times 10$$

$$= 32000$$

Non-example

$$0.8 \times 10^4$$

$$5.3 \times 10^{0.7}$$

12 Negative Powers of 10

Negative powers of 10

0.001	10^0	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
$1 \times \frac{1}{1000}$	10^1	10^0	10^{-1}	10^{-2}	10^{-3}
1×10^{-3}	0	0	0	0	1

Any value to the power 0 always = 1

Negative powers do not indicate negative solutions

13 Compare and Order in Standard Form

Order numbers in standard form

$$6.4 \times 10^{-2} \quad 2.4 \times 10^2 \quad 3.3 \times 10^0$$

$$1.3 \times 10^{-1}$$

Look at the power first will the number be > or < than 1

$$0.064$$

$$240$$

$$1$$

$$0.13$$

Use a place value grid to compare the numbers for ordering

14 Mental Calculations with Numbers in Standard Form

Mental calculations

$$6.4 \times 10^2 \times 1000 \quad \text{Not in Standard Form}$$

$$= 6.4 \times 10^2 \times 10^3 \quad \text{Use addition for indices rule}$$

$$= 6.4 \times 10^5$$

$$8 \times 10^5 \times 3$$

$$= 24 \times 10^5 \quad \text{Not in Standard Form}$$

$$= 2.4 \times 10^1 \times 10^5 \quad \text{Use addition for indices rule}$$

$$= 2.4 \times 10^6$$

$$(2 \times 10^3) \div 4 \quad \text{Divide the values}$$

$$= (2 \div 4) \times 10^3$$

$$= 0.5 \times 10^3$$

Remember the layout for standard form

Any number between 1 and less than 10 $\rightarrow A \times 10^n$ ← Any integer

15 Addition and Subtraction

Addition and Subtraction

Tip: Convert into ordinary numbers first and back to standard form at the end

$$6 \times 10^5 + 8 \times 10^5$$

$$= 600000 + 800000$$

$$= 1400000$$

$$= 1.4 \times 10^6$$

More robust method
Less room for misconceptions
Easier to do calculations with negative indices
Can use for different powers

16 Multiplication and Division

Multiplication and division

$$\frac{1.5 \times 10^5}{0.3 \times 10^3}$$

Division questions can look like this

For multiplication and division you can look at the values for A and the powers of 10 as two separate calculations

$$(1.5 \times 10^5) \div (0.3 \times 10^3)$$

$$(1.5 \div 0.3) \times 10^5 - 10^3$$

Revisit addition and subtraction laws for indices – they are needed for the calculations

$$= 5 \times 10^2$$

Addition law for indices

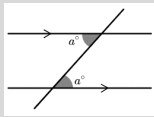
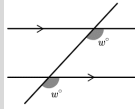
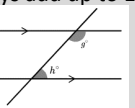
$$a^m \times a^n = a^{m+n}$$

Subtraction law for indices

$$a^m \div a^n = a^{m-n}$$

Year 9 Mathematics – Knowledge Organiser – Angles in Parallel Lines and Polygons – Autumn Term

Key Vocabulary:

1	Parallel	Straight lines that never meet. They are the same distance apart along their length.
2	Angle	The figure formed by two straight lines meeting. Measured in degrees.
3	Transversal	A line that cuts across two or more parallel lines.
4	Polygon	A 2D shape made with straight lines.
5	Sum	Addition – total of all the interior angles added together.
6	Regular Polygon	A 2D shape where all sides have equal length and all interior angles are equal size.
7	Irregular Polygon	A 2D shape where all sides do not have equal length and all interior angles are not equal size.
8	Alternate Angles	When two parallel lines are crossed by a transversal the pair of angles on opposite sides of the transversal are equal. E.g. 
9	Corresponding Angles	When two parallel lines are crossed by a transversal, the angles in matching corners are called corresponding angles. E.g. 
10	Co-interior Angles	When angles are trapped between two parallel lines, they always add up to 180 degrees. E.g. 

11 Basic Angle Rules and Notation

Basic angle rules and notation R

The letter in the middle is the angle. The arc represents the part of the angle.

Acute Angles
0° < angle < 90°

Right Angles
90°

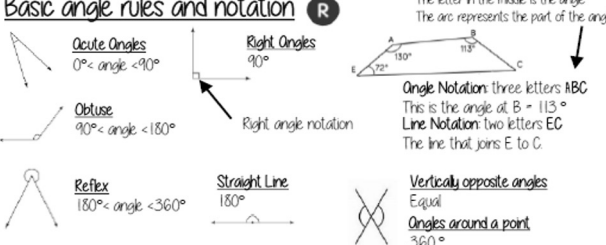
Obtuse
90° < angle < 180°

Reflex
180° < angle < 360°

Straight Line
180°

Vertically opposite angles
Equal

Angles around a point
360°



Angle Notation: three letters ABC
This is the angle at B = 113°

Line Notation: two letters EC
The line that joins E to C.

12 Parallel Lines

Parallel lines

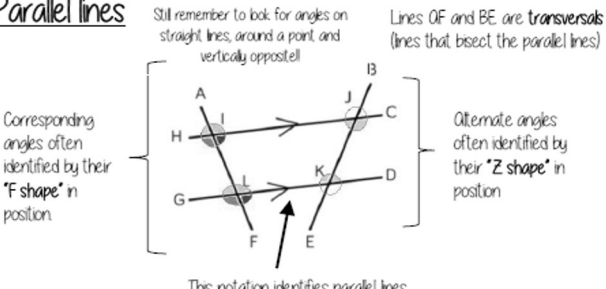
Still remember to look for angles on straight lines, around a point and vertically opposite!

Lines OF and BE are transversals (lines that bisect the parallel lines)

Corresponding angles often identified by their "F shape" in position.

Alternate angles often identified by their "Z shape" in position.

This notation identifies parallel lines

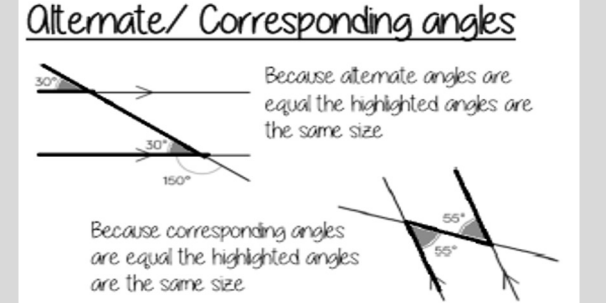


13 Alternate and Corresponding Angles

Alternate/ Corresponding angles

Because alternate angles are equal the highlighted angles are the same size.

Because corresponding angles are equal the highlighted angles are the same size.

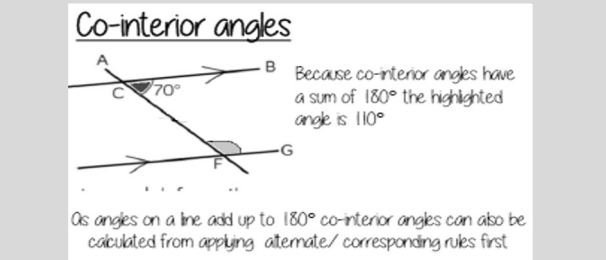


14 Co-interior Angles

Co-interior angles

Because co-interior angles have a sum of 180° the highlighted angle is 110°

As angles on a line add up to 180° co-interior angles can also be calculated from applying alternate/ corresponding rules first.



15 Properties of Quadrilaterals

Properties of Quadrilaterals

Square
All sides equal size
All angles 90°
Opposite sides are parallel

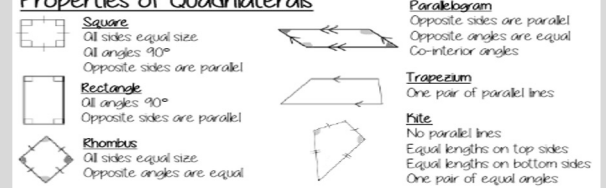
Rectangle
All angles 90°
Opposite sides are parallel

Rhombus
All sides equal size
Opposite angles are equal

Parallelogram
Opposite sides are parallel
Opposite angles are equal
Co-interior angles

Trapezium
One pair of parallel lines

Kite
No parallel lines
Equal lengths on top sides
Equal lengths on bottom sides
One pair of equal angles



16 Sum of Exterior Angles

Sum of exterior angles

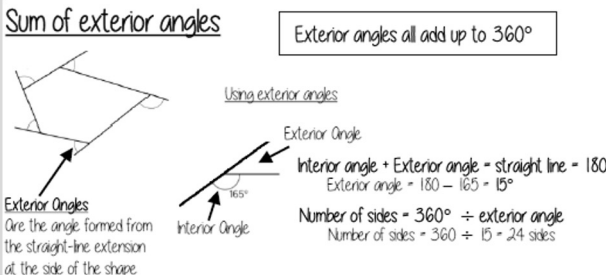
Exterior angles all add up to 360°

Using exterior angles

Exterior Angle + Interior Angle = straight line = 180°
Exterior angle = 180 - 165 = 15°

Number of sides = 360° ÷ exterior angle
Number of sides = 360 ÷ 15 = 24 sides

Exterior Angles are the angle formed from the straight-line extension at the side of the shape.



