

"Best possible education"

"Care and Support"



"Successful lives"



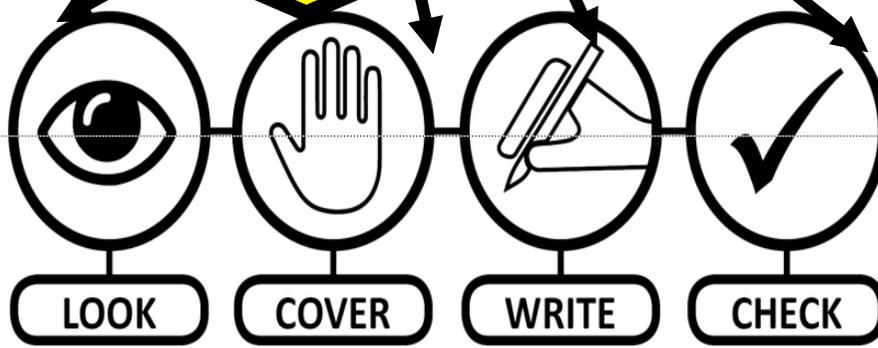
How do I make the best use of my knowledge organiser...

Use it create mind maps and plaster it on my wall

Fill in my knowledge gaps and make the connections between my learning

Use the questions to test my knowledge through memorisation!

If I miss a lesson, I can now catch up!



Self-Quizzing
 Create quiz questions on the topics that you need to learn.
 Check your answers and keep testing yourself on the questions that you find tricky.

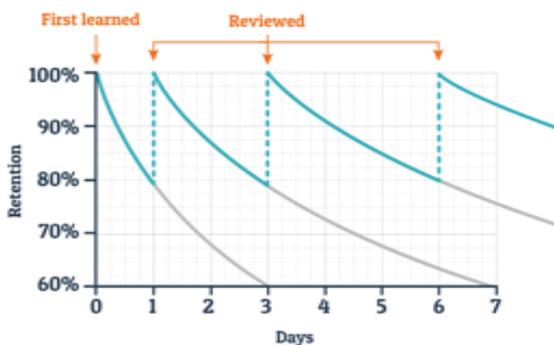
Flash Cards
 Use key words or questions with brief answers on the reverse. Try using a free app like Quizlet for a more interactive method.

Mind Mapping
 Use images, colours, symbols, keywords, capitals and sub-sections.

Mnemonics
 The first letter of each word is used to create a new word.
 The first letters in a list of words are used to form new words that create a story.

The Forgetting Curve

Typical Forgetting Curve for Newly Learned Information



First line shows you will forget information if you do not try to remember it in the first few days
 Other lines: You will retain information if you go over it at regular intervals. That is what you need to do to ensure you remember what you learned in lessons.

What is it?

This **curve** shows how information is forgotten when there is **NO** effort made to remember it. But also what happens when you **DO** review your work.

Why is it important?

It means that you will forget things that you don't go over. You **MUST** review new learning regularly.

How can I apply it to my learning?

- Quiz yourself after every few weeks randomly on things you struggle with.
- If you keep getting things right, make the time between each test longer.
- If keep getting things wrong, make time between each test shorter.

Six Guaranteed Top Techniques to Help You Revise

1 Retrieval Practice



- Test yourself on the material that you need to learn.
- Testing yourself will feel difficult and slow at first but it is the best way to memorise.
- Put your books away and then write down as much as you can remember.
- You can also recall or explain things out loud to yourself (active recall)
- Create quiz questions to test yourself.
- Make flashcards with questions and prompts.
- Use past paper exam questions.
- Once you know what you don't know – focus on learning these details.

2 Spaced Practice

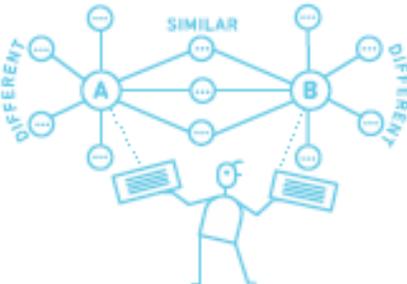
2



- Review the information that you need to learn regularly.
- Try to review new information you have studied once within 24 hours, then again after a week, then again after a month.
- Spreading your revision like this will mean you learn more in less time and will also mean you learn more quickly in lesson time during the year.
- Short regular revision sessions will also help to keep you calm during the exam periods.

3 Elaboration

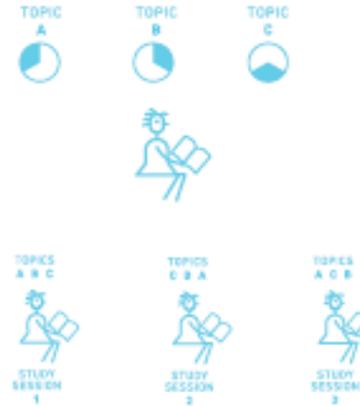
3



- Ask yourself questions while you are studying about how things work and why.
- Make connections between different ideas to explain how they work together.
- Think of two ideas (or characters) and think of ways they are similar and different.
- Describe how the things that you are studying apply to your own experiences and memories.

4 Interleaving

4



- Switch between ideas during a study session. Don't study one idea for too long.
- Go back over the ideas again in different orders to strengthen your understanding.
- Make links between different ideas as you switch between them.
- Don't switch too often! You need to make sure that you fully understand the ideas before moving on.
- Interleaving will feel harder than studying one topic for a long time. Don't give up – it will be more effective!

5 Concrete Examples

5



- Collect examples of exam questions and high quality responses from class, revision guides or websites such as Mr Bruff.com.
- Make links between what you need to learn and the examples that you have collected.
- Identify the qualities that you can emulate in your own responses.

6 Dual Coding

6



- Take information that you are trying to learn and draw visuals to go along with it.
- Try to come up with different ways to represent the information visually.

Contents page -Y11(H) KO

Subject	Page Number
Maths	5-18
English Literature	19-22
English Language	23-35
Science	
Biology: B5-B7	36-53
Chemistry: C4-C10	54-78
Physics: P5-P7	79-94
Sports Studies	95-99
Urdu	100-101
RE	102-103
French	104-109
Business Studies	110-115
IT	116-131
Art	132-133
Geography	134-143
History	144-150

4 Methods of Retrieval Practice

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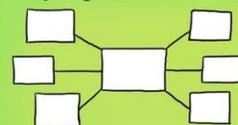
Before you start put away all your books & classroom materials.

Retrieval Practice Examples

- * Exit Tickets
- * Starter quizzes
- * Multiple choice quizzes
- * Short answer tests
- * Free write
- * Think, pair, share
- * Ranking & sorting
- * Challenge grids

BRAIN DUMP

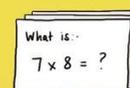
Write, draw a picture, create a mind-map on everything you know about a topic.



Give yourself a time limit, say 3 minutes, then have a look at your books & add a few things you forgot.

FLASHCARDS

Create your own flashcards, question on one side answer on the other. Can you make links between the cards?



You need to repeat the Q&A process for flashcards you fail on more frequently & less frequently for those you answer correctly.

QUIZZING

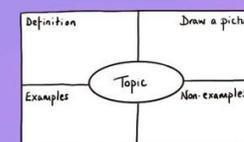
Create practice questions on a topic. Swap your questions with a partner & answer.

Question - What is a metaphor?

- A comparison using 'like, as, than'.
- A comparison where one thing is another.
- A comparison with a human attribute.

KNOWLEDGE ORGANISERS

Complete a knowledge organiser template for key information about a topic.



You can use knowledge organisers to learn new vocab & make links in between subjects or ideas.

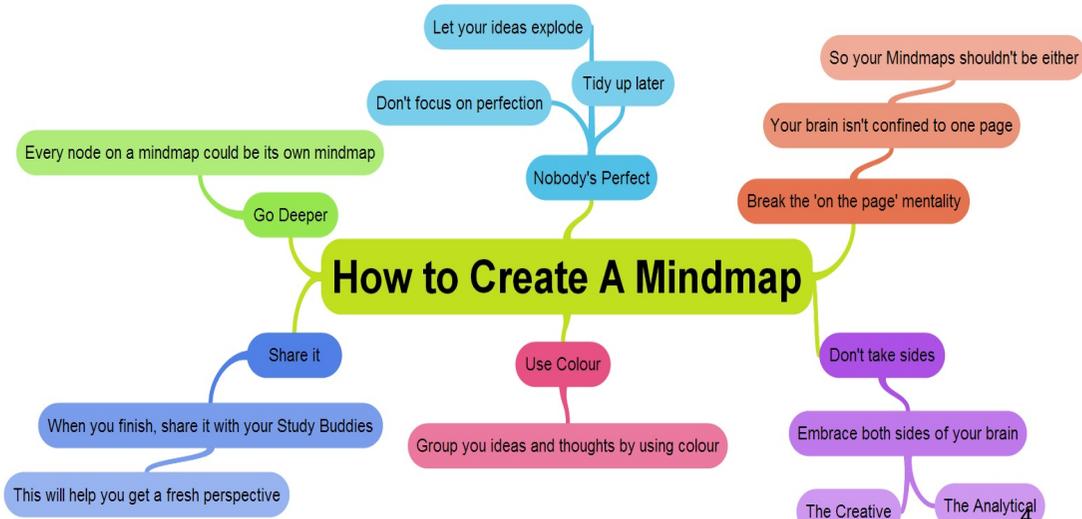
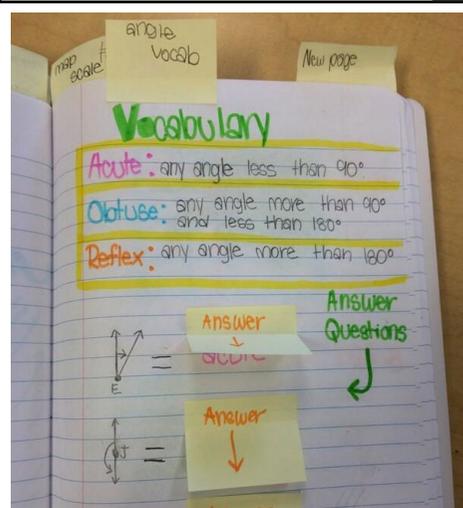
After you have retrieved as much as you can go back to your books & check what you've missed. Next time focus on that missing information

Read only as much as your hand can cover.

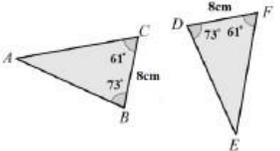
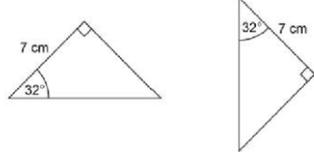
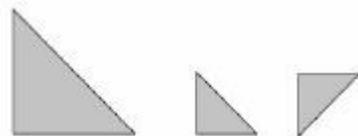
Cover what you just read with your hand.

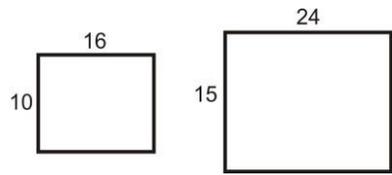
Remember what you've just read.

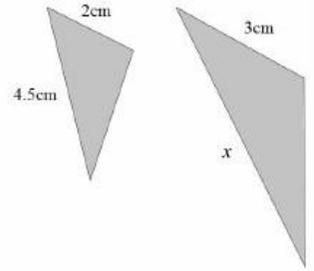
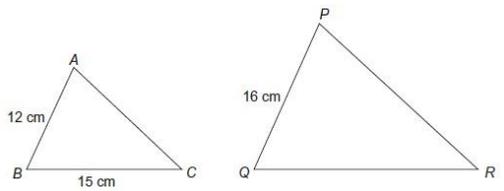
Retell what you read in your head or to a partner.

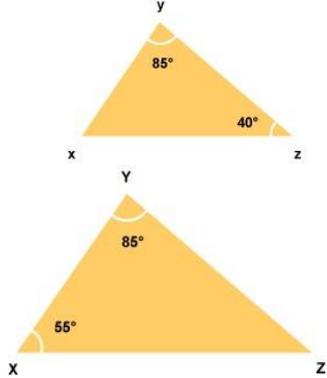
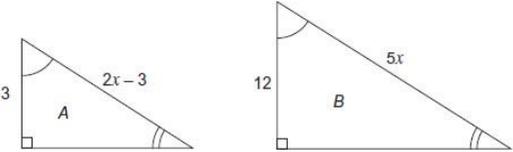


Knowledge Organiser Autumn 1&2
Topic: Congruence and Similarity

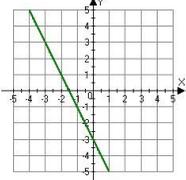
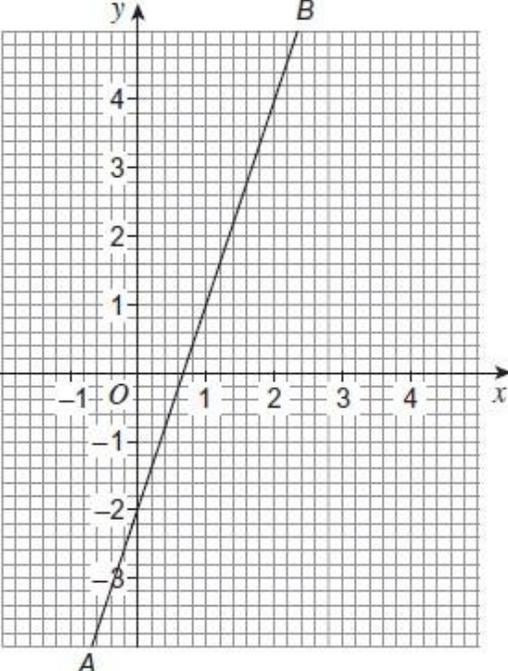
Topic/Skill	Definition/Tips	Example	Your Turn
1. Congruent Shapes	Shapes are congruent if they are identical - same shape and same size . Shapes can be rotated or reflected but still be congruent.		
2. Congruent Triangles	4 ways of proving that two triangles are congruent: 1. SSS (Side, Side, Side) 2. RHS (Right angle, Hypotenuse, Side) 3. SAS (Side, Angle, Side) 4. ASA (Angle, Side, Angle) or AAS <u>ASS does not prove congruency.</u>	 <p style="text-align: center;"> $BC = DF$ $\angle ABC = \angle EDF$ $\angle ACB = \angle FED$ \therefore The two triangles are congruent by AAS. </p>	 <p style="text-align: center;">Circle the reason why these triangles are congruent.</p> <p style="text-align: center;"> ASA SSS SAS RHS </p>
3. Similar Shapes	Shapes are similar if they are the same shape but different sizes . The proportion of the matching sides must be the same, meaning the ratios of corresponding sides are all equal.		

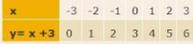
<p>4. Scale Factor</p>	<p>The ratio of corresponding sides of two similar shapes.</p> <p>To find a scale factor, divide a length on one shape by the corresponding length on a similar shape.</p>	 <p>Scale Factor = $15 \div 10 = 1.5$</p>	<p>Each side of a square is made 3 times as long.</p> <p>What happens to the perimeter?</p> <p>Circle your answer $\times 6$ $\times 3$ $\times 9$ $\times 12$</p>
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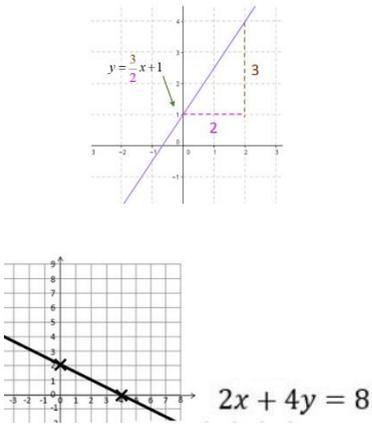
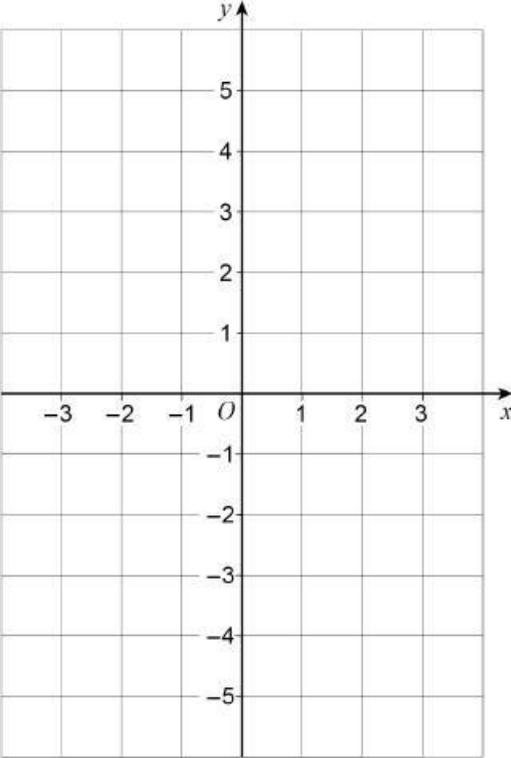
<p>5. Finding missing lengths in similar shapes</p>	<ol style="list-style-type: none"> Find the scale factor. Multiply or divide the corresponding side to find a missing length. <p>If you are finding a missing length on the larger shape you will need to multiply by the scale factor.</p> <p>If you are finding a missing length on the smaller shape you will need to divide by the scale factor.</p>	 <p>Scale Factor = $3 \div 2 = 1.5$ $x = 4.5 \times 1.5 = 6.75cm$</p>	<p>Triangles <i>ABC</i> and <i>PQR</i> are similar.</p> <p>Not drawn accurately</p>  <p>Work out the length <i>QR</i>.</p>
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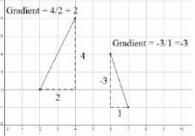
<p>6. Similar Triangles</p>	<p>To show that two triangles are similar, show that:</p> <ol style="list-style-type: none"> 1. The three sides are in the same proportion 2. Two sides are in the same proportion, and their included angle is the same 3. The three angles are equal 		<p>A and B are similar triangles. All measurements are in centimetres.</p> <p>Not drawn accurately</p>  <p>Work out the area of triangle B.</p>

Topic: Coordinates and Linear Graphs

Topic/Skill	Definition/Tips	Example	Your Turn
2. Midpoint of a Line	<p>Method 1: add the x coordinates and divide by 2, add the y coordinates and divide by 2</p> <p>Method 2: Sketch the line and find the values half way between the two x and two y values.</p>	<p>Find the midpoint between (2,1) and (6,9)</p> $\frac{2+6}{2} = 4 \quad \frac{1+9}{2} = 5$ <p>So, the midpoint is (4,5)</p>	<p>P is (4, 9) and Q is (-2, 1)</p> <p>Circle the midpoint of PQ.</p> <p>(1, 5) (3, 4) (3, 5) (6, 8)</p>
3. Linear Graph	<p>Straight line graph.</p> <p>The general equation of a linear graph is</p> $y = mx + c$ <p>where m is the gradient and c is the yintercept.</p> <p>The equation of a linear graph can contain an x-term, a y-term and a number.</p>	<p>Example:</p>  <p>Other examples:</p> $x = y$ $y = 4$ $x = -2$ $y = 2x - 7$ $y + x = 10$ $2y - 4x = 12$	 <p>Work out the equation of line AB.</p>

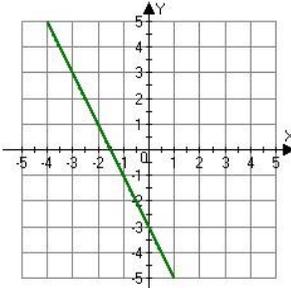
4. Plotting Linear Graphs	<p>Method 1: Table of Values</p> <p>Construct a table of values to calculate coordinates.</p>		<p>On the grid, draw the graph of $x + y = 2$ for values of x from -3 to 3</p>
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	<p>Method 2: Gradient-Intercept Method (use when the equation is in the form $y = mx + c$)</p> <ol style="list-style-type: none"> Plots the y-intercept Using the gradient, plot a second point. Draw a line through the two points plotted. <p>Method 3: Cover-Up Method (use when the equation is in the form $ax + by = c$)</p> <ol style="list-style-type: none"> Cover the x term and solve the resulting equation. Plot this on the x - axis. Cover the y term and solve the resulting equation. Plot this on the y - axis. Draw a line through the two points plotted. 		
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<p>5. Gradient</p>	<p>The gradient of a line is how steep it is.</p> <p>Gradient =</p> $\frac{\text{Change in } y}{\text{Change in } x} = \frac{\text{Rise}}{\text{Run}}$ <p>The gradient can be positive (sloping upwards) or negative (sloping downwards)</p>		<p>A is the point (2, -5)</p> <p>B is the point (4, -9)</p> <p>(a) Show that the gradient of the straight line passing through A and B is -2</p>
<p>6. Finding the Equation of a Line <u>given a point and a gradient</u></p>	<p>Substitute in the gradient (m) and point (x,y) in to the equation $y = mx + c$ and solve for c.</p>	<p>Find the equation of the line with gradient 4 passing through (2,7).</p> $y = mx + c$ $7 = 4 \times 2 + c$ $c = -1$ $y = 4x - 1$	<p>Write down the equation of the lines below</p> <p>gradient of 3 and y-intercept of 6</p> <p>gradient of -4 and y-intercept of 3</p>
<p>7. Finding the Equation of a Line <u>given two points</u></p>	<p>Use the two points to calculate the gradient. Then repeat the method above using the gradient and either of the points.</p>	<p>Find the equation of the line passing through (6,11) and (2,3)</p> $m = \frac{11 - 3}{6 - 2} = 2$ $y = mx + c$ $11 = 2 \times 6 + c$ $c = -1$	

		$y = 2x - 1$	
8. Parallel Lines	If two lines are parallel , they will have the same gradient . The value of m will be the same for both lines.	<p>Are the lines $y = 3x - 1$ and $2y - 6x + 10 = 0$ parallel?</p> <p>Answer: Rearrange the second equation in to the form $y = mx + c$</p> $2y - 6x + 10 = 0 \rightarrow y = 3x - 5$ <p>Since the two gradients are equal (3), the lines are parallel.</p>	<p>Show that the lines $y = 3x + 7$ and $2y - 6x = 8$ are parallel. Do not use a graphical method.</p>
9. Perpendicular Lines	If two lines are perpendicular , the product of their gradients will always equal -1 .	<p>Find the equation of the line perpendicular to $y = 3x + 2$ which passes through (6,5)</p>	<p>Line N has the equation</p> $y = 5 - \frac{3}{4}x$

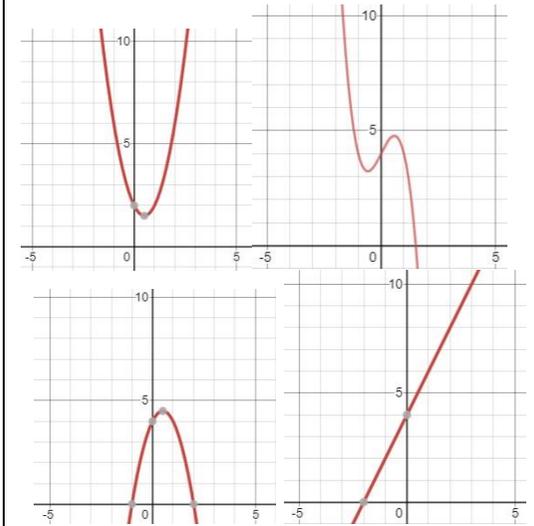
	<p>The gradient of one line will be the negative reciprocal of the gradient of the other line.</p> <p>You may need to rearrange equations of lines to compare gradients (they need to be in the form $y = mx + c$)</p>	<p>Answer: As they are perpendicular, the $\frac{1}{3}$ gradient of the new line will be $-$ as this is the negative reciprocal of 3.</p> $y = mx + c$ $5 = - \times 6 + c \quad \frac{1}{3}$ $c = 7$ $y = -x + 7 \quad \frac{1}{3}$ <p>Or</p> $3x + x - 7 = 0$	<p>Circle the gradient of a line that is perpendicular to line N.</p> <p>$-\frac{4}{3}$ $\frac{3}{4}$ $\frac{4}{3}$ 3</p>
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Topic/Skill	Definition/Tips	Example		Your Turn									
Expanding double brackets	Multiply every term in the first bracket by every term in the second bracket Be careful with negatives	GRID e.g. $(x + 2)(x + 7)$ <table border="1" data-bbox="1003 391 1265 534"> <tr> <td></td> <td>x</td> <td>+2</td> </tr> <tr> <td>x</td> <td>x²</td> <td>+2x</td> </tr> <tr> <td>+7</td> <td>+7x</td> <td>+14</td> </tr> </table> $x^2 + 2x + 7x + 14$ $= x^2 + 9x + 14$		x	+2	x	x ²	+2x	+7	+7x	+14	SMILEY FACE e.g. $(x + 3)(x + 5)$  $x^2 + 3x + 5x + 15$ $= x^2 + 8x + 15$	Expand $(x + 2)(x + 3)$ Expand $(x - 2)(x + 1)$
	x	+2											
x	x ²	+2x											
+7	+7x	+14											
Square a single bracket	Multiply the bracket by itself	$(x + 2)^2 = (x + 2)(x + 2)$ $= x^2 + 4x + 4$		$(x + 3)^2 =$									
Linear Graph	Straight line graph. The equation of a linear graph can contain an x-term , a y-term and a number . Often these come in the form $y = mx + c$	Example:  Other examples: $x = y$ $y = 4$ $x = -2$ $y = 2x - 7$ $2y - 4x = 12$		For each equation, say whether the line would be horizontal, vertical or diagonal: $x = y$ $y = 4$ $x = -2$ $y = 2x - 7$ $2y - 4x = 12$									

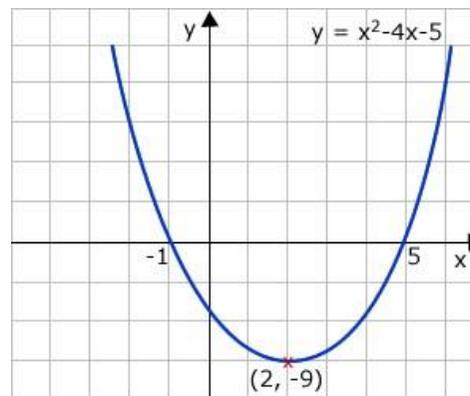
<p>Quadratic</p>	<p>A quadratic expression is of the form</p> $ax^2 + bx + c$ <p>where a, b and c are numbers, $a \neq 0$</p>	<p>Examples of quadratic expressions:</p> x^2 $8x^2 - 3x + 7$ <p>Examples of non-quadratic expressions:</p> $2x^3 - 5x^2$ $9x - 1$	<p>Which of these are quadratic equations?</p> $2x^2 = x + 20$ $x - 4 = 20$ $4 = 20 - 2x^2$ $x^3 = 20 + x^2$
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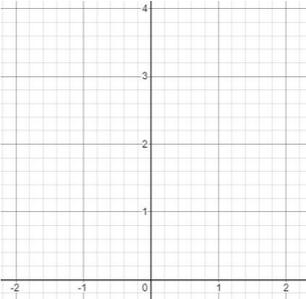
Quadratic
Graph

A '**U-shaped**' curve called a **parabola**.
The equation is of the form $y = ax^2 + bx + c$, where a , b and c are numbers, $a \neq 0$. If $a < 0$, the parabola is **upside down**.



Tick the Quadratic Graphs



Plotting Quadratic Graphs	Sketching a quadratic graph is the same as with a linear equation. Choose some values for x , work out the y values, and plot the graph.	Find the values of y when $y = x^2$ <table border="1" data-bbox="996 416 1581 560"> <tbody> <tr> <td>x</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> <td>2</td> </tr> <tr> <td>y</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </tbody> </table>	x	-2	-1	0	1	2	y			4			Finish the table and sketch the curve: 
x	-2	-1	0	1	2										
y			4												
Factorising Quadratics	When a quadratic expression is in the form $x^2 + bx + c$ find the two numbers that add to give b and multiply to give c . Be careful with negatives	$x^2 + 7x + 10 = (x + 5)(x + 2)$ (because 5 and 2 add to give 7 and multiply to give 10) $x^2 + 2x - 8 = (x + 4)(x - 2)$ (because +4 and -2 add to give +2 and multiply to give -8)	$x^2 + 3x + 4 =$ $x^2 - 3x - 2 =$												
Solving Quadratics ($ax^2 = b$)	Isolate the x^2 term and square root both sides. Remember there will be a positive and a negative solution .	$2x^2 = 98$ $x^2 = 49$ $x = \pm 7$	$3x^2 = 75$												

Trigonometry	The ratios between the sides and angles of triangles		
Labelling the triangle	H = hypotenuse O = Opposite A = Adjacent θ is the angle involved		
Sine	$\sin \theta = \frac{O}{H}$	$\theta = \sin^{-1} \frac{O}{H}$	
Cosine	$\cos \theta = \frac{A}{H}$	$\theta = \cos^{-1} \frac{A}{H}$	
Tangent	$\tan \theta = \frac{O}{A}$	$\theta = \tan^{-1} \frac{O}{A}$	

Use trigonometry to work out the size of angle x .

Not drawn accurately

$x^2 + 5x + 6 = 0$

$x^2 = 5x - 6$

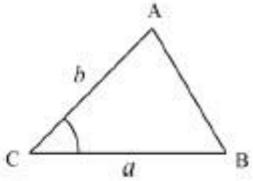
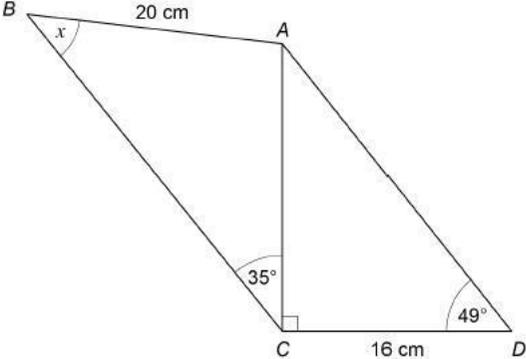
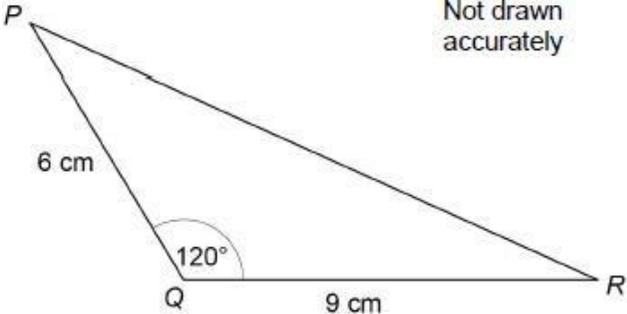
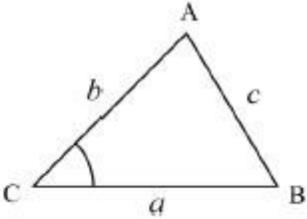
Circle the value of $\cos 30^\circ$

$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$
0	1

Exact values

θ	0°	30°	45°	60°	90°
$\sin \theta$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\tan \theta$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	

These can be found using the triangles:

<p>Area of a triangle</p>	$\text{Area} = \frac{1}{2}ab\sin C$ <p>You can use this formula if you know two sides and the angle between them</p>		<p><i>ABC</i> and <i>ACD</i> are triangles.</p>  <p>Not drawn accurately</p> <p>Work out the size of angle x.</p> <p>Here is a triangle.</p>  <p>Not drawn accurately</p> <p>Work out the length PR.</p>
<p>Sine Rule – calculating a side</p>	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ <p>You use this rule if you know one angle and the opposite side, and one angle and you want to work out the length of its opposite side</p>		
<p>Sine Rule – calculating an angle</p>	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$ <p>You use this rule if you know one angle and the opposite side, and one side and you want to work out the size of its opposite angle</p>		
<p>Cosine Rule – calculating a side</p>	$a^2 = b^2 + c^2 - 2bc\cos A$ <p>You use this rule if you know two sides and the included angle and want to work out the missing side</p>		
<p>Cosine Rule – calculating an angle</p>	$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$ <p>You use this rule if you know all three sides and want to work out an angle</p>		

English Literature – A Christmas Carol

PLOT STRUCTURE

The Preface
Dickens introduces his 'Ghostly Little Book' and his 'ghost on an idea'.

He talks to his reader telling them that he wants if to 'haunt' their memories, so they don't forget why we need to live by Christian values.

Stave One
Scrooge is at work in his counting house. Despite the Christmas Eve cold, he refuses to spend money on coals for the fire. Scrooge's turns down his nephew, Fred's, invitation to his Christmas party and the request of two men who want money for charity. Scrooge is visited by the ghost of his dead partner, Jacob Marley, who tells Scrooge that, due to his greedy life, he has to wander the Earth wearing heavy chains. He tells Scrooge that three spirits will visit him during the next three nights.

Stave Two
He wakes and the Ghost of Christmas Past takes Scrooge into the past. Invisible to those he watches, Scrooge revisits his childhood school days, his apprenticeship with a jolly merchant named Fezziwig, and his engagement to Belle, who leaves Scrooge as he loves money too much to love another human being. Scrooge sheds tears of regret before being returned to his bed.

Stave Three
The Ghost of Christmas Present shows Scrooge Christmas as it will happen that year. Scrooge watches the Cratchit family eat a tiny meal in their little home. He sees Bob Cratchit's son, Tiny Tim, whose kindness and humility warm Scrooge's heart. The spectre shows Scrooge his nephew's Christmas party. Toward the end of the day the ghost shows Scrooge two starved children, Ignorance and Want. He vanishes as Scrooge notices a dark, hooded figure coming.

Stave Four
The Ghost of Christmas Yet to Come takes Scrooge through a sequence of scenes linked to an unnamed man's death. Scrooge, is keen to learn the lesson. He begs to know the name of the dead man. He finds himself in a churchyard with the spirit pointing to a grave. Scrooge looks at the headstone and is shocked to read his own name. He is desperate to change his fate and promises to change his ways. He suddenly finds himself safely tucked in his bed.

Stave Five
Scrooge rushes out onto the street hoping to share his newfound Christmas spirit. He sends a turkey to the Cratchit house and goes to Fred's party, As the years go by, he continues to celebrate Christmas with all his heart. He treats Tiny Tim as if he were his own child, gives gifts for the poor and is kind, generous and warm.