17 Sum of Interior Angles

Sum of interior angles

(number of sides - 2) x 180

Interior Angles are the angles enclosed by the polygon.

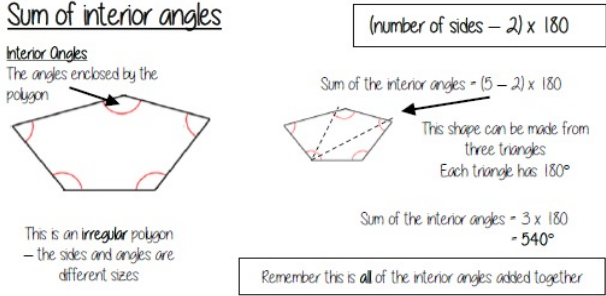
Sum of the interior angles = (5 - 2) x 180

This shape can be made from three triangles. Each triangle has 180°

Sum of the interior angles = 3 x 180 = 540°

This is an irregular polygon – the sides and angles are different sizes.

Remember this is all of the interior angles added together



18 Missing Angles in Regular Polygons

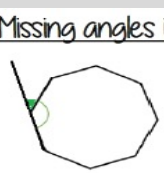
Missing angles in regular polygons

Exterior angle = 360 ÷ 8 = 45°

Interior angle = $\frac{(8-2) \times 180}{8} = \frac{6 \times 180}{8} = 135^\circ$

Exterior angles in regular polygons = 360° ÷ number of sides

Interior angles in regular polygons = $\frac{\text{number of sides} - 2}{\text{number of sides}} \times 180$



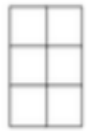
Year 9 Mathematics – Knowledge Organiser – Area of Trapezia and Circles – Autumn Term

Key Vocabulary:

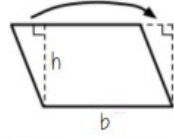
1	A radius	A measure of distance from the centre of any circular object to its outermost edge or boundary.
2	Area	Space inside a 2D object.
3	Perimeter	Length around the outside of a 2D object.
4	Pi (π):	The ratio of a circle's circumference to its diameter.
5	Perpendicular	At an angle of 90° to a given surface.
6	Formula	A mathematical relationship/ rule given in symbols. E.g. $b \times h = \text{area}$ of rectangle/ square.
7	Infinity (∞)	A number without a given ending (too great to count to the end of the number) – never ends.
8	Sector	A part of the circle enclosed by two radii and an arc.
9	Compound shape	A shape created with two or more basic shapes.

10 Area – Rectangles, Triangles, Parallelograms

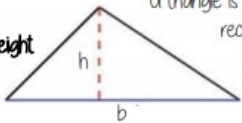
Rectangle
Base x Height



Parallelogram/ Rhombus
Base x Perpendicular height



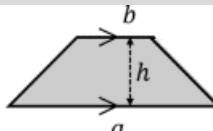
Triangle
 $\frac{1}{2} \times \text{Base} \times \text{Perpendicular height}$



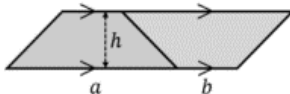
A triangle is half the size of the rectangle it would fit in

11 Area of a Trapezium

Area of a trapezium
 $\frac{(a+b) \times h}{2}$



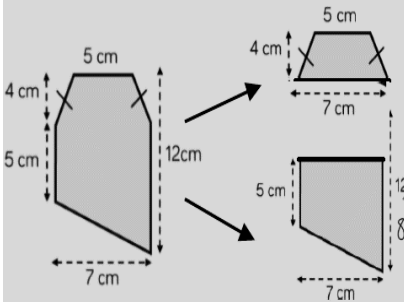
Why?



- Two congruent trapeziums make a parallelogram
- New length $(a + b) \times \text{height}$
- Divide by 2 to find area of one

12 Perimeter and Area of Compound Shapes

To find the area compound shapes, they often need splitting into more manageable shapes. First identify the shapes and missing sides etc.



Shape A - Isosceles trapezium

Shape B - non-standard trapezium

Shape A + Shape B = total area

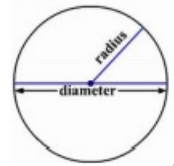
$$\frac{(5+7) \times 4}{2} + \frac{(5+8) \times 7}{2} = 24 + 45.5 = 69.5 \text{ cm}^2$$

Units

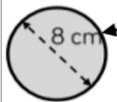
13 Calculate the Area of a Circle and Parts of a Circle Without a Calculator

Read the question – leave in terms of π or if $\pi \approx 3$ (provides an estimate for answers) .

Area of a circle $\pi \times \text{radius}^2$




Diameter = 8cm
 \therefore Radius = 4cm



$\pi \times \text{radius}^2$
 $= \pi \times 4^2$
 $= \pi \times 16$
 $= 16\pi \text{ cm}^2$

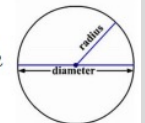
Find the area of one quarter of the circle



Circle Area = $16\pi \text{ cm}^2$
Quarter = $4\pi \text{ cm}^2$

14 Calculate the Area of a Circle and Parts of a Circle With a Calculator

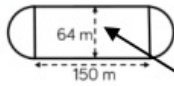
Area of a circle $\pi \times \text{radius}^2$



It is important to round your answer suitably to significant figures or decimal places. This will give you a decimal solution that will go on forever!

15 Compound Shapes

Spotting diameters and radii



This dimension is also the diameter of the semi circles

Arc lengths = $\pi \times 64 = 64\pi$

Don't need to halve this because there are 2 ends which make the whole circle

Arc lengths + Straight lengths = total perimeter

$$= 64\pi + 150 + 150$$

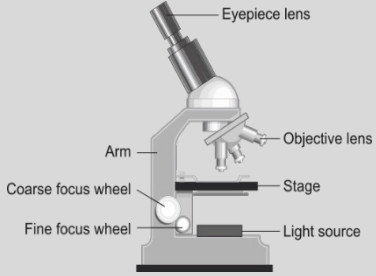
$$= (300 + 64\pi) \text{ m}$$

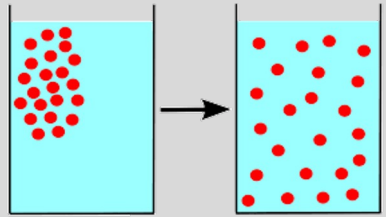
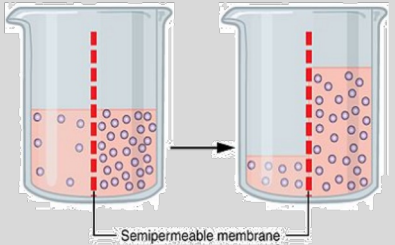
OR = 501.1 m

Still remember to split up the compound shape into smaller more manageable individual shapes first

Year 9 Science Autumn Term Knowledge Organiser Growth and Differentiation

Key Vocabulary:		
1	Eukaryotic cells	A cell that contains membrane bound organelles.
2	Aseptic	Free from contamination of microorganisms.
3	Microscopy	The field of using microscopes to view samples that cannot be seen with the naked eye
4	Diffusion	The movement of particles from a high concentration to a low concentration.
5	Osmosis	The diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane
6	Cancer	When cell division happens uncontrollably so cell numbers increase rapidly and can form tumours.
7	Stem cells	An undifferentiated cell that can form other cell types.
8	Organelle	A sub-cellular structure that has a specific function inside the cell.
9	Mitosis	The phase of cell division when one cell divides into two.
10	Partially permeable membrane	A membrane that lets particular substances through it (either in or out).
11	Active transport	The movement of molecules from a dilute to a more concentrated solution against a concentration gradient using energy from respiration.
12	Meristem	Stem cells found in plants that can develop into all plant cells.