Context:

- ✓ Dickens wrote 'A Christmas Carol' in 1843 focusing on how many of society's ills can be blamed on greed.
- ✓ Dickens' early life gave him first-hand experience of poverty.
- ✓ 1832 – The Great Reform Bill gave many middle class property owners the right to vote for the first time.
- ✓ Large sections of the middle classes, the working classes and women still didn't have the right to vote.
- ✓ 1834 – Poor Law Amendment Act – Led to a cut in aid given to the poor.
- ✓ Workhouses were created which poor people would have to live and work in, if they were unable to pay for their own housing.
- ✓ In 1843, Dickens read a government report on child labour in England.
- ✓ Dickens wanted to use his popularity to bring the problem of child poverty to the attention of a wider public.
- ✓ Victorian London was a place of great wealth and great poverty.

Characterisation	Key Quotes
Scrooge ✓ A selfish business man who transforms into a charitable philanthropist. Our protagonist.	"Hard and sharp as flint... As solitary as an oyster" "Are there no prisons...are there no workhouses..." "I will honour Christmas in my heart. I will live in the Past, the Present, and the Future. I will not shut out the lessons that they teach."
Fred ✓ Scrooge's nephew whose party invitation he declines. Represents forgiveness and family.	"I have always thought of Christmas as a good time, a kind, forgiving, charitable, pleasant time" "Scrooge's offences carry their own punishment. Who suffers? Himself!"
Jacob Marley ✓ Scrooge's dead partner who returns to warn Scrooge to change his ways.	"I wear the chain I forged in life" "The chain was made up of cash boxes.. ledgers.. heavy purses" "My spirit never roved beyond the narrow limits of our money changing hole"
Bob Cratchit ✓ Scrooge's clerk. He loves his family and is shown to be happy and morally upright. He has love but not wealth.	"The clerk's fire was so very much smaller that it looked like only one coal" "Tiny Time rode upon his shoulder" "I'll give you Mr Scrooge, the founder of the feast" "I think he's walked a little slower than he used to" –
Tiny Tim ✓ Bob's son whose story plays a part in inspiring Scrooge's transformation. Represents the victims of poverty.	"He bore a little crutch, and had his limbs supported by an iron frame!" "Tiny Tim hoped the people saw him in the church, because he was a cripple, and remember upon Christmas day, who made lame beggars walk, and blind men see." "God bless us everyone"
The Ghost of Christmas Past ✓ A strange combination of young and old, wearing white robes and looking like a candle.	"Would you (Scrooge) so soon put out he light I give?" "A solitary child, neglected by his friends, is left there still – Scrooge sobbed." "Scrooge's heart and soul were in the scene.. he remembered everything, enjoyed everything."
The Ghost of Christmas Present ✓ A portly, jovial gentleman surrounded by a warm glow. He brings joy to the neediest.	"A jolly giant who bore a glowing torch with a cheery voice and a joyful air" "I see a vacant seat. The child will die" "They are Man's. This boy is Ignorance. This girl is Want. Beware for I see that written which is Doom."
The Ghost of Christmas Yet To Come ✓ A robed and hooded spirit who confronts Scrooge with his own tombstone.	"It was shrouded in a deep black garment which concealed its head, its face, its form and left nothing visible except one outstretched hand" "Scrooge crept towards it, trembling, and following the finger, read upon the stone of the neglected grave his own name, Ebenezer Scrooge."
Fezziwig ✓ Scrooge's ex-employer. A representation of a good employer and generosity of spirit.	"Bless his heart; it's Fezziwig alive again!" "He has the power to render us happy or unhappy; to make our service light or burdensome. The happiness he gives, is as if it cost a fortune"
Belle ✓ Scrooge's fiancé as a young man.	"Another idol has displaced me.. a golden one"
Fan ✓ Scrooge's sister. Fred's mother.	"I have come to bring you home dear brother.. home, home, home!"

Key Terms and ideas:

- ✓ Novella
- ✓ Ghost Story
- ✓ Bildungsroman
- ✓ Transformation
- ✓ Redemption
- ✓ Christian Values
- ✓ 1st person narrative voice

- ✓ 3rd person omniscient narrator
- ✓ Stave
- ✓ Metaphor, simile, imagery
- ✓ Senses
- ✓ Pace
- ✓ Shifts in time, place, person

Key Concepts and Themes:

- ✓ Greed
- ✓ Avarice (an excessive desire for wealth – one of the 7 deadly sins)
- ✓ Ignorance & Want (lack of knowledge/education & need/poverty)
- ✓ Redemption (being saved from sin or evil)
- ✓ Predestination
- ✓ Free Will
- ✓ Poverty
- ✓ Class
- ✓ Isolation
- ✓ Transformation
- ✓ We observe Scrooge observing...
- ✓ The passage of time
- ✓ Family
- ✓ Guilt
- ✓ Generosity
- ✓ Social Responsibility
- ✓ Justice
- ✓ The supernatural
- ✓ Christmas
- ✓ Death

KS4 Independent Study Tasks



Task 1: Context Leaflet

'Are there no prisons?' asked Scrooge.
 'Plenty of prisons,' said the gentleman, laying down the pen again.
 'And the Union workhouses.' demanded Scrooge. 'Are they still in operation?'
 'They are. Still,' returned the gentleman, 'I wish I could say they were not.'
 'The Treadmill and the Poor Law are in full vigour, then?' said Scrooge.
 'Both very busy, sir.'

Starting with the 'context' section in your Knowledge Organiser, research the times Dickens was writing about. Design a leaflet telling younger students about the background to 'A Christmas Carol'.

You must include the following:

- 1) What is a Workhouse? Describe them and what the conditions were like.
- 2) What were the Poor Laws? Where did the 1834 Poor Law say the poor had to go?
- 3) What is the Treadmill that Scrooge mentions? Type into the search engine 'Treadmill punishment' to see what you can find out.
- 4) Find out about Charles Dickens. What was his early life like? When did he write the book? Why did he write the book? When was he born? When did he die?

You need to set this out as a leaflet:- include bullet points, headings and pictures as well as facts you have found.

Grade 7-9 enrichment:

Include a section about Dickens' life as a child. You might want to include some of the experiences that inflected him such as his father's time in a debtors prison.

Include a section about poverty and wealth in Britain today. How different is society now that we have the NHS and a Welfare System? Do you think the wealth divide has reduced and we live a more equal life nowadays?

Deadline:

Task 2: Characterisation

Read through the character profiles and their quotations. Make revision cards for each character. Make sure you include:

- ✓ Their personality, their relationships, their behaviours, their emotions, their impact on Scrooge
- ✓ Key quotes – learn these ready for a mini-test in class.

Grade 7-9 enrichment: Add at least one method to each card, and analyse its impact on the reader. How is Dickens using character to tell us about society?

Deadline:

Task 3: Ignorance and Want

"They were a boy and girl. Yellow, **meagre**, ragged, scowling, wolfish; but prostrate, too, in their **humility**. Where graceful youth should have filled their features out, and touched them with its freshest tints, a stale and shrivelled hand, like that of age, had pinched, and twisted them, and pulled them into shreds. Where angels might have sat enthroned, devils lurked, and glared out **menacing**. No change, no **degradation**, no **perversion** of humanity, in any grade, through all the mysteries of wonderful creation, has monsters half so horrible and dread."

Draw and label the characters of Ignorance and Want.

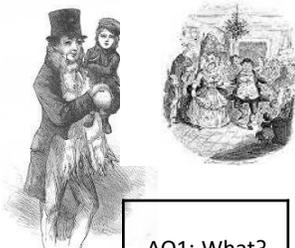
- ✓ Use a dictionary to find the meaning of the words in bold.
- ✓ Draw the 2 characters. Add labels from the description.
- ✓ How does Dickens' present the characters of Ignorance and Want, and what is his main purpose in doing so? What does he want Scrooge, and his audience, to consider?

Grade 7-9 enrichment:

"They are Man's," said the Spirit, looking down upon them.

Write to discuss Dickens' uncompromising statement that Ignorance and Want belong to us all. How important do you think he saw his role as novelist?

Deadline:



AO1: What? Details and evidence

AO2: How? Methods and effects

AO3: Why? Contexts and meanings

Task 4: The Ghosts

Create a map to show each of the 'stops' shown to Scrooge by the three ghosts. The Plot grid overleaf will help you get started, but you will need to add in more detail.

Make maps for:

- The Ghost of Christmas Past
- The Ghost of Christmas Present
- The Ghost of Christmas Yet To Come

Grade 7-9 enrichment:

Add writing to answer the question: How does Dickens use the ghosts to direct Scrooge through his transformation? Why show him those particular scenes?

Deadline:

Task 5: Scrooge's Transformation

How does Dickens present the transformation of Scrooge? Create a 5 stage document tracking the transformation of Scrooge. Include details, quotes and images. Use the plot structure box overleaf to help.

Include:

- ✓ Scrooge in Stave One, at work, in the street and at home
- ✓ Scrooge in Stave Two observing his past
- ✓ Scrooge in Stave Three witnessing the reality of Victorian life at Christmas
- ✓ Scrooge in Stave Four listening in to people's conversations about a dead man, then seeing his own grave
- ✓ Scrooge in Stave Five waking up on Christmas morning.

Grade 7-9 enrichment:

Analyse the structure Dickens has chosen. Think about how he has used this to fit the bildungsroman genre and to communicate a social message.

Deadline:



Task 6: Timed essay – 1 hour

Choose one of the following essay titles. Read, plan, prepare. You will be asked to write this essay in class in exam conditions. You will need to cover AO1, 2 and 3 in your essay.

- ✓ How does Dickens present Scrooge as an outsider to society?
- ✓ How does Dickens present ideas about social responsibility?
- ✓ How does Dickens present the theme of guilt?
- ✓ How does Dickens present ideas about actions and consequences?
- ✓ How does Dickens present the theme of loneliness and isolation?
- ✓ How does Dickens present happiness and joy in the novel?

Grade 7-9 enrichment:

Top band answers require SQI, MQE, word level analysis and context. Aim high by making your analysis developed, critical and exploratory.

Deadline:

MACBETH knowledge organiser

PLOT SUMMARY BY ACT

Act 1	The play opens with three witches chanting on a bleak moorland. In the next scene we hear a battle report in which a soldier Macbeth bravely fought in a battle to defend Scotland. On a bleak Scottish moorland, Macbeth and Banquo, two of King Duncan's generals, discover three strange women (witches). The witches prophesy that Macbeth will be promoted twice: to Thane of Cawdor and King of Scotland. Banquo's descendants will be kings, but Banquo isn't promised any kingdom himself. Macbeth and Banquo want to know more, but the "weird sisters" disappear. Soon afterwards, King Duncan names Macbeth Thane of Cawdor as a reward for his success in the recent battles. The promotion seems to support the prophecy. The King then proposes to make a brief visit that night to Macbeth's castle. Lady Macbeth receives news from her husband about the prophecy and his new title. She vows to help him become king by whatever means are necessary...
Act 2	Macbeth returns to his castle, followed almost immediately by King Duncan. The Macbeths plot together to kill Duncan and wait until everyone is asleep. At the agreed time, Lady Macbeth gives the guards drugged wine so Macbeth can enter and kill the King. He regrets this almost immediately, but his wife reassures him. She leaves the bloody daggers by the dead king just before Macduff arrives. When Macduff discovers the murder, Macbeth kills the drunken guards in a show of rage and retribution. Duncan's sons, Malcolm and Donalbain, flee, fearing for their own lives; but they are, nevertheless, blamed for the murder.
Act 3	Macbeth becomes King of Scotland but is plagued by feelings of insecurity. He remembers the prophecy that Banquo's descendants will inherit the throne and arranges for Banquo and his son Fleance to be killed. In the darkness, Banquo is murdered, but his son escapes the assassins. At his state banquet that night, Macbeth sees the ghost of Banquo and worries the courtiers with his mad response. Lady Macbeth dismisses the court and unsuccessfully tries to calm her husband.
Act 4	Macbeth seeks out the witches who say that he will be safe until a local wood, Birnam Wood, marches into battle against him. He also need not fear anyone born of woman. They also prophesy that the Scottish succession will still come from Banquo's son. Macbeth embarks on a reign of terror, slaughtering many, including Macduff's family. Macduff had gone to seek Malcolm (one of Duncan's sons who fled) at the court of the English king. Malcolm is young and unsure of himself, but Macduff, pained with grief, persuades him to lead an army against Macbeth.
Act 5	Macbeth feels safe in his remote castle at Dunsinane until he is told that Birnam Wood is moving towards him. Malcolm's army is carrying branches from the forest as camouflage for their assault on Macbeth's stronghold. Meanwhile, an overwrought and guilty Lady Macbeth walks in her sleep and tells her secrets to her doctor. She commits suicide. As the final battle commences, Macbeth hears of Lady Macbeth's suicide. In the midst of a losing battle, Macduff challenges Macbeth. Macbeth learns Macduff is the child of a caesarean birth (loophole!), realises he is doomed, and submits to his enemy. Macduff triumphs and brings the head of the traitor Macbeth to Malcolm. Malcolm declares peace and goes to Scone to be crowned king.

KEY VOCABULARY

dramatic irony
Hamartia (fatal flaw)
Hubris (excessive pride/ego)
tragic hero
remorse / remorseful
paranoia / paranoid
deception / deceive
role reversal
betrayal / betray
manipulation / manipulate
courage / courageous
nihilism / nihilistic
inevitability / inevitable
equivocal/equivocator
Machiavellian
tyrant/ tyrannical/ tyranny
supernatural
treason/treachery
valiant
malevolent
macabre
Natural order
regicide
duplicity
soliloquy
catharsis

KEY THEMES

Ambition —Despite being a loyal and brave soldier at the beginning of the play, Macbeth can not resist the power of his ambition (his fatal flaw). Lady Macbeth's ambition also knows no bounds. Both characters are willing to disobey God to fulfil their ambitions. But consider where ambition leads these characters...
Appearance and Reality - Shakespeare introduces this theme immediately when the Witches chant 'Fair is foul and foul is fair' in the very first scene. This is a play where people's outward appearances cannot be trusted. What might initially appear good, often turns out to be evil...
Guilt — Both Macbeth and Lady Macbeth are plagued by guilt after the regicide. As a result of this, the mental stability of both characters suffers a dramatic decline. Lady Macbeth grossly underestimates the power of guilt and is made to pay for this with her life. In the play the motif of blood represents guilt.
Power —The battle for power can be seen throughout the play. Arguably, some of the most powerful characters are female: Lady Macbeth and the Witches. Both forces are able to manipulate the play's protagonist: Macbeth. However, the power of God cannot be ignored. Are Macbeth and Lady Macbeth punished for committing regicide (a sin against God)?
Chaos and Disorder — At the beginning of the play, everything is in order. However, when Divine Right is challenged, with the murder of King James, the balance of The Great Chain of Being is offset. The play's events that succeed the regicide are marked by chaos and disorder, be it the mental state of the play's protagonists: Macbeth and Lady Macbeth; the state of Scotland or the weather / nature. Order is only restored at the very end of the play when the King is returned to its rightful owner: Malcolm (the eldest son of Duncan).

KEY QUOTATIONS

'Look like the innocent flower but be the serpent underneath it'	'A little water clears us of this deed'	'Out, damn spot!'
'O full of scorpions is my mind, dear wife'	'Tis the eye of childhood that fears a painted devil'	'The Thane of Fife had a wife' 'Hell is murky'
'Fair is foul and foul is fair;'	'Be innocent of the knowledge, dearest chuck, until thou applaud the deed'	'Amen stuck in my throat'
'So foul and fair a day I have not seen'	'Pour my spirits in thine ear'	'Tomorrow and tomorrow and tomorrow'
'I will try the last'	'come you sprits...unsex me here'	
'Life is a tale told by an idiot signifying nothing'	'I have no spur to prick the sides of my intent., only vaulting ambition'	'This dead butcher and his fiend-like queen'
'To be thus is nothing but to be safely thus'	'Unseam'd him from the nave to the chaps'	'Stars hide your fires, let not light see my black and deep desires'
	'smoked with bloody execution'	
'Some say the Earth was feverous and did shake'	'Would all great Neptune's ocean wash this blood from my hands?'	'I am in blood, stepped in so far...'
'My way of life is fall'n into the sear—the yellow leaf'	'All the perfumes of Arabia will not sweeten this little hand'	'Macbeth has murdered sleep' 'Look on it again, I dare not'

EXAMPLE EXAM QUESTIONS

- Starting with this speech, explore how Shakespeare presents ambition in Macbeth.
- Starting with this moment in the play, explore how Shakespeare presents the attitudes of Macbeth and Banquo towards the supernatural.
- Starting with this speech, explore how far Shakespeare presents Macbeth as a violent character.
- Starting with this speech, explore how far Shakespeare presents Lady Macbeth as a powerful character.
- Starting with this speech, explore how Shakespeare presents the differences between appearance and reality in Macbeth.

USEFUL EXAM PHRASES

Shakespeare presents... / shows... / hints... / creates... / uses ...
 Through the character of... Shakespeare shows / explores / questions...
 Shakespeare challenges the belief that...
 Shakespeare asks his reader to question / consider...
 Shakespeare reinforces this idea earlier / later in the play when...
 Shakespeare sends a clear message to his audience...

Key characters—function and analysis	
Macbeth	A captain in Duncan's army, later the Thane (Lord) of Glamis and Cawdor. When Three Witches predict that he will one day be king of Scotland, he takes his fate into his own hands, allowing his ambition and that of his wife's to overcome his better judgement. His bloody reign culminates in a battle against Malcolm and the English forces. Macbeth is the epitome of a tragic hero . He represents the dangers of overstepping your position in life—Great
Lady Macbeth	Macbeth's wife whose ambition helps to drive her husband toward the desperate act of regicide. Subsequently, her husband's tyranny and her own guilt recoil upon her, sending her into a madness from which she never recovers and leads to her suicide. Shakespeare demonstrates how a powerful, ambitious and ruthless character cannot escape the consequences of their own actions. Defies gender expectations of women at the time. Linked with the
Banquo	Macbeth's close friend and ally who also receives predictions from the witches. His response however, is more cautious than Macbeth's. The prediction, that Banquo's child will become king, is sufficient to spell Banquo's death, ordered by an increasingly resentful and paranoid Macbeth. The vision of Banquo's ghost later haunts Macbeth. He represents rationality and reason in contrast to Macbeth.
King Duncan	King of Scotland. His victories against rebellious kinsmen and the Norwegians have made him a popular king. When Macbeth initially decides not to kill the king, he gives Duncan's many qualities as his reasons. He names his eldest son—Malcolm—as his heir. He dies at the hands of Macbeth and therefore the Chain of Being or Natural Order is disrupted. Too trusting—his trust in the original Thane of Cawdor was betrayed—as was his trust in Mac-
Macduff	The Thane of Fife. He is loyal to Duncan and becomes suspicious of Macbeth early on in the play. He leaves Scotland to join Malcolm in England. The witches warn Macbeth to “Beware Macduff” prompting Macbeth to have Macduff's family killed. Macduff's role is vital as his killing of Macbeth allows the Natural Order to be restored. He remains the noble hero throughout and serves as a contrast to Macbeth.
Malcolm	Duncan's rightful heir. He leaves for England after his father's murder and enlists the support of the English king and English lords. He is shown as being noble and deserving of the throne. Malcolm is the embodiment of all that is good in kingship, and this is seen particularly in Act 4, Scene 3, in which he tests the allegiance of Macduff. His restoration to the Scottish throne is essential for the Chain of Being/Natural Order to be restored.
The Witches	The witches directly influence the actions of Macbeth . He did not have to act on their prophecies, but when he did, his death was sealed. This conflict between man and the supernatural runs throughout the play. The witches represent the dangers of the supernatural.

Context and writer's intentions
Divine Right —The belief that the King was chosen by God. Thus, to commit regicide meant disobeying the will of God. A Jacobean audience believed people who committed regicide would be punished by God. The mental decline of both Macbeth and Lady Macbeth, having been plagued with guilt, is Shakespeare's way of showing that regicide does not go without punishment.
Natural Order / The Great Chain of Being — A religious hierarchy where everything on earth was awarded a 'rank' / status. God was at the top, followed by angels, humans, animals and plants etc A Jacobean audience believed that if this hierarchy was interfered with (i.e. a human tried to 'jump up' the ranks to the status of angels or God) then the natural order would be thrown into chaos. Shakespeare shows this on the night of the regicide when there is a violent storm. Macbeth's attempt to climb the 'Chain of Being' disturbs the natural world.
Religion —A Jacobean audience were extremely religious, believing life to be sacred and God to be the creator of everything. Thus, when Macbeth claims life is 'a tale told by an idiot...signifying nothing' a Jacobean audience would have been greatly shocked. This nihilistic language (rejecting all religious and moral principles in the belief that life is meaningless) solidifies Macbeth's 'tyrant' and 'hellhound' status towards the end of the play.
Patriarchal Society / Gender Identity —The play is set in a Patriarchal society; a society where women were expected to be subservient to men. A woman was expected to obey her father / husband and was presumed to be physically and mentally weaker than a man. However, Shakespeare subverts these traditional gender roles in the relationship between Macbeth and Lady Macbeth; a relationship where we observe a strong female character command, instruct and manipulate her husband. Many women who subverted expected gender roles or conventions at the time were accused of being witches.
Witchcraft —King James I was obsessed with magic and witchcraft and ordered several witch-hunts during his reign as King, even producing a treatise on witchcraft called Daemonologie ('the Science of Demons'). In 1542, fifty years before Shakespeare wrote <i>Macbeth</i> , King Henry VIII passed the first English Witchcraft Act, which officially made the practice of witchcraft punishable by death. The inclusion of the three Witches in Shakespeare's 'Macbeth' would have greatly interested King James. Shakespeare's portrayal of the Witches shows them to cast spells and use familiars. The Witches' conspiracy against the state (monarchy) was something that would have instilled great fear amongst the audience. Moreover, the 'spot' on Lady Macbeth's hand is also an reference to what was known as 'the devil's mark' (something that would condemn any suspected Witch to death).
The Gunpowder Plot — King James I was the intended victim of Guy Fawkes' Gunpowder plot. This made him nervous of future regicide attempts. Shakespeare's 'Macbeth' would have been popular with King James because it shows that those who commit regicide are greatly punished / mentally tortured. The message of Shakespeare's play acts as a deterrent to anyone thinking of committing regicide.

WRITER'S METHODS
Use of soliloquy/aside —notice when Macbeth starts using asides and what this might suggest about his changing character (e.g when he starts having dangerous thoughts!) Soliloquies are often used when characters have a decision to make. It shows characters in turmoil. Usually by the end they have made a decision.
Pathetic Fallacy —consider how the weather is highlighted by Shakespeare at key points in the play and how the weather reflects the mood. E.g the play opens with 'thunder and lightning' -Shakespeare immediately sets an ominous mood. Think about the night of the murder and the weather/reaction of the earth to the murder.
Symbolism/motif : when an object is used to represent a deeper more significant meaning. E.g. blood as a symbol of guilt in the play. Another important symbol is sleep (or lack of) - references to sleep and sleeplessness reveal the deterioration of Lady Macbeth and Macbeth's turmoil too.
Dramatic irony —when the audience knows something that one or more characters do not eg. We know Duncan shouldn't trust Macbeth. We also witness Macbeth lie to Banquo about the witches when he says “consider it not so deeply” and we've just seen him “consider it deeply!”
Contrasting imagery eg. Heaven/hell light/dark good/evil occurs throughout the play. Notice what these images suggest eg. Evil is sometimes shown through dark imagery.

EXAM TIPS
1. Read the information AQA provides you (about the extract) at the top. It gives you clues about where in the play the extract appears.
2. Also, double check which characters are speaking in the extract as students sometimes make mistakes with this.
3. Read the question at the bottom of the extract before you read the extract so you can look for the most relevant quotations.
4. Start your answer with a confident thesis—your response to the question.
5. Aim to zoom in on individual words / short phrases within the extract, explaining their significance in detail as well as Shakespeare's intentions.
6. Now start to consider other parts of the play where the question focus is relevant.
7. Fewer points that are wholly relevant to the question (and explore it in detail) are better than responses that do not address the question and are more general in approach.

FORM
The play is a Shakespearean tragedy . Tragedies usually adhere to a set of conventions :
The play centres around a tragic hero. Usually he is male, usually with high status at the start of the play and some moral virtues. Through a combination of the character's fatal flaw (their <i>hamartia</i>) and the intervention of fate, the character is set off on a path of self-destruction from which they cannot escape. They may have a moment of realisation in which they realise their mistake, but it is too late to turn back. The play ends with their death, and then the natural order is restored.
Audiences were meant to feel a sense of catharsis —that is, they could experience the intense emotions of the plot without making the same mistakes as the protagonist.
It might be useful to think about where in the plot of Macbeth these stages above occur and how Shakespeare portrays the various stages of Macbeth's downfall.

Explorations in Creative Reading (GCSE English Language Paper 1 Section A – AQA)

Q	What is the Q asking?	Subject terminology	Excellence criteria	Sentence starters	
Read	5-10 mins to read the source				
1: facts	Read lines... to ... List 4 things you learn about ... 1. Re-read the specified lines. 2. Copy 4 facts: do not infer. 4 marks – 5 minutes		<ul style="list-style-type: none"> ○ Focus on facts, not inference or analysis ○ You can quote the text 		
2: analyse language	Read lines ... to How does the writer use language to present ...? 1. Re-read the specified lines. 2. Highlight or underline 3 quotations relevant to the question. You can quickly annotate. 3. Write 3 PEE paragraphs responding to the question. 8 marks – 10 minutes	<ol style="list-style-type: none"> 1. Adjective: describes a noun 2. Adverb: describes a verb 3. Alliteration: words start with same sound 4. Allusion: reference to another text or event 5. Colloquial language: informal language 6. Euphemism: replacing an offensive phrase with milder words 7. Hyperbole: over-exaggeration 8. Imagery: visual language 9. Imperative verb: command 10. Juxtaposition: contrasting ideas 11. Metaphor: comparison 	<ol style="list-style-type: none"> 12. Modal verb: shows possibility e.g. could, might 13. Onomatopoeia: words which sound like what they describe e.g. boom 14. Oxymoron: combines contradictory terms e.g. a minor crisis 15. Pathetic fallacy: using the weather to set the emotion or mood 16. Personification: giving an object human characteristics 17. Semantic field: group of words with similar connotations 18. Sibilance: repetition of “s” sound 19. Simile: comparison using “like” or “as” 20. Symbolism: image represents an idea 21. Triple: list of three 22. Verb: action word 	<p>Point</p> <ul style="list-style-type: none"> ○ Respond directly to the Q using precise vocabulary ○ Use “in order to” to address key concepts <p>Evidence</p> <ul style="list-style-type: none"> ○ Select precise evidence ○ Embed fluently in a sentence <p>Explain / analyse</p> <ul style="list-style-type: none"> ○ What do the words suggest, imply or symbolise? ○ Explore more than one word, idea or interpretation ○ Use subject terminology 	<p>The writer portrays ... as ... in order to suggest that...</p> <p>This is clear when we read “...” Evidence of this is “...”</p> <p>This means that... We learn that... The writer communicates that... The word / language device suggests / conveys... This indicates that... In addition, the word / language device is used because... This reinforces the idea that...</p>
3: analyse structure	Use the whole source. How does the writer structure the text to interest you as a reader? 1. Identify 3 or more structural devices, choosing one from the beginning, one from the middle, and one from the end of the text. 2. Write 3 PEEAs responding to the question, thinking beginning, middle, end. 8 marks – 10 minutes	<p>Beginning: Narrative perspective</p> <ol style="list-style-type: none"> A. 1st person: told from the character’s perspective (I) B. 2nd person: directed to the reader (you) C. 3rd person: external narrator (he, she, it) D. Limited narrator: doesn’t have full knowledge of the situation E. Omniscient narrator: full knowledge and understanding F. Unreliable narrator: we question the narrator’s credibility <p>Beginning: Introducing Ideas</p> <ol style="list-style-type: none"> G. Establishing setting H. Introducing character(s) I. Establishing an atmosphere 	<p>Middle: shifts in...</p> <ol style="list-style-type: none"> J. Focus K. Place L. Time (flashforward / flashback) M. Narrative perspective N. Atmosphere / mood <p>Ending:</p> <ol style="list-style-type: none"> O. Circular structure: the narrative ends where it begins P. Cliff-hanger: the narrative ends suddenly Q. Resolved ending: loose ends are tied up R. Unresolved ending: loose ends are not tied up <p>Overall structure:</p> <ol style="list-style-type: none"> S. Linear: events are told in the order that they happen, chronologically T. Non-linear: events are not in order U. Motif: a pattern of ideas, images or words repeated throughout the text 	<p>Point</p> <ul style="list-style-type: none"> ○ Respond directly to the question using precise vocabulary ○ Use “in order to” to address key concepts <p>Evidence</p> <ul style="list-style-type: none"> ○ Select precise evidence ○ Embed fluently in a sentence <p>Explain / analyse</p> <ul style="list-style-type: none"> ○ Explore the effect of the structural device ○ Use subject terminology 	<p>The writer structures the text by... in order to... The writer introduces the idea of... The writer focuses on... The writer develops the idea of... The writer draws the extract to a close by...</p> <p>This is evident in the line “...”</p> <p>The structural device is used because... This suggests that... This introduces / develops... This focusses our attention on... The writer zooms in on... because...</p>
4: present a point of view	Read lines ... to ... Having read this section of the text, a student said “.....” To what extent do you agree? 1. Re-read the specified lines. 2. Agree/disagree table. 3. Write 4 PEE paragraphs. 20 marks – 20 minutes	<p>All language and structural devices</p> <p>Use XXOX to structure your argument: X: strongest agree point X: next agree point O: other side of the argument – if relevant X: final agree point</p>		<p>See Question 2</p>	

Analytical verbs:

- **presents:** portrays, conveys
- **shows:** demonstrates, illustrates
- **suggests:** hints, implies, indicates
- **reveals** that...: exposes, clarifies
- **emphasises:** confirms, highlights
- **creates** debate about...: initiates, generates, provokes
- **explores** the idea that...: considers, prompts, questions
- **challenges** the idea that...: confirms
- **confirms** the idea that...: supports, justifies, develops
- **believes...**: perceives, trusts, learns, observes
- **considers...**: appreciates, clarifies, examines
- **sympathises...**: emphasises, senses, pities, understands
- **discovers...**: realises, understands, decides, concludes
- **develops** the idea that...: builds, changes

Example question:

Write a description for a magazine inspired by this image:



OR

Write the opening of a story about isolation.

24 marks for content and organisation, 16 marks for technical accuracy

Developing your character:

Before the exam, you need to create a fully developed character and know everything about them. When you go into the exam, you can “drop” your character into the image to give you a starting point.

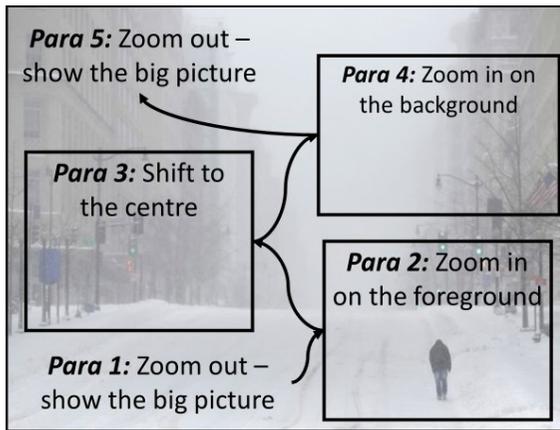
Make sure you know your character’s...

- Family and education background
- Experience of work and employment
- Experience of historical events e.g. World War Two
- Personality and characteristics
- Likes and dislikes (food, clothes....)

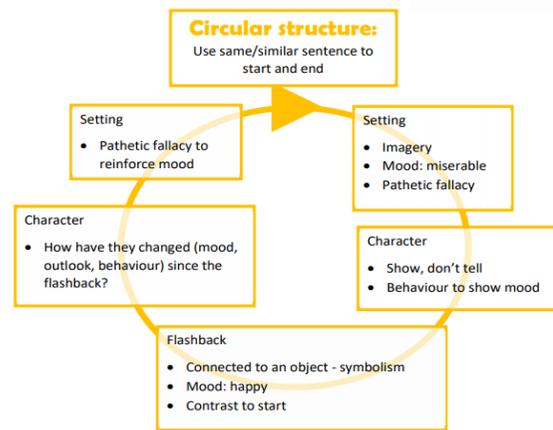
For each of these, ask yourself **why**. E.g. Why does my character become angry easily? Why did my character leave school at 16?

Excellence criteria for self-assessment

Structuring your writing 1: take a journey through the image



Structuring your writing 2: circular structure



Using descriptive language: show, don't tell

We use a range of language devices to show rather than tell the reader what the character is doing. E.g. She was sad. → Her body drooped. Slowly, she wrapped her arms around herself, hoping to stop herself shattering into a million pieces. As her lip began to quiver, a single tear fell.

Use all the language devices listed on the other side of this Knowledge Organiser (see Question 2) to describe:

- Facial expression
- Body language and movement
- Clothing and appearance
- Reactions to other people
- Tone of voice
- Changing weather
- How an object moves
- How an event makes the character feel

Using a range of sentence structures – start with...

1. Two –ing verbs	Raising a hand...
2. Two or three adjectives	Humid and clammy, the air...
3. Two –ly adverbs	Rapidly, quickly, the bird...
4. A preposition (over, under, in)	Under the moon, the river...
5. A simile	Like a...
6. A connective:	First, we..
7. The noun – adjective, adjective - sentence:	The tree – bony, twisted – grew...
8. More, more, more sentence:	The more he cried, the more he felt...
9. The so, so sentence:	It was so small, so tiny...
10. It was one of those days...	It was one of those days when...