13	Cells	<ul style="list-style-type: none"> All eukaryotic cells have a nucleus, mitochondria, ribosomes, cytoplasm and a cell membrane. Plant cells also have a cell wall, vacuole and chloroplasts Prokaryotic cells do not contain membrane-bound organelles. Prokaryotic cells are approximately 10 orders of magnitude smaller than eukaryotic cells
14	Microscopy	 <ul style="list-style-type: none"> A sample used with a light microscope must be very thin to allow light to pass through Magnification is the number of times larger an image is than the object Resolution is the ability to distinguish between two points
15	Magnification	<ul style="list-style-type: none"> A microscope is used to make something small appear much larger. To calculate the magnification of an image seen under the microscope, this equation can be used: Magnification = eyepiece magnification x objective lens magnification
16	Cancer	<ul style="list-style-type: none"> Cancer is caused by uncontrolled cell division A tumour is a mass of cells caused by uncontrolled cell division Benign tumours are a mass of cells contained in one area Malignant tumours are formed of cancer cells that invade other tissues and spread around the body where they form secondary tumours

17	Aseptic Technique	<ul style="list-style-type: none"> Petri dishes are used to produce cultures of bacteria and other micro-organisms Cultured bacteria are grown on a nutrient medium in controlled conditions Aseptic techniques must be used to prepare cultures to prevent contamination of the culture and the growth of harmful bacteria
18	Stem Cells	<ul style="list-style-type: none"> Embryonic stem cells can differentiate into all human cell types Adult bone marrow contains stem cells that can differentiate into different types of blood cell
19	Movement of Particles	<ul style="list-style-type: none"> Diffusion is the spreading out of particles, of a gas or liquid, resulting in net movement from an area of high concentration to low concentration  <ul style="list-style-type: none"> Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane  <ul style="list-style-type: none"> Active transport moves substances from a more dilute solution to a more concentrated solution, requiring energy from respiration

Year 9 Science Autumn Term Knowledge Organiser Periodic Table

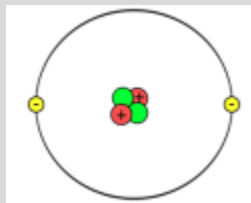
Key Vocabulary:

1	Atom	The smallest part of an element that can exist independently.
2	Electronic structure	The number of electrons in each energy level (shell) of an atom.
3	Isotopes	Atoms of the same element with mass numbers due to different numbers of neutrons in the nucleus.
4	Atomic model	A model that represents the structure of the atom..
5	Periodic table	A table of all the known elements arranged in order of atomic number so that elements with similar properties are in columns, known as groups.
6	Noble gas	An inert gas found in group 0 of the periodic table.
7	Alkali metal	An element in group 1 of the periodic table.
8	Compound	A substance made up of two or more different elements chemically bonded together.
9	Displacement reaction	A reaction in which a more reactive substance displaces a less reactive substance.
10	Halogens	An element in group 7 of the periodic table.
11	Inert	Stable and unreactive.
12	Radius	The distance from the centre to the circumference of a circle or sphere.

Atomic Structure

13

Atoms consist of a positively charged nucleus, containing protons and neutrons, surrounded by negatively charged electrons



14

Atomic and Mass Number

The atomic number is the number of protons in an atom of the element. All atoms of a particular element have the same number of protons in their nuclei. Atoms of different elements have different numbers of protons

The mass number of an element is the total number of protons and neutrons. The relative charges of the subatomic particles are: protons (+), electrons (-) and neutrons (0)

15

Electronic Configuration

Electrons in an atom occupy the lowest available energy level. The electronic structure of an atom can be represented by numbers or a diagram. Atoms have no overall electrical charge because the number of electrons is equal to the number of protons in the nucleus

Elements in the periodic table are arranged in order of increasing atomic number and elements with similar properties

16

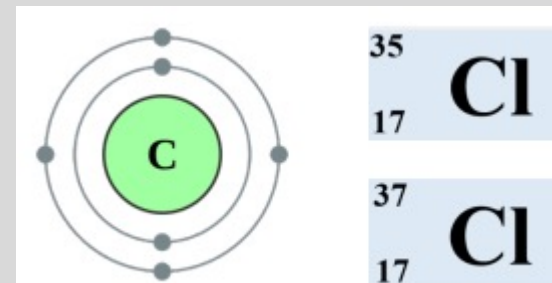
The Periodic Table

The Groups

17

Isotopes

Isotopes are atoms of the same element that have different numbers of neutrons. An element's relative atomic mass is an average value that takes account of the abundance of different isotopes



18

The Halogens

Elements in Group 7 are known as the Halogens. They have similar reactions because they all have 7 electrons in their outer shell

The Halogens are non-metals and consist of molecules made up of pairs of atoms. Melting and boiling points increase with increasing relative molecular mass (as you go down the group)

Reactivity decreases as you do down the group. A more reactive halogen can displace a less reactive halogen from an aqueous solution of its salt

19

The Transition Metals

Metals including Cr, Mn, Fe, Co, Ni and Cu are transition metals with similar properties, which are different from the properties of Group 1

Many transition elements form ions with different charges, form coloured compounds and can be useful as catalysts

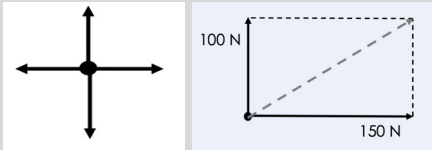
20

The Noble Gases

Elements in Group 0 are called the Noble Gases. They are unreactive and do not easily form molecules because they have a stable arrangement of electrons. They have 8 electrons in their outer shell, except Helium which has 2. Boiling point increases with increasing atomic mass (as you go down the group)

Year 9 Science Knowledge Organiser – Acceleration

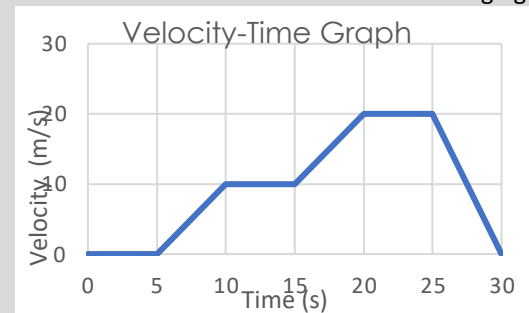
Key Vocabulary:		
1	Acceleration	The rate of change of velocity.
2	Action	A description of a change in a physical system.
3	Balanced	Equal in size and opposite in direction.
4	Component	The horizontal or vertical part that makes up a diagonal vector.
5	Constant Velocity	When an object travels at the same speed in the same direction.
6	Contact Force	Is a force that acts when objects are physically touching each other.
7	Curve	A continuous and smooth flowing line without any sharp turns.
8	Deceleration	Slowing down, also known as negative acceleration.
9	Distance	The length of a path or length between two points.
10	Displacement	The change in position of an object.
11	Gradient	The slope of a graph.
12	Initial Velocity	A vector quantity that describes the velocity of an object before an acceleration.
13	Mass	Mass is a measurement of how much matter is in an object.
14	Non-contact Force	A force which acts on an object over a distance.
15	Resultant	The sum of two or more vectors: the result of adding two or more vectors together.
16	Scalar	Quantities that have magnitude (size) only.
17	Speed	The distance covered per unit time.
18	Tangent	A straight line touching a curve at a single point without crossing the line.
19	Unbalanced	Forces that are not equal and opposite, a non-zero resultant force.
20	Vector	Quantities that have both magnitude (size) and direction.
21	Velocity	The speed of an object in a given direction.
22	Vertical	Perpendicular to an x-axis (an up or down line).

23	Scalars & Vectors
	<ol style="list-style-type: none"> Scalars are quantities which only have size (magnitude), such as distance, speed, mass and energy. Vectors are quantities with size and direction, such as displacement, velocity, acceleration, force and weight. Resultant force is a vector quantity Forces acting in the same direction can be added together Forces acting in opposite directions can be subtracted Resultant forces can be resolved into their horizontal and vertical components
	

24	Acceleration
	<ol style="list-style-type: none"> Acceleration is the rate of change of velocity Change in velocity is calculated using final velocity minus initial velocity Acceleration happens when there is change in velocity (speeding up, slowing down or a change in direction) Negative acceleration (slowing down) can be called deceleration The SI unit for acceleration is m/s^2 An object moving in a circle is accelerating because it is constantly changing direction Objects near Earth's surface experience gravitational acceleration of $9.8 m/s^2$ Air resistance/drag increases with speed
	$Acceleration = \frac{\text{Change in velocity}}{\text{Time}}$


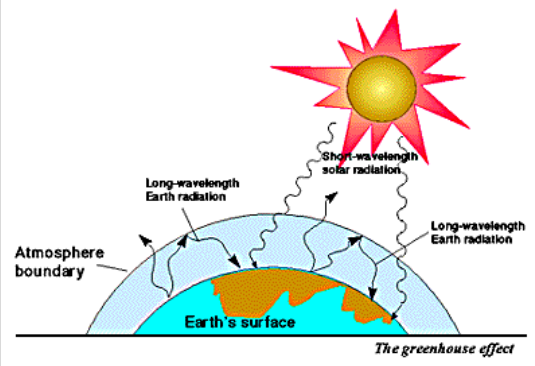
25	Newton's Laws
	<ol style="list-style-type: none"> Newton's Third Law states that every action has an equal and opposite reaction Newton's First Law states that an object's motion will not change unless acted upon by an unbalanced force If the resultant force is 0 N a stationary object will remain stationary If the resultant force is 0 N an object in motion will continue moving at the same velocity If the resultant force is not 0 N a stationary object will accelerate in the direction of the resultant force If the resultant force is not 0 N an object in motion will accelerate in the direction of the resultant force

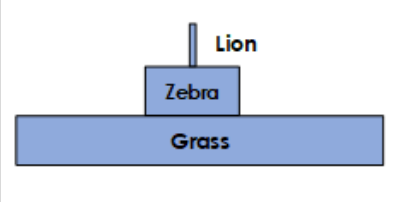
26	Velocity-Time Graphs
	<ol style="list-style-type: none"> Velocity-time graphs can be used to describe motion A horizontal line shows a constant velocity A straight line with a positive gradient (slope) shows that an object has a positive acceleration (speeding up) A straight line with a negative gradient (slope) shows that an object has a negative acceleration/deceleration (slowing down) Acceleration can be calculated by calculating the gradient Distance can be calculated from the area under the graph A curved line shows that acceleration is changing



Year 9 Science Autumn Term Knowledge Organiser – Human Interaction

Key Vocabulary:		
1	Biodiversity	The variety of different species in an ecosystem
2	Sampling	Techniques used to measure populations of living organisms.
3	Quadrat	A piece of equipment used to count the number of organisms/individuals in a specific area.
4	Abundance	The quantity or amount of something present in a particular area.
5	Peat	A dark brown substance, like soil, that is formed when plant material cannot decay because of acidic and anaerobic conditions.
6	Greenhouse gases	A gas that contributes to the greenhouse effect and global warming.
7	Global warming	The rise in global temperatures due to greenhouse gases.
8	Pollution	Caused when human waste isn't properly handled or disposed of.
9	Biomass	A measure of the total quantity of biological material in one or many organisms.
10	Trophic level	An organism's position in a food chain.
11	Transect	A line placed across a habitat for systematic sampling.
12	Eutrophication	Excessive nutrients in a body of water which cause excessive plant growth.
13	Biotechnology	The use of biological processes for industrial or medical purposes.

Human Interactions	
14	Sampling
a)	Techniques used to measure populations of living organisms.
b)	Random sampling - Used to measure the abundance of a living organism in a habitat using random coordinates.
c)	Systematic sampling - Used to measure the effect of a factor on the distribution of a species, using a transect.
d)	Quadrat
	
15	Greenhouse Effect
Levels of carbon dioxide and methane in the atmosphere are increasing, contributing to global warming	
	
16	Consequences of Global Warming
There are many biological consequences to global warming including:	
a)	Melting polar ice caps
b)	Rising sea levels
c)	Extreme weather patterns
d)	Flooding
e)	Loss of habitats
17	Reducing Human Impact
How humans can reduce their impact on Biodiversity by:	
a)	Protecting rare habitats
b)	Maintaining nature reserves
c)	Breeding programmes for endangered species
d)	Recycling resources to reduce landfill waste
e)	Reducing deforestation
f)	Growing hedgerows on farms to allow more crops to grow

Increasing Human Population	
18	Increasing Human Population
The increasing human population means that more resources are required and more waste is produced. More waste is also produced through the improved standard of living.	
If waste is not treated properly it results in pollution:	
a)	Water pollution is caused by poor sewage treatment and leaching of fertilisers
b)	Air pollution is caused by smoke and acidic gases
c)	Land pollution is caused by landfill and toxic chemical waste
19	Pyramids of Biomass
<ul style="list-style-type: none"> Biomass is lost between trophic levels in a food chain Biomass is lost through waste (faeces, urine, sweat, gas) and through life processes such as movement and thermoregulation 	
	
20	Farming
a)	Efficiency of food production can be improved by restricting energy transfer from food animals to the environment.
b)	This includes intensive farming methods where movement of animals is limited and the temperature of their surroundings is controlled.
c)	Fish stocks in oceans are declining because of overfishing
21	Food Security
Food security is having enough food to feed a population. Many factors can threaten food security:	
a)	Increasing birth rate.
b)	Changing diets in developed countries means that scarce food resources are being transported across the world
c)	New pests and pathogens are affecting farming
d)	Environmental changes, including droughts, which can lead to famines
e)	Political instability and conflicts in some parts of the world threaten access to food and water

Year 9 Art and Design Autumn Term Knowledge Organiser

Key Vocabulary:

1	The Formal Elements of Art	The formal elements of art are used to make a piece of artwork. These are line, tone, texture, shape, pattern and colour . They are often used together, and how they are organised in a piece of art determines what the finished piece will look like.
2	scale	The scale of something is its size. To scale something is to enlarge it. To scale down is to do a smaller version and reduce it.
3	horizon line	The horizon line in a perspective drawing is a horizontal line drawn across the picture. It can be a temporary pencil line or morph into a permanent line where sky and land meet. It is always at eye level and its placement determines where we seem to be looking from, whether that is from a high place or from close to the ground.
4	foreground	The foreground refers to the area closest to the viewer, which will almost always be in the lower section of your picture.
5	middleground	The middleground is the space naturally occurring between the foreground and the background.
6	background	The background is the space naturally occurring in the distance and called the background.
7	acrylic paint	Paint that can be used thickly like oil paint and thinly for transparent watercolour style washes. Slightly glossy finish, and waterproof when dry.
8	mono-print	A printmaking process where paper is laid on an inked surface and drawn on. Each print is a one-off.
9	mixed media	Mixed media refers to a visual art form that combines a variety of media in a single piece of artwork.

Art Movements:

10	Romanticism	A European art movement of the late eighteenth to mid-nineteenth century. J.M.W Turner painted landscapes with interest in light and colour.
11	Impressionism	A French art movement from around 1880. Mostly painted out of doors, impressionist artists aimed to capture the fleeting effects of colour in a moment of time. Claude Monet, Pierre-Auguste Renoir, and Camille Pissarro are some artists in the period.
12	Post - Impressionism	Originally this referred to a group of late nineteenth-century painters, including Paul Cezanne and Vincent Van Gogh. They took ideas of Impressionism further to explore colour.
13	Pointillism	Georges Seurat and Paul Signac painted scenes in the 1880s using tiny dabs of pure colour that appear to blend together and form different colours when looked at from a distance.
14	Fauvism	A style adopted by artists around 1905-10. Landscapes were painted with bright colours and loose brushstrokes. Andre Derain was a famous artist in this period.
15	Abstract	Art that is not representational or realistic. Where the formal elements of art are the subject rather than a representation of a person, object or scene. Helen Frankenthaler's artwork is an example of Abstract Expressionism.

Year 9 Computing Autumn Term Knowledge Organiser Python PART 1

Key Vocabulary:

1	Program	Set of instructions.
2	Algorithm	A sequence of ordered instructions that are followed step-by-step to solve a problem.
3	Sequence	The order of the instructions in the code
4	Iteration	Repeat
5	Decomposition	Break into smaller chunks
6	Abstraction	Remove unneeded parts of the code
7	Program execution	To run the code
8	Syntax error	A mistake in the spelling or punctuation

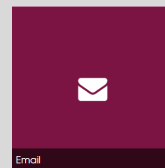
Accessing the Network & Email

9 How to log on to school network:

User name: R7FirstnameMiddleInitalSurname
 (EG: Name: Joseph Rayner Stephens becomes R7JosephRStephens
 No middle name: Joseph Stephens becomes R7JosephStephens)
 Password: Your own secret word and number combination!

10 How to access school email:

To access your school email at home, go to the school website and scroll down to this button



User: R7FirstnameMiddleInitalSurname@rshs.spt.ac.uk
 (EG: Name: Joseph Rayner Stephens becomes
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 Password: Same secret password as logging onto school network

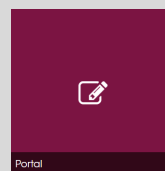
11 Who can see my school email & network area:

Your school email can be viewed by the School Network Manager, Technician, Learning Leaders and Teachers.

Emails are monitored and automatically scanned for inappropriate content to protect students. There are consequences for anyone misusing the school email system.

12 How to access network remotely via portal:

To access your school email at home, go to the school website and scroll down to this button. Use the same logging on details as you would in school.