Using a range of punctuation

.	End a sentence
,	Separate clauses in a sentence (where you take a breath)
-	Add additional information in an informal way
;	Add additional information – full sentence before and after the ;
:	Introduce a list OR a shocking idea e.g. Morning arrived: disaster!
()	Include additional information that isn't essential to the sentence
?	Pose a question
!	Show shock or surprise (use sparingly)
...	Build tension or leave a gap
'	Indicate possession (Amy's work) or omission (I can't do it)

	Target
Content and organisation: 24 marks	Communication is convincing – it reads like a novel / short story
	Communication is compelling – it is a short story I would be interested in reading
	Tone, style and register are matched to audience – you have written in the style of a novelist
	Extensive and ambitious use of vocabulary
	Sustained crafting of linguistic devices – you have used a range of language devices throughout
	Use of structural features – e.g. circular structure
Technical accuracy: 16 marks	Inclusion of a range of complex ideas – e.g. you explore different moods, emotions, aspects of character
	Paragraphs are linked
	Sentence demarcation is accurate – full stops, commas etc are in the correct place
	Wide range of punctuation used accurately
	Uses the full range of sentence forms for effect
	Secure control of complex grammatical structures
	High level of accuracy in spelling
	Extensive and ambitious use of vocabulary

Example question:



Statement of opinion, linked to the Sources in Section A. start by drawing an agree/disagree table to generate ideas.

Instructions for which Genre, Audience and Purpose to use

24 marks for content and organisation; 16 marks for technical accuracy (40 marks)

Structuring your writing

Beginnings	Imagine this:....	-Use descriptive language techniques -Juxtapose two views on the same topic -e.g. <i>Imagine this: a world in which social media has ruined young people's mental health due to emphasis on body image.... Now imagine this: a world in which social media boosts mental health because it helps people connect...</i>
	Now imagine this:....	
	One word + amplification	-e.g. <i>Social media. What comes to mind when you hear these words? Well, to many people social media conjures up images of... and...</i>
Middles	Anecdote	-Use descriptive language techniques -Use a personal story to engage your reader -e.g. <i>Josie joined Instagram when she was 14, three years after she started endlessly pestering her parents to get an account. But after just one week, it all went wrong...</i>
	XXOX	X = agree, O = show the other side of the argument (then demolish it)
Endings	Develop your points	Use descriptive language and detailed anecdotes to expand on your ideas <i>e.g. Remember the world we imagined...</i>
	Circular structure: return to the start	Return to the character you described in your opening anecdote. How have they changed? What might they have learned? How has your perspective on this character's situation changed?
	Use collective language and a call to action	<i>e.g. Let's join together in a call to improve social media. Our voices need to be heard so that the technological giants which increasingly control our online interactions will change for the better...</i>
	Offer a solution	<i>e.g. In order to see an improvement in this, we need to...</i>

GAP the question:

Genre	Newspaper article	Include a headline Broadsheet – serious, academic, factual Tabloid – less serious, humorous, focussed more on personal stories and experiences
	Speech	Address the audience directly Use inclusive pronouns (we, us, our) Use anecdotes which the audience will relate to
	Letter	Start with <i>Dear...</i> End with <i>Yours faithfully...</i>
	Blog	Slightly more informal; but not as chatty as the examples <u>you</u> will have read online Include the audience (we, our) Include personal stories and experiences
Audience	Formal	Teacher Headteacher Politician
	Informal	Friends Class at school Year group Family
Purpose	To persuade or argue	You need to provide evidence (facts, statistics, anecdotes) to convince your readers to agree with you
	To inform or describe	Explain your point of view on a topic or detail your experiences

Using a range of sentence structures – start with...

1. –ing verbs	Consider the idea that...
2. Two or three adjectives	Unsettling, worrying and disturbing , the idea...
3. –ly adverbs	Importantly , we must consider...
4. A preposition (over, under)	Above all else...
5. A simile	Like a...
6. A connective	First , we..
7. The noun – adjective, adjective - sentence:	Social media – dangerous and attractive – draws all of us in...
8. More, more, more sentence:	The more you tweet, the more likes you get...

Using a range of punctuation

.	End a sentence
,	Separate clauses in a sentence (where you take a breath)
-	Add additional information in an informal way
;	Add additional information – full sentence before and after the ;
:	Introduce a list OR a shocking idea e.g. Morning arrived: disaster!
()	Include additional information that isn't essential to the sentence
?	Pose a question
!	Show shock or surprise (use sparingly)
'	Indicate possession (Amy's work) or omission (I can't do it)

Excellence criteria for self-assessment

	Target
Content and organisation: 24 marks	Communication is convincing – it reads like an article
	Communication is compelling – it is an article I would be interested in reading
	Tone, style and register are matched to audience – you have written in the style of a journalist
	Extensive and ambitious use of vocabulary
	Sustained crafting of linguistic devices – you have used a range of language devices throughout
	Use of structural features – e.g. circular structure
Technical accuracy: 16 marks	Inclusion of a range of complex ideas – e.g. you explore different points of view and perspectives
	Paragraphs are linked
	Sentence demarcation is accurate – full stops, commas etc are in the correct place
	Wide range of punctuation used accurately
	Uses the full range of sentence forms for effect
	Secure control of complex grammatical structures
	High level of accuracy in spelling
	Extensive and ambitious use of vocabulary

GCSE ENGLISH LANGUAGE: KNOWLEDGE ORGANISER

English Language Paper 1: Section A				English Language Paper 2: Section A			
Q	Type of question	Marks	Minutes / length of answer	Q	Type of question	Marks	Minutes / length of answer
1				1			
2				2			
3				3			
4				4			
English Language Paper 1: Section B – writing to describe / narrate				English Language Paper 2: Section B – Writing to persuade			
5				5			
Language Devices		Definition	Example	Structural devices		Definition	
<i>Imperative verb</i>				Beginning: narrative hook			
<i>Negatives disproven</i>				Beginning: narrative perspective (1 st / 2 nd / 3 rd person)			
<i>Anecdote</i>				Beginning: creating atmosphere / tone			
<i>Alliteration</i>				Middle: shift in focus			
<i>Address reader</i>				Middle: building tension			
<i>Opinions</i>				Ending: cliff-hanger			
<i>Rhetorical question</i>				Ending: unanswered questions			
<i>Emotive language</i>				Examples of connectives:			
<i>Statistics</i>				Showing similarities:			
<i>Triple</i>				Showing differences:			
<i>Pathetic fallacy</i>				Sentence stems for writing a PEEA paragraph:			
<i>Personification</i>				Point			
<i>Adjectives</i>				Evidence			
<i>Adverbs</i>				Explain			
<i>Simile</i>				Analyse			
<i>Senses</i>							
<i>Metaphor</i>							

GCSE ENGLISH LANGUAGE: KNOWLEDGE ORGANISER

English Language Paper 1: Section A				English Language Paper 2: Section A			
Q	Type of question	Marks	Minutes / length of answer	Q	Type of question	Marks	Minutes / length of answer
1	List 4 things about...	4	5 mins / 4 sentences	1	Tick 4 true statements	4	5 mins / 4 ticks
2	How does the writer use language to...	8	10 mins / 3 PEEAs	2	Summarise the similarities / differences between...	8	10 mins / 2 PEELEE paragraphs
3	How does the writer structure the text to interest you as a reader?	8	10 mins / 3 PEEAs (beginning, middle, end)	3	How does the writer of Source A use language to...	12	15 mins / 3-4 PEEAs
4	You will be given a statement from a student. To what extent do you agree?	20	20 mins / 5 PEEAs (XXOXX)	4	Compare how both writers use language to...	16	20 mins / 5 PEEAs

English Language Paper 1: Section B – writing to describe / narrate				English Language Paper 2: Section B – Writing to persuade			
5	Use the picture as a spring board for a description. Create a narrative on the theme of...	40 (24 marks for content; 16 marks for SPAG)	45 mins / 6 paragraphs	5	Respond to a viewpoint on a particular issue. Write a newspaper article / speech / letter to persuade the reader of your point of view.	40 (24 marks for content; 16 marks for SPAG)	45 mins / 6 paragraphs (Intro XXOX Conc)

Language Devices		Definition	Example	Structural devices		Definition
<i>Imperative verb</i>	A command verb		“Unsex me here”	Beginning: narrative hook		How the writer engages the reader e.g. using surprise, beginning in the middle of the story, with a question
<i>Negatives disproven</i>	Explaining why you disagree with the other point of view		Whilst you may believe that cars are better than motorbikes, in reality you should agree with me that...	Beginning: narrative perspective (1 st / 2 nd / 3 rd person)		1 st : I, me, we, 2 nd : you, 3 rd : they, he, she
<i>Anecdote</i>	A short, personal story		A story about why you have lost your homework	Beginning: creating atmosphere / tone		How the writer creates moods or emotions at the start of a text
<i>Alliteration</i>	Words starting with the same sound		“Two truths are told”	Middle: shift in focus		How the writer changes the focus to a different topic, issue, place or character
<i>Address reader</i>	Speaking directly to the reader / listener		Wouldn't you agree that...	Middle: building tension		Increasing the feeling of suspense
<i>Opinions</i>	Your own point of view		I believe that dogs are better than cats because...	Ending: cliff-hanger		Ending the narrative on a moment of tension or suspense
<i>Rhetorical question</i>	A question which doesn't expect an answer		Wouldn't you agree that revision is useful preparation for exams?	Ending: unanswered questions		Generating issues which the reader wants to find the answers for
<i>Emotive language</i>	Words which make the reader feel a strong emotion		Why not help this poor, abandoned, isolated puppy find a new home?	Examples of connectives:		
<i>Statistics</i>	Facts presented as numbers		80% of students agree with me that...	Showing similarities:		Similarly, likewise, in comparison, in addition, furthermore
<i>Triple</i>	A list of three things		English is exciting, enjoyable and enriching	Showing differences:		In contrast, contrastingly, however, on the other hand
<i>Pathetic fallacy</i>	Using the weather to convey the mood		“The rain set early in tonight”	Sentence stems for writing a PEEA paragraph:		
<i>Personification</i>	Giving an object human characteristics		The door groaned as it opened	Point		The writer presents.... as...
<i>Adjectives</i>	Words which describe a noun		Happy, energetic, excited	Evidence		We see this when... / The writer indicates this by saying... / Evidence of this is.... / A quotation to show this is...
<i>Adverbs</i>	Words which describe a verb (often end in -ly)		Quickly, slowly, unfailingly	Explain		This means that... / This suggests...
<i>Simile</i>	A comparison using like or as		As fast as the wind	Analyse		This suggests... / This connotes.... because... / This prompts the reader to consider... / The effect is... / This implies that... / This reinforces the point that...
<i>Senses</i>	Hearing, sight, smell, touch, taste		“The dew of the morning sank chill on my brow”			
<i>Metaphor</i>	A comparison between two things		Eden Rock			

English Language Paper 1: Fiction (Reading)

Steps to Success	Sentence Starters
Question 2: How does the writer use language to ...? (8mks)	
<ul style="list-style-type: none"> • Start by annotating the text and identifying quotations which show deliberate language choices • Comment on 3-4 different quotations in the text • Use subject terminology (see below) when referring to word choices and techniques • Consider the specific effects these language features have on a reader's understanding or appreciation of the text and its content • Consider the writer's intentions and how the reader should respond 	<ul style="list-style-type: none"> • <i>The writer ..., for example ... to create an image of ... making the reader imagine/understand ...</i> • <i>(Author) uses (feature) such as ... which creates a sense of ...</i> • <i>(Author) uses (feature) when describing ... in order to present ... This makes the reader ...</i> • <i>The writer wants to show/emphasise/suggest/make the reader think about...</i> • <i>This idea is further emphasised by ...The writer uses (term) to show (link to question), as shown by (evidence)</i>
Question 3: How does the writer use structure to ...? (8mks)	
<ul style="list-style-type: none"> • Divide the text in to sections (beginning, middle, end) • Annotate the different sections to show the focus and structural features used e.g: narrative voice, tense, shift and sequencing, links • Structure your answer by looking at the beginning, middle, end. • For each section, explain what the structural features is and remember to use quotes • Explain the effect the writer is trying to create <ul style="list-style-type: none"> ○ (what does the author make the reader ○ feel/think/imagine/question? Why does the writer sequence the text in this way?) 	<ul style="list-style-type: none"> • <i>At the beginning the writer focuses on...</i> • <i>In the middle of the text it shifts/progresses/develops ... to focus on...</i> • <i>The contrasts created between ... suggest ...</i> • <i>The continued shift in focus from ... to ... allows us to...</i> • <i>The climax of the piece occurs when...</i> • <i>The first/third person narrator creates...</i> • <i>This makes the reader think/understand/imagine/question/feel... because....</i>

Question 4: To what extent do you agree with the statement about the text? Critically evaluate. (20mks)

- Start by deciding how far you agree with the statement
- Annotating the text to support your decision identifying methods and effects.
- Write an umbrella point clearly stating your opinion giving a reason why
- Comment on 3 to 4 different methods and analyse their effects.
- Use subject terminology (see below) when referring to word choices and techniques
- Evaluate how effective the methods are

- *I partially /wholly agree with the statement that..... **because** ... however....*
- *The writer uses ... for example ...*
- *However*
- *In addition ...*
- *This emphasises/suggests/implies/ indicates*
- *This idea is further emphasised by ...*
- *The writer uses (term) to show (link to question), as shown by (evidence)*

Subject Terminology

Word classes: noun, verb, adjective, adverb, pronoun, preposition

Figurative Language: imagery, metaphor, simile, personification, onomatopoeia, alliteration

Steps to Success: Question 5 Writing to describe or narrate

You will be given a choice of two tasks: they could both be descriptive writing; both could be narrative writing or there could be a choice of one of each. You will be given a picture as a stimulus. **Suggested Timings:**

5 minutes planning

30 minutes writing

5 minutes proofreading

Descriptive writing – structure **NOTE: You can adapt this for narrative by focusing on the development of characters and/or actions in each paragraph.**

Paragraph 1: Describe a wide-angle view (pan) of the scene in the third person using adjectives, a simile and one sentence in which you use a semi-colon instead of a full stop to join two independent clauses. Use one key word which you repeat at the beginning, middle and end.

Paragraph 2: Zoom in on a feature/character. Use the senses.

Paragraph 3: Use a preposition to switch the focus to another part of the scene. Develop some action **Paragraph 4:** Zoom in on a character or characters. Start with an ‘ing’ verb (refer to movement) and use a list of 3. Include some snatched dialogue (one or two lines).

Paragraph 5: A single sentence

Paragraph 6: Return to a wide-angle view. How has it changed? Repeat a word or phrase from paragraph one.

Descriptive techniques (to be used in both descriptive and narrative writing):

- Sensory details that appeal to the reader’s senses – what they can see hear, touch and smell or taste. (Atmosphere. Colour. Texture.)
- Wow words: quantifiers and qualifiers in lists (e.g. ‘three excellent students), powerful
- noun/adjectival phrases, ispace openers, vivid vocabulary Imagery such as similes, metaphors and personification
- Lists to build detail

Additional techniques for narrative • Character development

- Dialogue to show character and plot development (some snatched dialogue can also be used in descriptive writing)
- Withholding information for effect
- Clues and hints to build suspense and tension

Arresting sentence styles:

Ambling through the gardens, **she stopped** at the sight of a hairy beast facing her.

- The little blue windup mouse Hugo had taken **fell** from his hand, **skidded** across the counter, and **landed** on the floor with a crack.
- **The more** confused she became, **the more** frustrated she grew.
- **Sighing**, Hattie knew there was no use in trying to explain why she did it.
- **Frightened, terrified, exhausted**, they fled the impending doom.

If the alarm had gone off, **if** the bus had been on time, **if** the road repairs had been completed, **then** his life would not have been destroyed.

English Language Paper 2: Non-Fiction (Reading)

Timing 1 and sequence 45mins (80 marks) 50% of Language GCSE

Steps to Success	Sentence Starters
Question 2: Summarise the differences (or similarities) between the 2 texts (8mks)	
<ul style="list-style-type: none"> • Underline key words in the question. Use these in your answer. • Create a T bar plan • Comment on 3-4 differences/similarities between the two texts • Support ideas with short quotations • Explain what the evidence suggests or implies 	<ul style="list-style-type: none"> • One of the main differences is • · On the other hand ... • · In contrast/Whereas ... • · We/I can infer that ... • · This suggests/implies/indicates/conveys • · This makes us think/imagine
Question 3: How does the writer use language ... (12mks)	
<ul style="list-style-type: none"> • Start by annotating the text and identifying quotations which show deliberate language choices • Comment on 3-4 different quotations in the text • Use subject terminology (see below) when referring to word choices and techniques • Consider the specific effects these language features have on a reader's understanding or appreciation of the text and its content • Consider the writer's intentions and how the reader should respond 	<ul style="list-style-type: none"> • <i>The writer ..., for example ... to create an image of ... making the reader imagine/understand ...</i> • <i>(Author) uses (feature) such as ... which creates a sense of ...</i> • <i>(Author) uses (feature) when describing ... in order to present ... This makes the reader ...</i> • <i>The writer wants to show/emphasise/suggest/make the reader think about...</i> • <i>This idea is further emphasised by ...The writer uses (term) to show (link to question), as shown by (evidence)</i>

Question 4: Compare the attitudes ... (16mks)

- Look for similarities and differences in opinion/thoughts/ideas in both texts.
- Highlight quotations in each source to support your ideas.
- Create a plan which compares the viewpoints/ideas/perspectives and the methods used to present these in each text.
- Write an umbrella point giving a comparative overview
- Comment in detail on at least 2 quotations from each text.
- Analyse the effect of methods in your quotations.