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 Password: Same secret password as logging onto school network

Year 9 Computing Autumn Term Knowledge Organiser Python PART 2

Key Vocabulary:

1	Program	Set of instructions.
2	Algorithm	A sequence of ordered instructions that are followed step-by-step to solve a problem.
3	Sequence	The order of the instructions in the code
4	Iteration	Repeat
5	Selection	A decision in the code.
6	Conditional Statement (IF)	A point where a decision is made by the user.
7	Variable	A piece of memory that stores a value temporarily
8	Decomposition	Break into smaller chunks
9	Abstraction	Remove unneeded parts of the code
10	Program execution	To run the code
11	Syntax error	A mistake in the spelling or punctuation
12	Input	Any method of getting data into the computer
13	Output	Any method of getting data out of the computer

Accessing the Network & Email

14

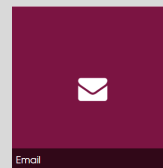
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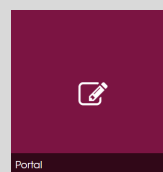
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 Password: Same secret password as logging onto school network

Year 9 Drama Autumn Term Knowledge Organiser

Key Vocabulary:			Devised Drama rehearsals and planning		Devised Drama Performance	
1	Devising	Creating a performance using research, factual information and improvised ideas	8	<p>What is Devising?</p> <p>Devising is a group collaboration in response to a stimulus leading to the creation of an original performance. Devising in drama demands inventiveness, an understanding of the rules of structuring a piece of theatre and a readiness to collaborate with others.</p>	13	<p>Staging Configurations</p> 
2	Staging	Where actors and set are in the space.	9	<p>Key knowledge</p> <p>Creating devised work using a stimulus allows you to produce a piece of imaginative theatre that can relate to your age group and include your own thoughts and opinions. The intention can be to inform, educate and even shock!</p>	14	<p>Mime: Movement/copying physical action</p> <p>Slow-motion: The slowing down of real-life speed to highlight a key moment.</p> <p>Improvisation: Create spontaneously or without preparation</p> <p>Atmosphere: The mood or feeling of a narrative.</p> <p>Climax (Peak of Tension): The highest point of suspense, where danger, uncertainty is at its greatest.</p> <p>Pace: The speed at which the story is delivered, or with which something happens or changes</p> <p>Tone: A quality in the voice which expresses the speaker's feelings or thoughts.</p> <p>Pause: A short period in which something such as a sound or activity is stopped before starting again.</p> <p>Facial Expressions – matches the character's feelings/emotions</p> <p>Body Language – over exaggerated to create identifiable characters to a young audience</p> <p>Gestures – Exaggerated hand movements</p> <p>Levels – Status, power, relationships</p> <p>Voice – clear use of voice using relevant vocabulary.</p>
3	Stimulus	Something that generates ideas e.g. a photograph, clip from a film, poem	10	<p>Rehearsal Skills</p> <p>Devising: is a method of theatre -making in which the performance originates from collaborative, often improvisatory work by a performing ensemble.</p> <p>Researching: Collecting evidence for the content and moral of a performance; Includes facts, interviews and personal thought.</p>	15	<p>Key Language</p> <p>Develop Ideas from any of the stimulus you have been given. Apply your own ideas about whether technology is negative or positive.</p> <p>Analyse the skills we have learnt; Physical theatre, narration, monologue etc.</p> <p>Evaluate the moral or message for the audience at the end.</p>
4	Moral	Message for the audience to think about and judge their own actions and behaviour.	11	<p>Key planning skills</p> <p>Fiction reading Script writing Creative thinking Responding to a stimulus. Performance skills/techniques.</p> <ol style="list-style-type: none"> 1. Consider your story 2. Consider the characters 3. Consider the theme/moral 4. Consider the target audience 5. Consider Staging and Stylistic Qualities 		
5	Theme	The topic of the performance e.g. Supernatural.	12	<p>Props, Costume, sound and lighting effects to create mood and atmosphere</p> <p>Mood and Atmosphere help the audience to feel something. Maybe it is a scary moment, or a joyful one. Mood is created by the performers through their actions, words and voices. Atmosphere is created by the production elements such as lighting, sound, music, and costume and how the performers interact with these things</p>		
6	Effectiveness	Does the performance have a positive and purposeful impact on the audience?				
7	Properties	This can be hand items to support the characterisation or staging props such as lighting and costume				

Year 9 DT Knowledge Organiser Graphic Design

Key Vocabulary:

1	Design Brief	The brief outlines what problem a designer will solve. It should be referred to throughout the project to make sure what you are working on will solve the problem.
2	Specification	A list of requirements for a design to help us to analyse and describe a product.
3	Concept	A concept is a thought or idea. For instance, if you're redecorating your bedroom, you might want to start with a concept, such as "flower garden" or "outer space." It is a general idea generated before any detailed design work is undertaken.
4	Analysis	A detailed examination of the elements of something. It is the process of breaking a complex topic or product into smaller parts in order to gain a better understanding of it.
5	Annotate	Note on your design to explain them in further detail giving a reason or comment.
6	Typography	The arrangement of text into a form of design. The technique of arranging type to make written language legible, readable and appealing when displayed.
7	Layer	A layer is simply one image stacked on top of another.
8	Logo	A symbol or other small design adopted by an organisation to identify its products to promote public identification and recognition.

Key Concepts

9. CAD/CAM

CAD (Computer Aided Design) is the use of a computer to help you visualise the product. CAD allows us to change the design quickly and allows the design to be shared easily via email etc. Multiple people can be working on the same design and the same time making the process very efficient.

CAM (Computer Aided Manufacturing) It is important to remember that CAD can happen on its own because it's just a design, but for CAM to occur, CAD must be involved. CAM is when machines (such as the laser cutter) produce the work that you have created using CAD. The process is to send your CAD design to the CAM machine, and with a few simple instructions the CAM machine will make the product or part.

10. Finishing

The finish of a product is usually (but not always) the final part of your product. A finish is often based on the product's intended use, by this I mean considering what the product will be used for. For example: If you have made a child's toy, you may wish to paint the product a bright colour to stimulate the child to play with it. If you have made a garden bench, you may not require colour, but you do require a finish that is waterproof because it is going to live outside.

- Ceramic coating is a process that coats a mug's surface with a solid ceramic material.
- Durable water-repellent coating, or DWR, is a liquid polymer that coats the fabric and makes it resistant to water. The spray works for any type of clothing material including cotton t-shirts.

11. Evaluation

The evaluation of your product often is left to the end, but you should evaluate your product at every stage in order to make alterations and corrections as you go.

It is useful to use a structure when evaluating such as a SWOT analysis. Using a SWOT analysis tool allows you to check all the main aspects of your product have been considered. A good evaluation DOES NOT only focus on the good parts of your product, but makes honest judgements that allow you to make improvements next time, or as you go.

SWOT Evaluation Method



Year 9 Food Prep Autumn Term Knowledge Organise: Bacteria and Food Poisoning

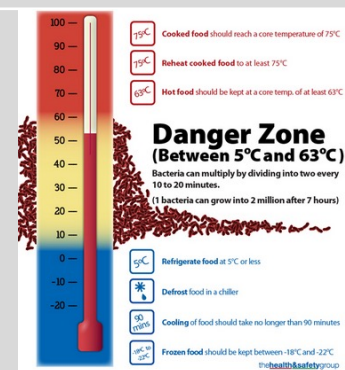
Key Vocabulary:

1	Bacteria	Microscopic, single-celled organisms that can be found in various environments. Some bacteria are beneficial, while others can cause foodborne illnesses when they contaminate food.
2	Food Poisoning	An illness caused by consuming contaminated food or beverages, typically due to the presence of harmful bacteria, viruses, or toxins.
3	Food Safety	Practices and guidelines aimed at preventing foodborne illnesses by ensuring that food is handled, prepared, cooked, and stored in ways that reduce the risk of contamination and the growth of harmful bacteria.
4	Pathogen	Microorganisms, such as bacteria, viruses, or parasites, that can cause disease. In the context of food safety, pathogens are often responsible for causing foodborne illnesses.
5	Cross - contamination	The transfer of harmful bacteria or other microorganisms from one substance or object to another, often due to improper handling of food, such as using the same cutting board for raw meat and vegetables without proper cleaning.
6	Foodborne illness	An illness resulting from the consumption of contaminated food or beverages, caused by bacteria, viruses, parasites, or toxins.
7	Visible symptoms	Symptoms from food poisoning that you can visibly see e.g. diarrhoea, vomiting.
8	Non-visible symptoms	Symptoms from food poisoning that you cannot visibly see e.g. stomach cramps.

Food Poisoning and Bacteria

9	Salmonella
You can get Salmonella from raw or undercooked poultry, eggs, and meat, as well as contaminated fruits and vegetables; symptoms include fever, diarrhoea, stomach cramps, and vomiting, typically occurring 6 hours to 6 days after ingestion.	
10	E. Coli
E. coli is commonly found in undercooked ground beef, raw vegetables, and unpasteurized milk or juice; it can cause severe stomach cramps, diarrhoea (often bloody), and vomiting, with symptoms usually appearing 3 to 4 days after exposure.	
11	Listeria
Listeria can be found in ready-to-eat deli meats, soft cheeses, and unpasteurized milk; it can cause symptoms such as fever, muscle aches, nausea, and diarrhoea, with more severe cases leading to meningitis or complications in pregnant women, and symptoms may appear anywhere from 1 to 4 weeks after exposure.	
12	Campylobacter
You can contract Campylobacter from undercooked poultry, unpasteurized milk, and contaminated water; symptoms include diarrhea (often bloody), abdominal pain, fever, and nausea, typically developing 2 to 5 days after infection.	

13 Key Temperatures



Year 9 Geography Autumn Term Knowledge Organiser: Exploring Fieldwork

Vocab	Definition
1.Primary Data	Data that you personally collect when doing fieldwork.
2.Secondary Data	Data that someone else has collected.
3.GIS	Geographical Information Systems – online maps and interactive maps that help represent data.
4.Quantitative Data	Data with a numerical value such as statistics.
5.Qualitative Data	Data that is words or images, usually containing views, opinions or feelings.
6.Analysis	Detailed examination of something usually data.
7.Conclusion	Drawing together results to reach an answer. In fieldwork drawing results from data to answer the enquiry question.
8.Evaluation	Weighing up the positives and negatives of something. In fieldwork it refers to considering how reliable and accurate the results are.
9.Accuracy	How limited errors have been, therefore making data more likely to give true results.
10.Reliability	How trustworthy data is based on it being a good representation of possible data to be collected.
11.Bias	When something is not done fairly as there is a preference given.
12.Correlation	When there is a link or relationship between two pieces of data.
13.Physical Fieldwork	Enquiry questions based around the natural environment and processes.
14.Human Fieldwork	Enquiry questions based around human interactions with the environment and man-made environments.

15. Types of Data

	Primary Data	Secondary Data
Quantitative	Cloud cover using the Okta Scale Wind Direction Wind Speed	Weather data ArcGIS Online
Qualitative	Environmental quality survey People counts Questionnaires and interviews Photographs Land use mapping	OS maps and maps of schools Satellite images

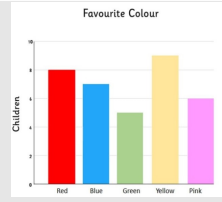
16. Risk Assessments		
It is important to carry out a risk assessment in order to ensure that I stay safe. By identifying a risk in advance, I can put in measures to reduce the risk. For example, by wearing waterproof clothing I can avoid getting wet if it rains.		
Weather	17 Risk	Mitigation
	Wet weather is dangerous due to slippery groyne's etc. Hot weather also poses the risk of dehydration.	Students advised to bring plenty of water and sun cream if the weather forecast is hot. If the weather forecast is wet, students are advised to bring appropriate clothing and footwear.
General public	Risk of verbal abuse from members of the public especially when carrying out questionnaires. Also risk of abduction.	Students told to walk around in pairs or more. Meeting point given to students to meet at regular times and a head count to be done. Students to be polite when asking questionnaires.

18. Fieldwork Techniques	
Maps	There are many different types of maps. Maps display information and data that geographers may find useful when studying a particular place. OS maps show relief (height and shape of the land) and we can use four figure and six figure grid references to locate places.
Questionnaire	A questionnaire is designed and the investigator asks their chosen audience questions.
Field Sketch	Sketch of the area of investigation. Add detailed annotations on features that provide information for your investigation. You could describe processes shown within the field sketch and comment on the noticeable interactions which you find particularly important.
Photos	Photographs of areas within the investigation that present relevant aspects of the investigation, e.g. litter in a park or destroyed outdoor furniture.
Bipolar Survey	A survey where a chosen aspect is rated using polar opposite ratings (e.g. from -5 to +5) For example: On a scale of -5 (completely against) to +5 (completely for), what is your opinion of.....
Land Use Survey	Prior to the survey, choose a relevant area that will be representative of what is being investigated. Walk down your chosen area and note down (tally's are useful) how an area of land is being used (entertainment, public building, commercial, service, outdoor etc.)
Environmental Quality Survey	The area of a chosen environment is rated using a scale, for example 1-5. Different aspects of the environment are rated such as noise, building condition, greenery etc. Before conducting, investigation sites should be chosen and your survey should be made specific to your investigation purpose.

19. Presentation and Analysis: e.g. Bar Chart

Bar charts are used to show the number of things (or frequency) in several categories.

- Plot categories on the x-axis.
- Leave gaps between the bars as data is not continuous.




Analysis
What are the highest and lowest bars? Is there any data that surprises you? Use data to help support your points.

20. Presentation and Analysis: e.g. Line Graph

A line graph is used to show changes over time, for example, Changes in temperature through a day. More than one line can be plotted so that a comparison can be made over time.

- Both the x and y axis are numerical and continuous.
- If time is one of the variable, always plot it on the x-axis.

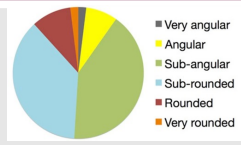


Analysis
Is the line going up or down? Is the line steep or does it go up or down slowly? Is the line smooth or does it zig-zag? Use data to help support your points.

21. Presentation and Analysis: e.g. Pie Chart

A pie chart is a circle divided in to sections. Each section represents a percentage.

- Sectors can be shaded or coloured, and need labels or a key.
- Multiple pie charts can be used where the size of each circle shows ration.



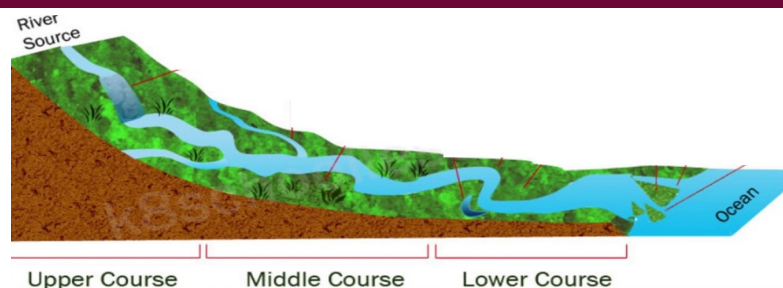
Analysis
Which categories are the smallest or largest sections of the pie chart? Are the categories divided up equally? Use data to help support your points.

22. Conclusion and Evaluation

Refer back to your hypothesis, in two simple sentences try to provide an overview of your findings.
Did you disprove your hypothesis?
Ensure that your hypothesis is consistent with what you are saying in your analysis.
What were the strongest or most reliable sections of your investigation?
How could you develop your investigation? What else could you have investigated?
Were there any problems with your techniques?
Were there any limitations?

Year 9 Geography Autumn Term Knowledge Organiser: Exploring Rivers

Key vocab	Definition
1. Confluence	The meeting point of two or more rivers
2. Tributary	A small stream feeding into a larger stream or lake
3. Watershed	The edge of the drainage basin
4. Fluvial	Anything that is associated with rivers
5. Drainage basin	The area of land around a river where all water drains from
6. Course	A distinctive part of a river
7. Processes	Forces that change the physical feature of the earth
8. Impact	Something that happens because of a previous action. This can be positive or negative
9. Transportation	The movement of material from one place to another
10. Erosion	The breaking down of rocks
11. Deposition	The dropping of material when the river loses energy



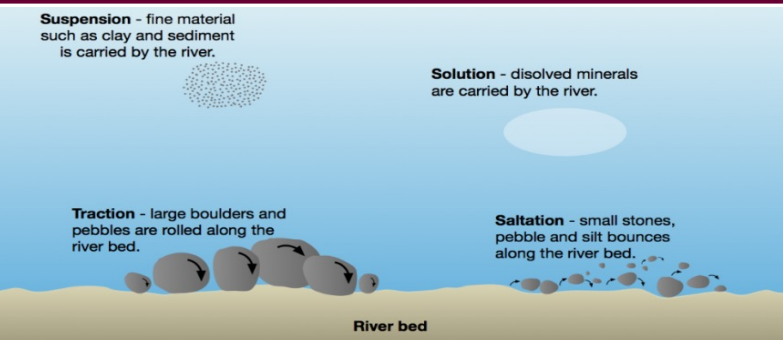
	Upper	Middle	Lower
13. Gradient	Steep	Slightly sloping	Flat
Channel width	Narrow	Slightly wider	Widest
Velocity	Fastest	slower	Slow
Sediment size	Large, Angular rocks	smaller, less angular rocks	Smaller, smoother rocks

17. Types of erosion	Definition
Hydraulic action	Sheer power of the water smashing against river banks. Air becomes trapped in cracks and widens them
Attrition	Rocks that the river is carrying knock against each other and become smaller and rounded
Abrasion	Pebbles grind along river banks and bed, causing rocks to break apart
Solution	Water dissolves certain types of rock such as limestone.