- *Both texts...*
- · *Whilst the writer of source A ... the writer of source B ...*
- · *(Author) feels that ... as shown when he/she says ...*
- · *We see this through his/her use of (method) which suggests ...*
- · *Whereas/On the other hand/In contrast ... (author) feels that ...*
- · *He/She uses ... to show ...*
- · *Overall, both writers show similar/different attitudes to ...*

Technical Terms

Word classes: noun, verb, adjective, adverb, pronoun, preposition

Rhetorical devices: repetition, use of facts, opinions, statistics, quotations, emotive language

Figurative Language: imagery, metaphor, simile, personification, onomatopoeia, alliteration

Sentence forms and types: simple, compound, complex, statement, question, exclamation, directive

Structure: perspective, focus, introduction, paragraph, development, positioning, juxtaposition

Steps to Success: Question 5 Writing to describe or narrate

Sample Task:

'More children should get a job before the age of sixteen. Part-time work would teach children valuable skills that they don't learn in school.'
To what extent do you agree with this statement? Write an article for a broadsheet newspaper in which you explain your point of view.

Suggested Timings:

5 minutes planning

30 minutes writing

5 minutes proofreading

Structure for writing to argue and persuade

Introduction: Start with a hook – introduce ideas. Think of a tone (amusing, serious or shocking). The opening should indicate your point of view. **Use an arresting sentence structure.**

1st main point : Statistics, Emotive language, Alliteration

Imagine

2nd main point : Anecdote, Personal opinion, Expert Opinion 3rd main

Moreover

3rd main point : Counter argument. Present an opposing argument to your main viewpoint. Undermine the counter argument.
Try using a statement followed by 2 bullet points.

In conclusion: Power of 3 and punctuation punch

Techniques to use when writing to argue and persuade

Direct address (you)

Anecdotes

Facts

Opinions (expert and personal)

Rhetorical questions/repetition

Emotive language

Statistics

Three (list of)

Arresting sentence styles:

Pressured and worried, stressed and exhausted, British students can no longer function and succeed under the current system.

- Students of Britain are **angry: angry** because their efforts are unrewarded.
- **Stressed, undervalued, exhausted,** the British school system is simply failing our students.
- **Greed, blind-ambition, arrogance:** which of these was Macbeth's worst trait?

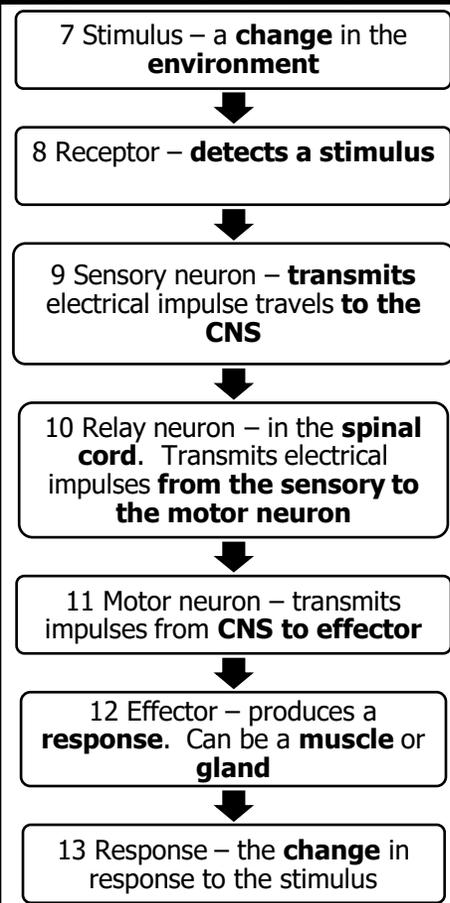
Section 1: Key Terms

1 Homeostasis	Regulating internal conditions to keep them at an optimum, despite internal and external changes . Maintains optimum conditions for enzymes .
2 Negative Feedback (HT)	Negative feedback ensures that changes are reversed and returned back to the optimum level .

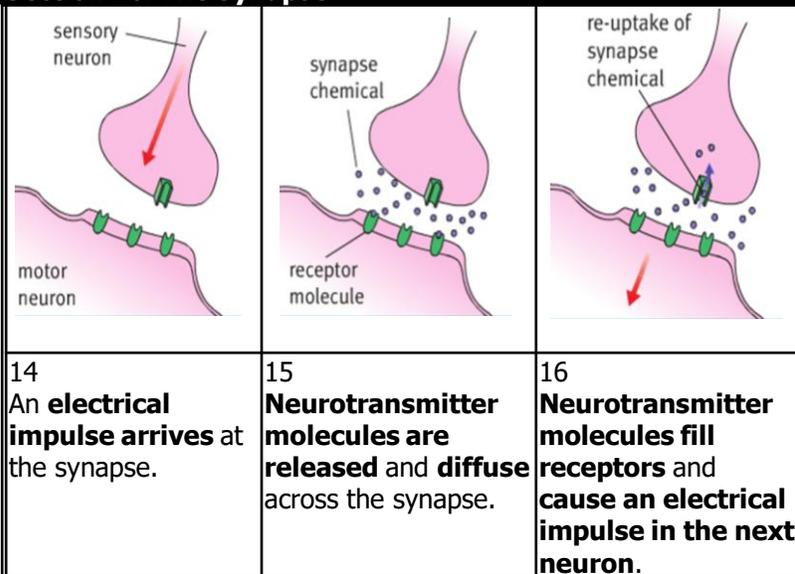
Section 2a: Nerve Reflexes Key Terms

2 Central nervous system (CNS)	The brain and spinal cord together. Co-ordinates the response of effectors .
3 Reflex action	A fast, automatic reaction. Does not involve thinking parts of the brain.
4 Coordination Centre	Receives and processes information from receptors e.g. CNS, pancreas.
5 Synapse	The gap between two neurons . Allows many different neurons to connect.
6 Myelin sheath	Some neurons are surrounded by myelin. Myelin insulates the neuron and speeds up the transmission of electrical impulses .

Section 2b: The Reflex Arc



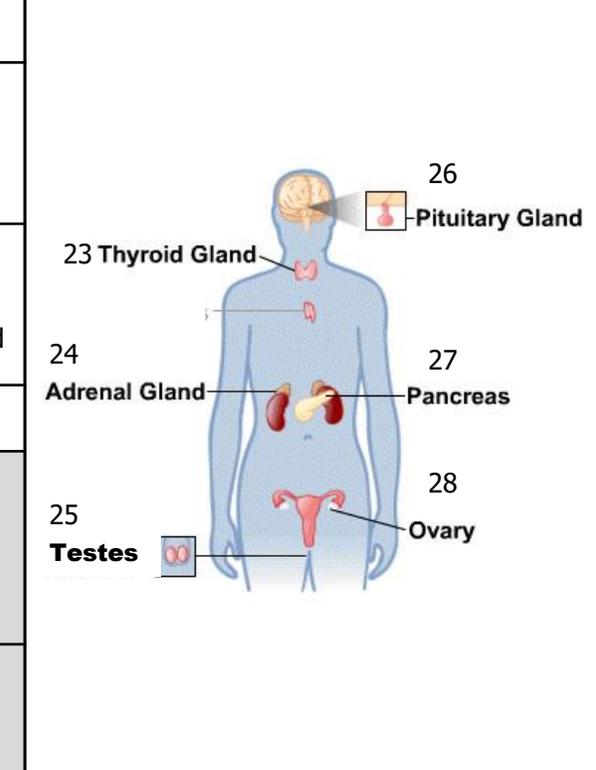
Section 2c: The Synapse



Section 3: Hormonal Control Key Terms

17 Endocrine System	The system of glands that secrete hormones .
18 Hormone	A chemical secreted by a gland that travels in the blood and has an effect on a target organ . The effects are slower and longer-lasting than responses from the nervous system.
19 Pituitary Gland	A gland that secretes several hormones into the blood. These hormones in turn act on other glands to stimulate other hormones to be released to bring about effects.
20 Testosterone	Male hormone produced by testes . Stimulates sperm production .
21 Adrenaline (HT)	Hormone produced by the adrenal glands in times of fear/ stress . It increases the heart rate and boosts the delivery of oxygen and glucose to the brain and muscles , preparing the body for 'flight or fight'.
22 Thyroxin (HT)	Hormone produced by the thyroid gland . Thyroxine stimulates the metabolic rate . Important in growth and development .

Section 4: Location of Endocrine Glands



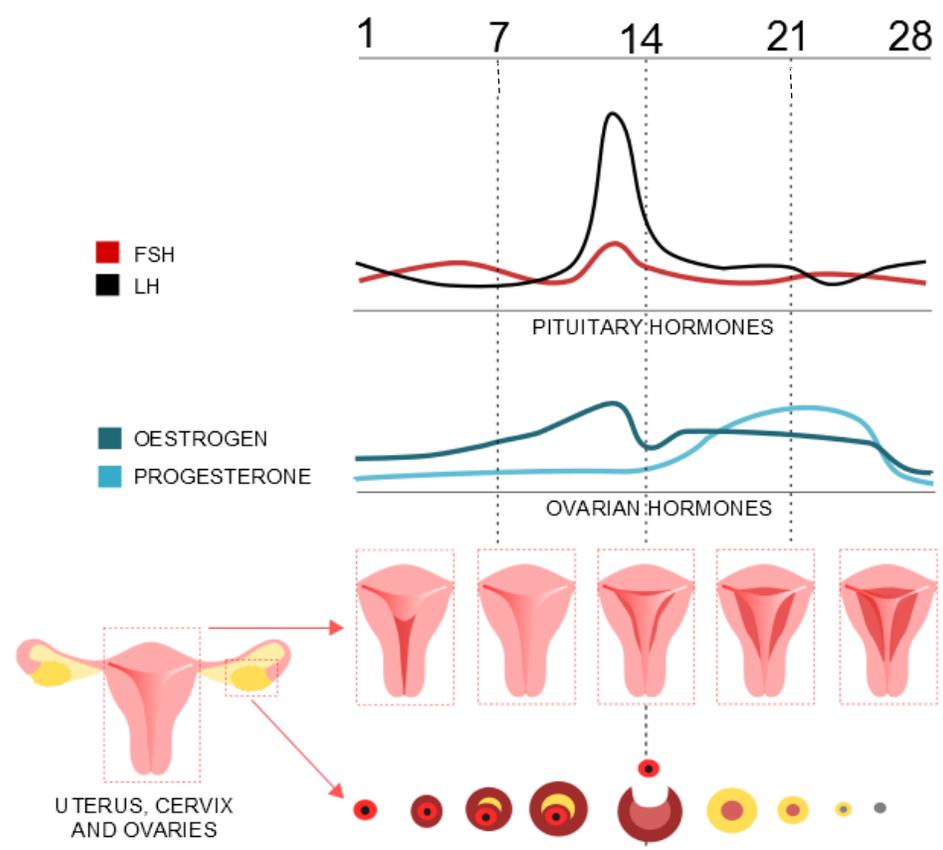
Section 5: Blood Glucose Control Key Terms

29 Pancreas	The gland that monitors and controls blood glucose concentration .
30 Insulin	A hormone produced when blood glucose concentration is too high . Causes glucose to move from the blood into the cells . In liver and muscle cells excess glucose is converted to glycogen .
31 Glucagon (HT)	A hormone produced when blood glucose concentration is too low . Causes glycogen to be converted into glucose and released into the blood .
32 Glycogen	A storage molecule made from many glucose molecules bonded together . Found in liver and muscle cells.
33 Type I Diabetes	Disorder in which the pancreas fails to produce enough insulin . Causes uncontrolled high blood glucose levels. Treated with insulin injections .
34 Type II Diabetes	Body cells no longer respond to insulin produced by the pancreas . A carbohydrate controlled diet and exercise are common treatments. Obesity is a risk factor .

Section 6: Menstrual Cycle (Some HT)

35 Ovulation	The release of an egg cell . Occurs approximately every 28 days .
36 FSH	Produced by the pituitary gland . A hormone that causes an egg to mature in the ovary . Causes oestrogen to be produced .
37 Oestrogen	Produced by the ovaries . Causes blood lining of uterus to develop . Stops FSH being produced . Stimulates release of LH .
38 LH	Produced by the pituitary gland . A hormone that causes ovulation .
39 Progesterone	Produced by the ovary . Maintains blood lining in uterus. Stops production of LH and FSH .

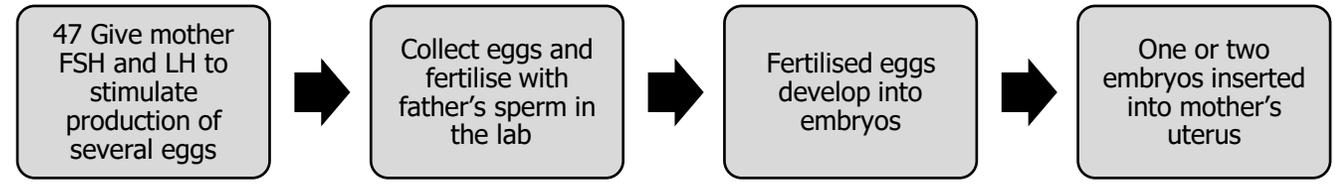
Section 7: Changes in the Menstrual Cycle (HT)



Section 8: Methods of Contraception

Method	How it works	Pros (+) and Cons (-)
40 Oral contraceptives	The contraceptive pill. Contain hormones to inhibit FSH production so eggs do not mature .	+ 99% effective + Reduces risk of some cancers - Can cause side effects e.g. nausea
41 Progesterone	Injection, implant or skin patch of slow-release progesterone to stop eggs maturing and being released .	+ Fewer side effects than pill. + Doesn't need to be taken daily so less likely to be forgotten - Less effective than pill
42 Barrier methods	Condom or diaphragm. Prevents sperm reaching the egg.	+ 98% effective (when used correctly) + Prevent STIs - Can break or be used incorrectly
43 Spermicide	Kills or disables sperm . Used with diaphragms to make them more effective.	+ Increases effectiveness of some barriers - Can't be used on its own
44 Avoiding intercourse	Avoiding intercourse when an egg might be in an oviduct.	- High risk of becoming pregnant
45 Sterilisation	Undergoing surgery to stop sperm or eggs being able to fertilise.	+ Permanently stops pregnancy - Risks from surgery - Expensive to reverse and may not work
46 Intra-uterine device (IUD)	An implant into the uterus that prevent fertilised eggs implanting into the wall of the uterus or release hormones .	+ Long lasting but can be reversed - Small risk of infection or uterus damage when IUD is implanted

Section 9: IVF (HT)



Section 9a: IVF Disadvantages

48 Emotionally and physically stressful.
49 Success rates are low.
50 Can lead to multiple births which are risky for mother and babies

B5 – Biology Knowledge Organiser Quiz

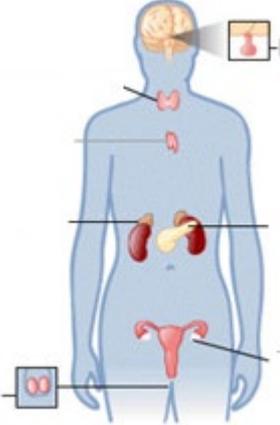
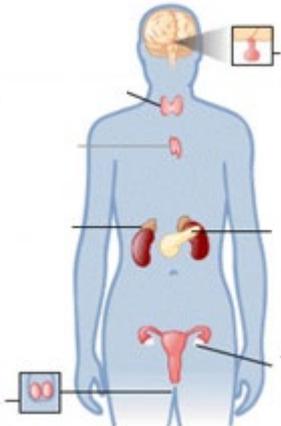
Section 1: Key terms	
1. Define homeostasis	
2 Define negative feedback	
Sections 2a: Nerve Reflexes Key Terms	
2 What is the CNS?)	
3 What is a reflex action?	
4 What is the coordination centre?	
5 What is a synapse?	
6 Describe what is the myelin sheath?	
Section 2b: The Reflex Arc	
7 what is the job of the stimulus?	
8 what is the job of the receptor?	
9 What is the job of the sensory neurone?	
10 what is the job of the relay neurone?	
11 what is the job of the motor neurone?	

12 What is the job of the effector?	
13 What is the job of the response?	
Summary: Using the above list the 7 parts of the reflex arc (this is not explicitly in the knowledge organiser, use the above to do this)	
Section 2c: The Synapse	
14 What is the first step in the 'the synapse'? Identify the correct diagram to show this step	
15 What is the second step in the 'the synapse'? Identify the correct diagram to show this step	
16 What is the second step in the 'the synapse'? Identify the correct diagram to show this step	
Section 3: Hormonal control key terms	
17 what does the endocrine system do?	
18 describe what hormones are, where they are produced and how long their action last	
19 What happens at the pituitary gland? What do these hormones do?	
20 What is testosterone? Where is it produced? What does it do?	

21 HT ONLY What is adrenaline? Where is it produced? What does it do?	
22 HT ONLY What is thyroxine? Where is it produced? What does it do?	