12. Landforms

Upper	<p>Interlocking spurs – hills that are overlapping in the landscape. Created by erosion.</p> <p>Waterfall – Hard rock above the soft rock. Hydraulic action creates an undercut which becomes unstable and falls into the plunge pool below</p>
Middle	<p>Meander – a bend in the river created by something that is in its way. Fastest flow on the outside, slowest flow on the inside.</p> <p>Oxbow lake – a meander that has been cut off from the main channel after flooding happens</p>
Lower	<p>Floodplain – the low lying land next to the river that floods when a river bursts its banks</p> <p>Levee – natural build up of material by deposition on the river banks. Acts as a natural flood defence.</p>

14. Types of Transportation



18. Impacts of flooding

- Loss of houses and businesses
- Floodwater can contaminate fresh water supplies
- Loss of life
- Difficult to get insurance on properties
- Destruction of wildlife habitats.
- Sewage can be brought up out of grids

19. Humans use of land around rivers

Upper	<ul style="list-style-type: none"> • Walking/hiking • Farming • Reservoirs
Middle	<ul style="list-style-type: none"> • Towns and cities • Farming • Transport
Lower	<ul style="list-style-type: none"> • Towns and cities • Factories built near ports • Tourism – beaches/seaside towns

15. Hard engineering

- Involves the use of technology to control rivers.
- It is more expensive as concrete is used.
- Immediate results but may create problems in the future

16. Soft engineering

- More sustainable option
- Does not interfere with the flow of the river
- Less expensive – very little material is used.
- Works alongside natural processes.

Year 9 History Autumn Term Knowledge Organiser: Who won the fight for the vote?

Key Vocabulary:

1	Suffrage	the right to vote in elections.
2	Suffragists	women who campaigned for the vote
3	Suffragettes	women who used militant methods to campaign for the vote
4	Militancy	use of violence in the campaign for the vote.
5	NSUWSS	National Women's Suffrage Societies- Suffragists, led by Millicent Fawcett
6	WSPU	Women's Social and Political Union – Suffragettes, Led by Emmeline Pankhurst
7	Deeds not words	the motto of the Suffragettes
8	Hunger Strike	An act of non-violent political protest. Refusing to eat in prison
9	Cat and Mouse Act	The law passed by the government in response to the hunger strikers
10	Petition	A formal written request sent by the public to parliament
11	Propaganda	Information (usually biased) used to promote a political cause/POV
12	Conscription	Compulsory joining of the military
13	FANY	A nursing organisation women joined during WW1
14	VAD	A nursing organisation women joined during WW1

Key information

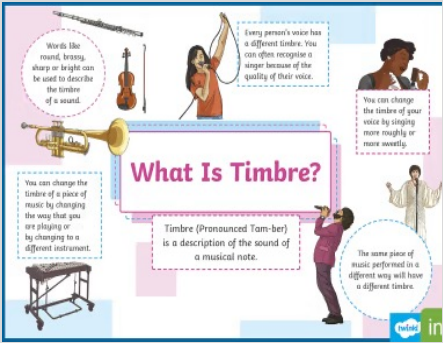

15	Suffragists
Group name: National Union of Women's Suffrage Societies	
Formed: 1897	
Leader: Millicent Fawcett	
Tactics: they presented petition to MPs in Parliament, the distributed leaflets and letters and they put MPs under constant pressure to give women the vote. They also held speeches across the country and went on well-disciplined marches.	
Members: Middle class and working class women	
16	Suffragettes
Group name: Women's Social and Political Union	
Leaders: Emmeline Pankhurst	
Tactics: smashing windows on private property and governmental buildings, disrupting the postal service, burning public buildings, attacking Church of England buildings, holding illegal demonstrations	
burning politicians unoccupied homes, disrupting the 1911 census, ruining golf courses and male-only clubs, chaining themselves to buildings, disrupting political meetings, planting bombs, handcuffing themselves to railings and going on hunger strikes	
Members: Middle class and upper class women	
17	The Cat and Mouse Act
In response to an outcry of support for Suffragette hunger strikers, the government passed a new law called the Prisoners (Temporary Discharge for Ill-Health) Act to prevent hunger strikers dying whilst in prison. The act stated that strikers would be released until they regained their strength, after which they would be imprisoned again to carry out the rest of their prison sentence. The act soon became known as the Cat and Mouse Act .	
18	World War One
Nursing - First Aid Nursing Yeomanry would run field hospitals, drive ambulances and set up soup kitchens and troop canteens, often under highly dangerous conditions. In addition the VAD would work as assistant nurses, ambulance drivers and cooks.	
Armaments – over 700,000 women worked as 'munitionettes'- they made bullets and shells- this could be dangerous work as they could suffer from TNT poisoning and there were a number of explosions at munitions factories during the First World War. In January 1917 73 people were killed and 400 wounded at a munitions factory.	
Women's Land Army a voluntary organisation women joined to help keep the country fed during WW1. The women would milk cows, feed horses, pigs and cows, plough, pull flax and fell trees. By 1918 113,000 women had joined the WLA	

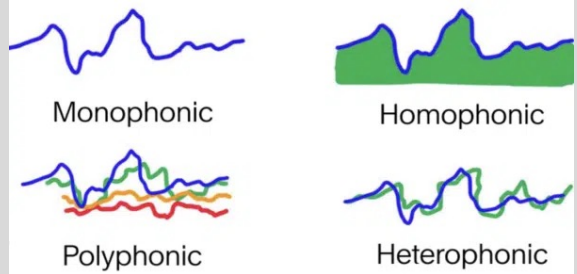
Key information

19	Timeline of Key events
1897	NUWSS formed. Millicent Fawcett is the leader
1903	WSPU formed. Emmeline Pankhurst is the leader
1908	The suffragettes start to use militancy
1909	The suffragette Marion Dunlop Wallace goes on hunger strike
1913	The Cat and Mouse Act is passed and the force feeding of suffragettes in prison starts
1914	World War One starts
1918	WW1 ends and women over 30 get the vote
1928	Women over 21 get the vote and get the same voting rights as men.
20	How did World War One change the political landscape?
21	An example of anti-suffrage propaganda
<ul style="list-style-type: none"> Before the war voters had to prove that they had lived in the same place for a year. During the war, millions of people had been on the move, to fight and to work. Most men in the armed forces in 1916 were not even in Britain. Many of the 40% of men excluded from voting under the old property qualification had shown their readiness to fight and die for their country. Women had made a huge contribution to the war effort. The proportion of women in employment rose from 24% to 37% 	

Year 9 Music Autumn Term Knowledge Organiser

Key Vocabulary:		
1	Riff	A short melodic pattern that repeats throughout or for long periods of the music
2	Hooks	A melody or rhythm that catches your attention in the music
3	Tonality	The different chords and scales used to make a piece of music – major/minor etc.
4	Scale	Series of 7 notes in a pattern These determine the overall mood of the piece
5	Expression	Making the music sing to the audience – using phrasing, articulation together with dynamics
6	Texture	How the music “feels”. In Popular music the chorus is normally louder with more instruments playing
7	Timbre	Change the effects on the instrument – add reverb etc, from the bottom of the garage band screen
8	Performance	The act of showing the end product – confidence and style are key!
9	Strophic form	The main form of a popular song – Intro, Verse, Chorus, Bridge, Instrumental, Pre-chorus, Outro
10	Distortion	An effect used by Rock/Metal guitar players The result is a fuzzy and crushing sound that isn't so pleasing to the ear

Music Knowledge	
11	<p>Timbre</p> 
12	<p>Timbre – more information</p> <p>In music, timbre, also known as tone colour or tone quality, is the perceived sound quality of a musical note, sound or tone. Timbre distinguishes different types of sound production, such as choir voices and musical instruments. It also enables listeners to distinguish different instruments in the same category.</p> <p>This means the way instruments are played Examples are:</p> <p>Strings – bowed and plucked</p>  <p>Effects – such as echo, reverb, gradation</p> <p>Guitars – Distortion and wah</p>

Music Knowledge	
13	<p>What Is the Difference between a Hook and a Riff?</p> <p>Have you ever listened to a song and thought it was the greatest thing you'd ever heard? The element that draws you back to it is called the “hook” because it hooks you into the ideas that it conveys.</p>
14	<p>Riffs</p> <p>A riff is something creative, catchy, and short that adds more character to a song. Normally instrumental – played on guitars and keyboard instruments</p>
15	<p>Hooks</p> <p>The hook can be in the lyrics, verses, chorus, bridge, or solos that are in the composition. Anything that brings you to want to listen to a song repetitively counts as this part of musical theory.</p>
16	<p>Textures</p>  <p>Monophonic – In unison or 1 line of music Homophonic – Movement in chords with the melody Polyphonic – Lots of layers of movement and melodies Heterophonic – 2 instruments playing similar melodies</p>

Year 9 Physical Education Spring Term Knowledge Organiser

Key Vocabulary:		
1	Methods of training	Different ways you can exercise the body to improve you health and well-being
2	Muscular system	The muscular system is an organ system consisting of skeletal, smooth, and cardiac muscle
3	Principles	Principles of training means exercising regularly to improve skills and fitness.
4	Cardio-respiratory system	The parts of the body that allow us to breathe and circulate oxygen.
5	Acceleration	Acceleration describes how quickly you can increase your velocity towards maximum speed.
6	Reps and sets	Rep = repetition of an exercise. E.G. perform 6 repetitions of an exercise before resting. Set = a group of repetitions (or reps) of that exercise
7	Body composition	Body composition is a method of describing what the body is made up of. Ratio of fat and fat free mass (bone / muscle).

8		Physiology - The human body
		<p>Muscular system</p> <p>Speed - distance divided by the time taken. How quickly you can cover a distance.</p> <p>Aerobic Endurance- efficiency of the cardiorespiratory system in supplying oxygen and nutrients to working muscles.</p> <p>Muscular Endurance- the ability of the muscular system to work efficiently, where a muscle can continue contracting over a period of time. (Muscles can work repeatedly without getting tired).</p> <p>Strength - the maximum force that can be generated by a muscle or muscle group.</p> <p>Flexibility- having an adequate range of motion in all joints of the body. The range of movement at a joint.</p> <p>Body Composition - the relative ratio of fat mass to fat-free mass (vital organs, muscle, bone) in the body.</p> <p>Components of Fitness Health/Physical AE/ME/F/ST/SP/BC</p>
		<p>Power- the product of strength and speed combined (explosive).</p> <p>Reaction Time - the time taken for a sports performer to respond to a stimulus and the initiation of their response. (How quickly you can react to a stimulus).</p> <p>Agility - the ability of a sports performer to quickly and precisely move or change direction without losing balance or time.</p> <p>Balance - maintain a stable position (static) or dynamic - whilst in motion.</p> <p>Coordination - smooth flow of movement / performance of a skill.</p> <p>Components of Fitness Skill ABC PR</p>
9		Principles of training
		<p>F - Frequency - How often your train</p> <p>I - Intensity - how hard you train</p> <p>T - Type - the method of training you use</p> <p>T - Time - How long you train for</p>

10		Body components
		<p>Methods of training</p> <p>Aerobic Endurance Training Continuous - a steady pace, moderate intensity 30mins+ Interval - periods of higher and lower intensity Fartlek - form of continuous training where intensity is changed by running at different speeds or different terrains.</p> <p>Circuit Training - circuit training involves a series of different activities performed at stations.</p> <p>Speed Training Interval - Work high intensity and rest Hollow - Fast slow fast Acceleration - Increase speed through zones</p> <p>Weight Training - using free weights or resistance machines. It involves using ratios (high, medium or low) of weights, reps and sets to improve either strength, endurance or power.</p> <p>Flexibility Training Static stretches - no movement and active or passive Dynamic - involve movement (e.g. heel flicks)</p> <p>Plyometrics - exercises performed quickly to improve power</p>
11		School.....
		<p>RESPECT - BE polite and considerate Shaking hands after the game</p> <p>RESILIENCE - Positivity Trying that skill again even though its difficult</p> <p>ASPIRATION - belief in our self What can I do to improve my performance</p>

Year 9 Religious Studies Autumn Term Knowledge Organiser : Exploring Islam

Key Vocabulary:			What do Muslims believe?		How do Muslims practice their religion?	
1	Prophet	A messenger from Allah, chosen to deliver Allah's words to mankind.	1	Life of Muhammad (pbuh)	6	Mosque
2	Shahadah	A declaration of faith. "There is no God but Allah, and Muhammad (pbuh) is His messenger."	2	Prophethood	The Muslim holy building is called the mosque. Mosques have many important features like the minaret, which is a tower from which the call to prayer is made. Many will have a domed prayer hall for men to pray, and some mosques have a separate area for women to worship.	
3	Salah	The second of the Five Pillars, meaning 'Prayer'.	3	The Five Pillars	7	Salah
4	Zakah	The third pillar which means 'Charity'. Zakah is the compulsory charitable payment of 2.5%	4	Qur'an	It is taught that Muhammad (pbuh) made a promise to Allah that Muslims would pray 5 times a day. These 5 daily prayers all follow a set routine and involve specific movements, called rakahs. Many Muslims will choose to pray at the mosque, although Islam teaches that you can pray anywhere, as long as you perform wudu, or the cleansing ritual.	
5	Sawm	The fourth pillar, meaning 'Fasting'. Refers to the practice of fasting during Ramadan.	5	Akhirah	8	Sawm
6	Hajj	The fifth pillar, which means 'Pilgrimage'. This is a special journey to Mecca, a place of religious importance.	6		The Qur'an was revealed to the Prophet Muhammad (pbuh) over many years, but the first revelation is celebrated during the month of Ramadan. Muslims remember the night of power by fasting, choosing to focus their attention on Allah and the Qur'an rather than the desires of the body. This also allows people to develop a sense of empathy for those less fortunate.	
7	Akhirah	The afterlife. Muslims believe in the existence of heaven and hell.	7		9	Festivals
					There are several Muslim festivals during the year. We will focus on two: Eid al Adha and Eid al Fitr.	
					Eid al Adha: This marks the end of Hajj, the annual pilgrimage to the city of Mecca. Muslims celebrate the conclusion of Hajj with family and friends, and those who have made the pilgrimage shave their heads.	
					Eid al Fitr: This celebrates the end of Ramadan. Many Muslims will get together with family and friends, and celebrate by having a large meal, exchanging cards or gifts and being thankful to Allah.	

Year 9 Spanish Autumn Term Knowledge Organiser – Tecnología y medios

1. Key Vocabulary / grammar		3. Adjectives		6. Parallel Text:		
Present Chateo con mis amigos – I chat with my friends Comparto mis vídeos favoritos – I share my favourite videos Descargo melodías o aplicaciones – I download ringtones or apps Hablo por Skype – I talk on Skype Juego – I play Leo mis SMS – I read my texts Escribo SMS – I send texts Saco fotos – take photos Veo - I watch Salgo con mis amigos – I go out with my friends Voy al cine – I go to the cinema Hago mis deberes – I do my homework	Past Chateé con mis amigos – I chatted with my friends Compartí mis vídeos favoritos – I shared my favourite videos Descargué melodías o aplicaciones – I downloaded ringtones or apps Hablé por Skype – I talked on Skype Jugué - I played Leí mis SMS – I read my texts Escribí SMS – I wrote texts Saqué fotos – I took photos Vi – I watched Salí con mis amigos – I went out with my friends Fui al cine – I went to the cinema Hice mis deberes – I did my homework	educativo – educational gracioso - funny informativo - informative importante - important inútil - pointless interesante - interesting estúpido/tonto – stupid/silly	útil - useful entretenido - entertaining pueril/infantil - childish aburrido - boring impresionante - impressive bueno / malo – good/bad emocionante – exciting	1	Normalmente chateo con mis amigos o	Normally I chat with my friends or
				2	saco fotos con mi móvil.	I take photos with my mobile.
				3	Nunca juego en línea pero siempre	I never play online but always
				4	comparto mis vídeos favoritos por Snapchat	I share my favourite videos on Snapchat
				5	pero ayer escuché música.	but yesterday I listened to music.
				6	Escucho música pop porque es entretenida,	I listen to pop music because it's entertaining,
				7	pero a veces las letras son tristes.	but sometimes the lyrics are sad.
				8	Sin embargo, odio la música de los años sesenta	However, I hate 60's music
				9	porque es un poco aburrida.	because it's a bit boring.
				10	Además, ayer vi un documental en la tele	In addition, yesterday I watched a documentary on the TV
				11	y fue muy educativo	and it was very educational
				12	pero normalmente me gusta ver las películas de acción	but normally I like to watch action films
				13	porque son emocionantes.	because they are exciting.
				14	La semana pasada fui al cine	Last week I went to the cinema
				15	para ver una película de amor.	to watch a romance film.
				16	Me encanta ir al cine pero cuesta un ojo de la cara.	I love going to the cinema but it costs an arm and a leg.
2. Let's show off		4. Music	5. TV			
		Escucho de todo – I listen to everything Escucho la música de... - I listen to ____'s music Escucho... - I listen to... El rap - rap El R 'n' B - RnB El rock - rock La música clásica - classical music La música electrónica – electro music La música pop – pop music La música Latina – Latin music La música de los años sesenta – 60s music Me gusta... - I like La letra – the lyrics	Un programa de deportes – a sports programme Una comedia – a comedy Un concurso – a gameshow Un documental – a documentary Un reality – a reality show Una serie policíaca – a police series Un dibujo animado – a cartoon Una telenovela – a soap El telediario – the news Una película de terror – a horror film Una película de amor – a love/romantic film Una película de guerra – a war film Una película de acción – an action film Una película de ciencia-ficción – a sci-fi film			
Siempre me ha gustado ver/escuchar – I've always liked watching/listening to... Cuesta un ojo de la cara – it costs an arm and a leg Lo bueno es que... - The good thing is that Lo malo es que... - the bad thing is that						