Section 4: Location of the endocrine glands

23 Label the endocrine gland
 24 label the adrenal gland
 25 label the testes
 26 label the pituitary gland
 27 label the pancreas
 28 label the ovary

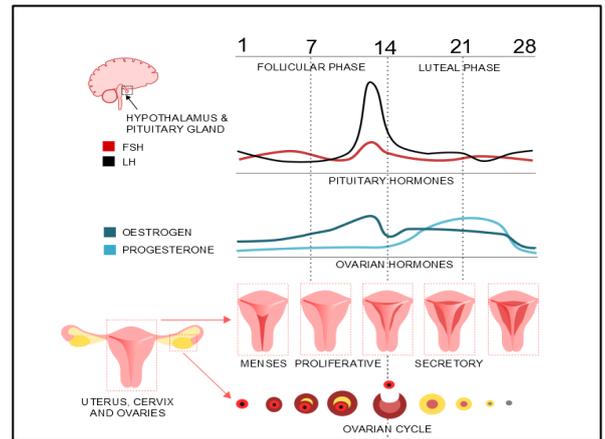
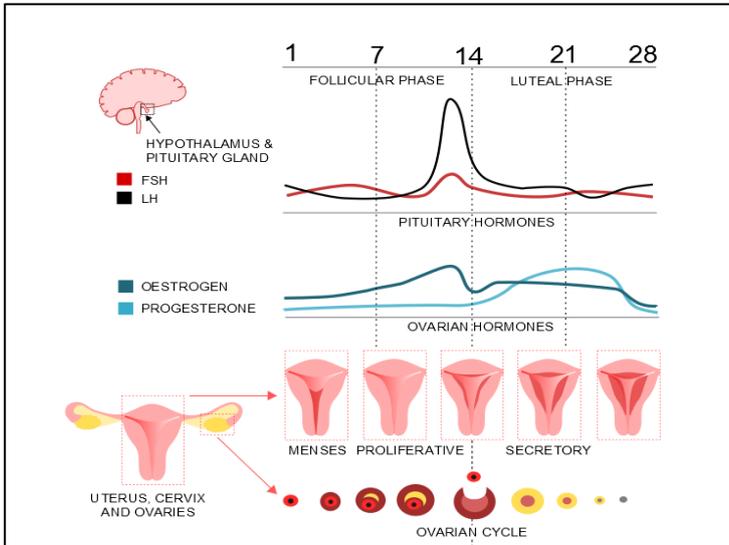
Section 5: Blood glucose control Key terms

29 what is the pancreas?	
30 what is insulin? When is it produced? What does it cause? what does it cause in the liver and muscle cells?	
31 HT ONLY what is glucagon? When is produced? What does it cause?	
32 What is glycogen? Where is it found?	

<p>33 What is type 1 diabetes? What does it cause?? How is it treated?</p>	
<p>34 What us type 2 diabetes? How is it treated? What is major risk factor?</p>	
<p>Sections 6: Menstrual Cycle (Some HT)</p>	
<p>35 What is ovulation? How often does it occur?</p>	
<p>36 What is FSH? What does it cause?</p>	
<p>37 What is oestrogen? What does it cause?</p>	
<p>38 What is LH? What does it cause?</p>	
<p>39 What is progesterone? What does it do?</p>	

Section 7: Changes in the menstrual cycle (HT)

Describe what you see in this graph



Section 8: Methods of contraception

40 How do oral contraceptives work? Give the pros and cons

41 How does progesterone work? Give the pros and cons

42 How do barrier methods work? Give the pros and cons

43 How do spermicides work? Give the pros and cons

44 How does avoiding intercourse work? Give the pros and cons	
45 How does sterilisation work? Give the pros and cons	
46 How does an intra-uterine device (IUD) work? Give the pros and cons	
Sections 9: IVF (HT ONLY)	
47 What is the first step in IVF	
48 What is the second step in IVF	
49 What is the third step in IVF	
49 What is fourth steps in IVF	
Section 9a: IVF disadvantages	
48 List the first disadvantage of IVF	
49 List the second disadvantage of IVF	
50 List the third disadvantage of IVF	

Biology 6: Inheritance, Variation, Evolution

Section 1a: Sexual and Asexual Reproduction

1 Sexual Reproduction	Reproduction involving the fusion of gametes .
2 Gamete	A sex cell that contains half the genetic information of a body cell. E.g. sperm and egg in animals, pollen and ovaries in plants.
3 Meiosis	The type of cell division that produces gametes . Four daughter cells are produced from one original cell. Each cell is genetically different. Each daughter cell has half the genetic information of a body cell.
4 Fertilisation	Fusion of gametes . Restores the full number of chromosomes.
5 Asexual Reproduction	Reproduction involving only one parent and no gametes . No mixing of genetic information so genetically identical clones are produced. Only mitosis is involved.
6 Mitosis	Cell division that produces two identical daughter cells with the full amount of chromosomes.

Section 1b: Mitosis and Meiosis

	Mitosis	Meiosis
7 Number of daughter cells produced	2	4
8 Variation in cells produced	Genetically identical to each other and parent cell	Different to each other and parent cell
9 Purpose	Growth, repair, asexual reproduction	Produce gametes for sexual reproduction
10 Number of chromosomes	Full amount (pairs of chromosomes)	Half (single chromosomes)

Section 1c: Advantages and Disadvantages of Different Types of Reproduction

	Advantages	Disadvantages
11 Sexual Reproduction	Produces variation . Offspring are more likely to survive changes to the environment and disease.	Requires a mate . Slower way of producing offspring.
12 Asexual Reproduction	Produce lots of offspring quickly . No mate needed.	Offspring are less likely to survive environmental changes or diseases.

Section 2: Genetic Diseases

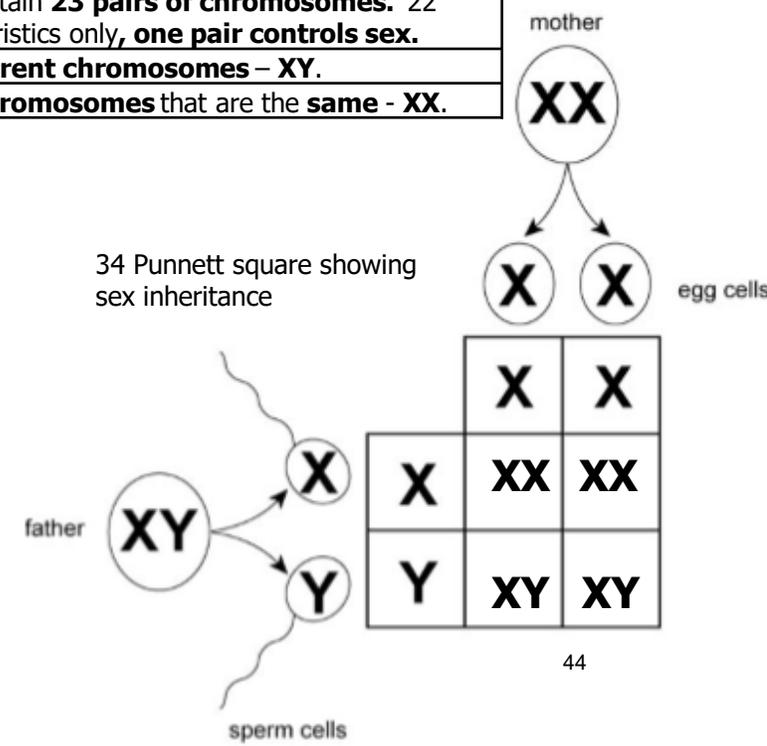
	Polydactyly	Cystic Fibrosis
13 Problem	Extra fingers and toes	Disorder of cell membranes. Causes sticky mucus on lungs.
14 Caused by...	Dominant allele	Recessive allele
15 Genotype of people with disease	PP or Pp	cc
16 Genotype of people without disease	pp	CC or Cc
17 Does the disease have carriers?	No	Yes – genotype Cc

Section 3: Genetics Key Terms

18 DNA	Genetic material . DNA is a polymer made up of two strands forming a double helix . The DNA makes up chromosomes.
19 Gene	A gene is a small section of DNA on a chromosome. Each gene codes for a particular sequence of amino acids , which make a protein .
20 Chromosome	A long coil of DNA . Found in the nucleus.
21 Genome	The entire genetic material of that organism .
22 Allele	Different versions of the same gene – dominant and recessive.
23 Dominant	A dominant allele is always expressed . Only one copy is needed.
24 Recessive	Only expressed if two copies are present .
25 Homozygous	Both alleles for a gene are the same (i.e. both are dominant or both are recessive).
26 Heterozygous	Both alleles for a gene are different (i.e. one is dominant, the other is recessive).
27 Genotype	The alleles present for a particular gene .
28 Phenotype	The physical feature expressed for a particular gene .
29 Single gene characteristics	Some characteristics are controlled by only one gene e.g. fur colour in mice, colour blindness in humans.
30 Multiple gene characteristics	Most characteristics are controlled by many genes e.g. height.

Section 4: Gender Inheritance

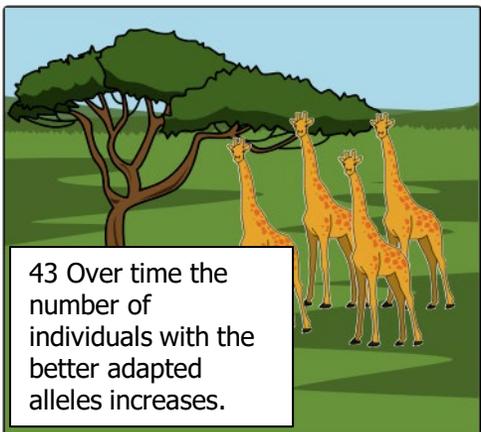
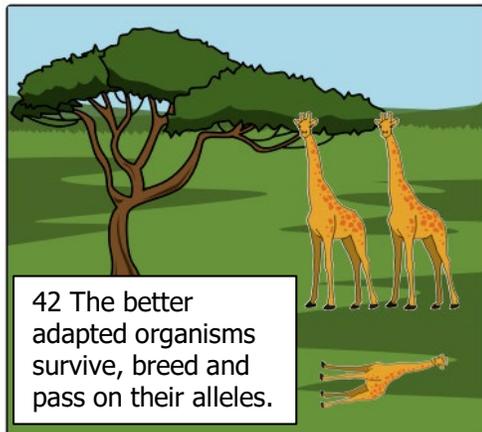
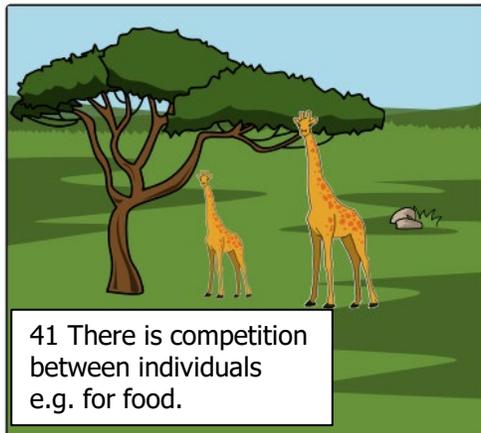
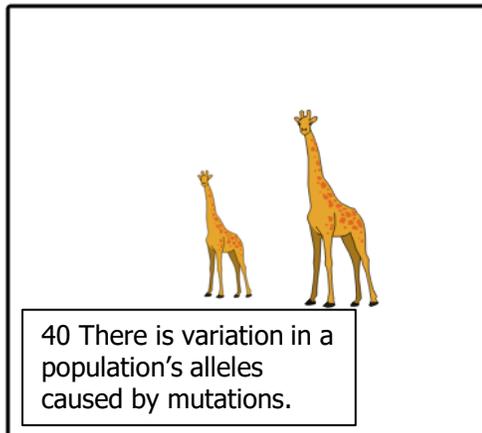
31 Human Chromosomes	Human body cells contain 23 pairs of chromosomes . 22 pairs control characteristics only, one pair controls sex .
32 Males	Males have two different chromosomes – XY .
33 Females	Females have two chromosomes that are the same - XX .



Section 5: Variation and Evolution Key Terms

35 Variation	The differences between organisms. Can be caused by genes (e.g. eye colour), the environment (e.g. scars) or both the environment and genes (e.g. weight). All variation in genes is caused by mutations .
36 Mutation	Mutations are changes in genes . Most have no effect on the phenotype. Occasionally mutations have a positive effect on phenotype and organisms with these mutations are more likely to survive.
37 Evolution	The change in the genes of a population over time . Occurs through natural selection.
38 Natural selection	The process by which the individuals best adapted to the environment survive and pass on their genes .
39 Speciation	Occurs when two populations are so different that they can no longer breed to produce fertile offspring . Two new species are formed.

Section 5a: Natural Selection



Section 6: Selective Breeding

44 Selective Breeding (Artificial Selection)	The process by which humans breed plants and animals for particular genetic characteristics .
45 Inbreeding	Selective breeding can lead to 'inbreeding' where some breeds are particularly prone to disease or inherited defects .

46 Process of selective breeding:

1. Choose parents with correct characteristics from the population.
2. Breed them together.
3. Choose the offspring with the desired characteristics and breed them together.
4. Continue over many generations.

47 Examples of desired characteristics:

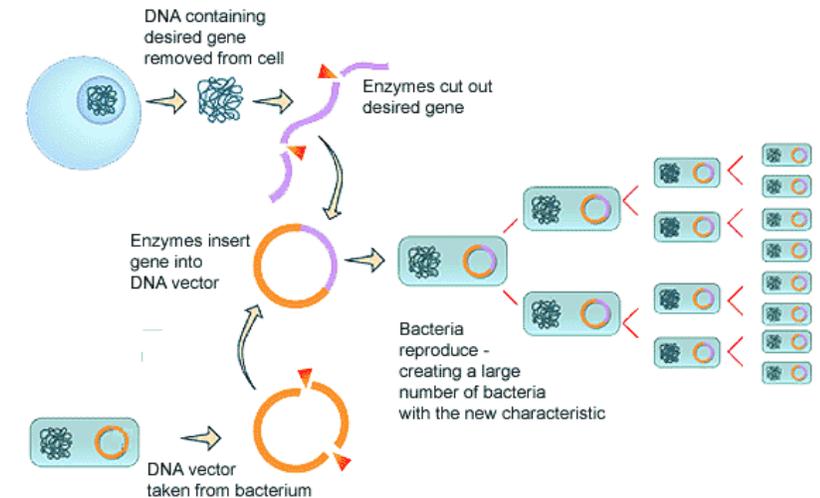
- Disease resistance in food crops.
- Animals which produce more meat or milk.
- Domestic dogs with a gentle nature.
- Large or unusual flowers.

Section 7: Genetic Engineering

48 Genetic Engineering	A process which involves modifying the genome of an organism by introducing a gene from another organism to give a desired characteristic.
49 GM Crop	Crops that have been produced by genetic engineering.
50 Vector	Something that can carry a gene into another organism e.g. bacterial plasmid or virus .

51 Process of genetic engineering:

1. **Genes are cut out** by **enzymes**.
2. The gene is **inserted into a vector** (either a bacterial plasmid or virus).
3. The vector is used to **insert the gene** into the required cells
4. Genes are transferred to the cells of animals, plants or microorganisms at an **early stage** in their development so that they develop with desired characteristics.



52 Examples of genetic engineering:

- Bacterial cells have human **insulin gene** inserted into them so that they produce insulin for diabetics.
- Plants that have had genes inserted that make them **resistant to disease, insects or herbicides**.

B6 – Knowledge Organiser Quiz

Section 1a – sexual and asexual reproduction	
1. Define fertilisation, what happens to the number of chromosomes?	
2. Describe what gametes are	
3. Describe meiosis	
5. Describe asexual reproduction -	
6. Describe mitosis	
Section 1b: mitosis and meiosis	
7. How many daughter cells in mitosis and meiosis?	
8. Describe the difference in variation in the cells produced via mitosis and meiosis	
9. What is mitosis/ meiosis used for?	
Section 1c: Advantages and disadvantages of different types of reproduction	
11. What are the advantages and disadvantages of sexual reproduction?	
12. What are the advantages and disadvantages of asexual reproduction?	

Section 2: Genetic diseases

13. List two inherited diseases

14. What is each disease caused by?

15. What could be the potential genotypes for people with each disease?

16. What could be the potential genotypes for people without each disease?

Section 3: Genetics Key terms

17. Does the disease have carriers?

18. Define DNA

19. Define gene

20. Define chromosome

21. Define genome

22. Define allele

23. Define dominant

24. Define recessive

25. Define homozygous

26. Define heterozygous

27. Define genotype

28. Define phenotype

29. What are single gene characteristics

30. What are multiple gene characteristics	
Section 4: gender inheritance	
31. How many chromosomes are there in humans? Which ones determine gender?	
32. What are the chromosome for males?	
33. What are the chromosomes for females?	
34. Draw the punnet square for sex inheritance	
Section 5: Variation and Evolution Key Terms	
35 Describe what variation means	
36 Describe what mutation means	
37 Describe what evolution means	
38 Describe what natural selection is	
39 Describe what speciation is	
Section 5a: Natural Selection	
40 What is the first step in natural selection	
41 What is the second step in natural selection	
42 What is the third step in natural selection	

43 What is the fourth step in natural selection	
Section 6: Selective breeding	
44 What is selective breeding?	
45 What is interbreeding?	
46 List the four steps involved in selective breeding	
47 Give 4 examples of desired characteristics	
Section 7: Genetic Engineering	
48 what is genetic engineering?	
49 what are GM crops?	
50 what is a vector?	
51: Describe the 4 steps involved in genetic engineering. Describe the diagram for genetic engineering	
52 give 2 examples of genetic e engineering	

Biology 7: Ecology

Section 1: Key terms

1 Ecosystem	The interaction of a community of living organisms (biotic) with the non-living (abiotic) parts of their environment.
2 Habitat	The area in which an organism lives .
3 Community	Two or more different species in an ecosystem. A stable community is one where all the species and environmental factors are in balance so that population sizes remain fairly constant .
4 Population	The total number of organisms of one species in an ecosystem.
5 Competition	Plants often compete for light, space, water and mineral ions . Animals often compete for food, mates and territory
6 Interdependence	Within a community each species depends on other species for food, shelter, pollination etc.
7 Adaptations	A feature that an organism has that allows it to survive in its ecosystem.
8 Biodiversity	The variety of all the different species of organisms on Earth , or within an ecosystem .

Section 3: Food Chains and Predator-Prey Relationships

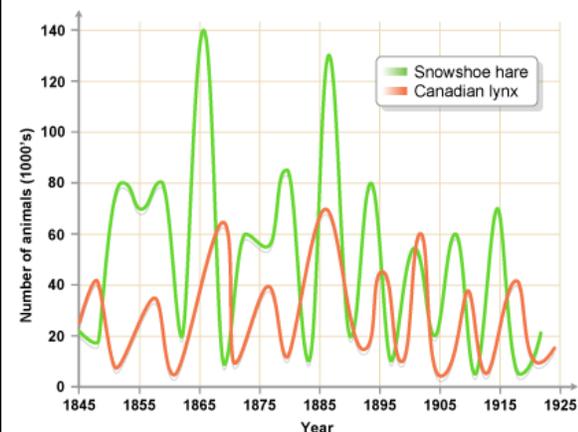


11 Producer – Start of a food chain. Produces **glucose** through **photosynthesis**.

12 Primary Consumer – Eats a **producer**. **Prey** of secondary consumer.

13 Secondary Consumer – Eats a **primary consumer**. **Predator** of primary consumer.

14 Tertiary Consumer – **Predates** on **secondary consumer**.



Predator-prey cycles

15 The population of the **prey increases**
16 **More food** is available for the **predators**, so their population increases.
17 There are **more predators** so the **population of the prey decreases**.
18 There is **less prey to feed on** so the population of **predators decreases**.
19 The **cycle restarts** from the beginning.

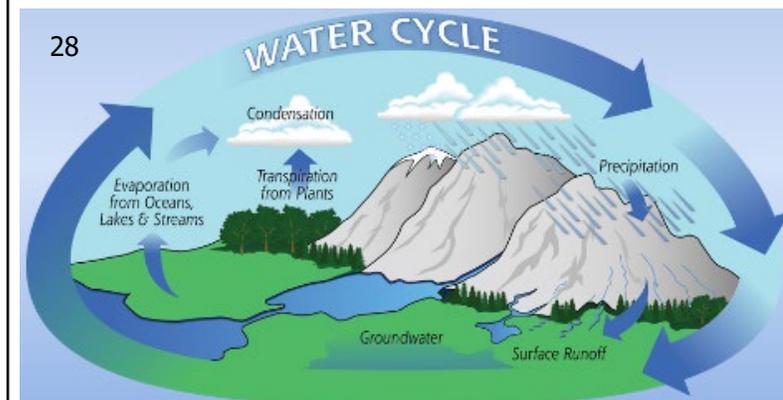
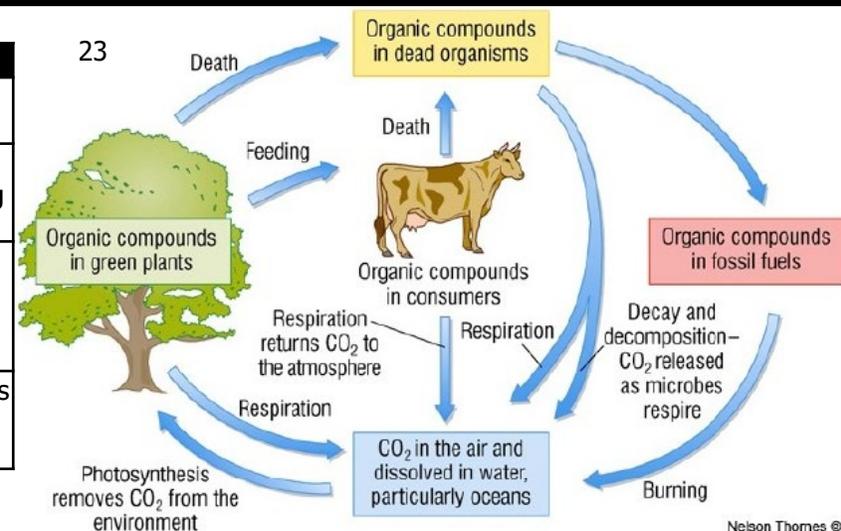
Section 2: Biotic and Abiotic Factors

9 Biotic	10 Abiotic
Availability of food	Light intensity
New predators arriving	Temperature
New pathogens	Moisture levels
One species outcompeting another	Oxygen levels for aquatic animals
	Wind intensity and direction
	Carbon dioxide levels for plants
	Soil pH and mineral content

Section 5: Cycles

Section 5a: Carbon cycle steps

24 Photosynthesis	Plants absorb CO₂ from atmosphere.
25 Respiration	Animals, plants and micro-organisms respire, releasing CO₂ into the atmosphere.
26 Decay	The carbon in dead organisms is released to the atmosphere by micro-organisms respiring .
27 Combustion	Carbon locked in fossil fuels is released as CO ₂ when fuels are burned .



Section 4: Adaptations

20 Structural Adaptations	Part of the body that helps the organism survive. e.g. polar bears have a thick layer of fat for insulation.
21 Functional Adaptations	How the body operates that helps the organism survive. E.g. camels do not sweat.
22 Behavioural Adaptations	A behaviour that helps the organism survive. e.g. desert rats stay in their burrows during the hottest parts of the day.

Section 5b: Water cycle steps

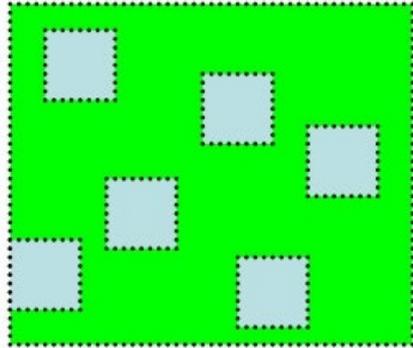
29 Evaporation	Liquid water is turned into water vapour in the atmosphere .
30 Condensation	Water vapour condenses to form clouds .
31 Precipitation	Water is deposited from clouds as rain .

Section 6: Human effects on biodiversity

Human activity	Why it happens	Effects
32 Polluting water with fertiliser and sewage	Farmers spread fertiliser on fields. Rain washes fertiliser into rivers and ponds. Sewage is released directly into rivers.	Fertilisers and sewage cause an increase in growth of algae . When the algae die , they are decomposed by bacteria that use oxygen . Other animals die due to a lack of oxygen .
33 Using land	Humans construct buildings , create quarries and farm .	Habitat for plants and animals is reduced .
34 Destroying peat bogs	Humans use peat to provide compost to increase food production.	Removes habitat, reducing biodiversity . Decay or burning of peat produces CO₂ .
35 Deforestation	To provide land for cattle and rice fields . To grow crops for biofuels .	Burning or decomposing trees releases CO₂ . Fewer trees to remove CO₂ from the atmosphere . Loss of biodiversity .
36 Producing acidic gases	Combustion of fossil fuels releases carbon dioxide, sulfur dioxide and nitrogen oxides . These gases dissolve in water making it acidic .	Acid rain. Damages plants . Can cause rivers and lakes to become acidic, killing animals and plants.
37 Polluting water with toxic chemicals	Pesticides and other toxic chemicals (e.g. from landfill) are washed into rivers and lakes by rain .	Toxic chemicals accumulate in animals. The further up the food chain , the greater the accumulation . Top predators die or fail to breed.
38 Increasing temperature of the planet (global warming)	Humans release extra greenhouse gases (CO₂ and methane) into the atmosphere and less CO₂ is absorbed by plants through photosynthesis. Greenhouse gases absorb heat and stop it escaping to space.	Loss of habitat as sea levels rise ; animals and plants can no longer survive in certain areas; reduced biodiversity ; change in migration patterns of animals.

Section 7: Maintaining biodiversity

39 Breeding programmes for endangered species.
40 Protection and regeneration of rare habitats.
41 Reintroduction of field margins and hedgerows in agricultural areas where farmers grow only one type of crop
42 Reduction of deforestation
43 Reduction of carbon dioxide emissions by some governments
44 Recycling resources rather than dumping waste in landfill.



Section 8: Measuring biodiversity

	Random Sampling	Systematic Sampling (transect)
45 Purpose	Estimate the size of a population in an area.	See how populations and communities change over a distance .
46 Method	<ol style="list-style-type: none"> Choose a suitable number of quadrats to use. Assign co-ordinates to the area that you are sampling. Randomly choose co-ordinates. Place the quadrats and count organisms present. Calculate the mean number of organisms. 	<ol style="list-style-type: none"> Use a tape measure to create a long line (transect). Put quadrats at set distances. Count organisms present. Repeat in a different place/ different time of year. Draw graphs to see how communities change over a distance.



B7 –Ecology KO test

Section 1: Key terms

- 1 Define ecosystem
- 2 Define habitat
- 3 Define community
- 4 Define population
- 5 Define competition
- 6 Define interdependence
- 7 Define adaptations
- 8 Define biodiversity

Section 2: Biotic and Abiotic Factors

9. List 9 biotic factors
10. List abiotic factors

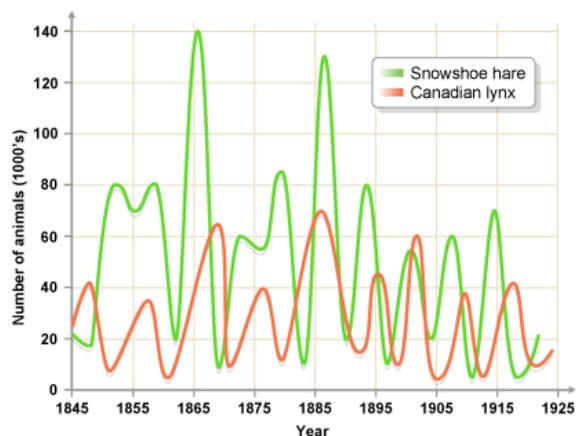
Section 3: Food Chains and Predator-Prey Relationships

- 11 Define Producer
- 12 Define Primary Consumer
- 13 Define Secondary Consumer
- 14 Define Tertiary Consumer

15 – 18

What is the title of this graph?

Describe the graph



Section 5 cycles

Section 5a: Carbon Cycle

23 Sketch out the carbon cycle

24 – 27 Describe the 4 steps in the carbon cycle

Section 5b: water cycle

28: Sketch out a diagram of the water cycle

29 – 31 Describe the 3 steps in the water cycle

Section 6: Human effects on biodiversity

List the 7 things that humans do to affect the environment negatively

32 Why does polluting water with fertiliser and sewage occur? What effects does this have?

33 what do we use land for? What effects does this have?

34 why do we destroy peat bogs? What effects does this have?

35 Why does deforestation occur? What effects does this have?

36 what causes the production of acidic gases? What effects does this have?

37 What causes the polluting of water with toxic chemicals? What effects does this have?

38 why is the planet's temperature increasing (global warming)? What effects does this have?

Section 7: Maintaining biodiversity

39 – 44 List 6 ways that we can maintain biodiversity

Section 8: Measuring biodiversity

45. Describe the purpose of random sampling and systematic sampling

46. Describe the method used for random sampling (5 steps) and systematic sampling (5 steps)

Chemistry 4: Chemical Changes

Section 1: Key Terms

1 Metal oxide	Metals react with oxides to produce metal oxides. This is an oxidation reaction.
2 Displacement reaction	A more reactive metal can displace a less reactive metal from a compound .
3 Oxidation	Two definitions: Chemicals are oxidised if they gain oxygen in a reaction. Chemicals are oxidised if they lose electrons in a reaction. (HT)
4 Reduction	Two definitions: Chemicals are oxidised if they lose oxygen in a reaction. Chemicals are oxidised if they gain electrons in a reaction. (HT)
5 Acid	A chemical that dissolves in water to produce H⁺ ions .
6 Base	A chemical that reacts with acids and neutralise them. E.g. metal oxides, metal hydroxides, metal carbonate
7 Alkali	A base that dissolves in water . It produces OH⁻ ions in solution.
8 Neutralisation	When a neutral solution is formed from reacting an acid and alkali . General equation: H⁺ + OH⁻ → H₂O
9 pH	A scale to measure acidity/ alkalinity . A decrease of one pH unit causes a 10x increase in H⁺ ions . (HT)
10 Strong acid (HT)	A strong acid is completely ionised in solution. E.g. hydrochloric, nitric and sulfuric acids.
11 Weak acid (HT)	A weak acid is only partially ionised in solution. E.g. ethanoic, citric and carbonic acids.

Section 2: Reactivity

Element	Reaction	Reactivity
12 Potassium	When potassium is added to water , the metal melts and floats. It moves around very quickly. The metal is also set on fire , with sparks and a lilac flame .	↑
13 Sodium	When sodium is added to water , it melts to form a ball that moves around on the surface. It fizzes rapidly .	
14 Lithium	When lithium is added to water , it floats. It fizzes steadily and becomes smaller.	
15 Calcium	Fizzes quickly with dilute acid .	
16 Magnesium	Fizzes quickly with dilute acid .	
17 (Carbon)		
18 Zinc	Bubbles slowly with dilute acid .	
19 Iron	Very slow reaction with dilute acid .	
20 (Hydrogen)		
21 Copper	No reaction with dilute acid .	

Section 4: Extracting Metals

22 Very unreactive metals	Found naturally in the ground. Don't need extracting .
23 Metals less reactive than carbon	Extracted by reduction with carbon .
24 Metals more reactive than carbon	Extracted by electrolysis .

Section 5: Reactions of Acids

25 With metal	Acid + Metal → Salt + Hydrogen
26 With alkali	Acid + Metal Hydroxide → Salt + Water (Neutralisation reaction)
27 With metal oxide	Acid + Metal Oxide → Salt + Water (Neutralisation reaction)
28 With carbonate	Acid + Metal Carbonate → Salt + Water + Carbon Dioxide (Neutralisation reaction)

Section 6: Making a Soluble Salt

29	Add solid metal, metal carbonate, metal oxide or metal hydroxide to an acid .
30	Add solid until no more reacts .
31	Filter off excess solid.
32	Evaporate to remove some of the water.
33	Leave to crystallise .
34	Remove all water in a desiccator/ oven .

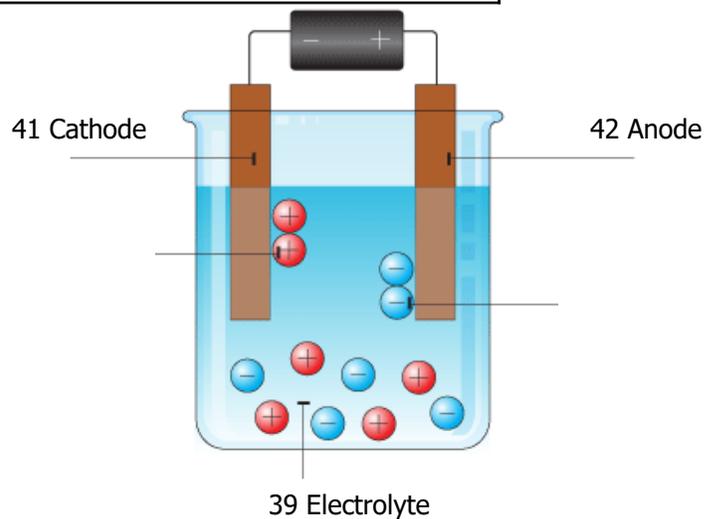
35 Acidic pH 0-6

36 Neutral pH 7

37 Neutral pH 8-14



Chemistry 4: Chemical Changes



- Positive
- Anode
- Negative
- Is
- Cathode

Section 7 Electrolysis key terms

38 Electrolysis	The process of splitting an ionic compound by passing electricity through it.
39 Electrolyte	An ionic compound that is molten (melted) or dissolved in water . The ions are free to move .
40 Electrode	An electrical conductor that is placed in the electrolyte and connected to the power supply .
41 Cathode	The electrode attached to the negative terminal of the power supply .
42 Anode	The electrode attached to the positive terminal of the power supply .

Section 8: What is discharged in electrolysis?

Electrolyte	Cathode	Anode
43 Molten Compound	Metal	Non-metal
44 Dissolved compound (aqueous solution)	The metal if the metal is less reactive than hydrogen . Hydrogen is produced if the metal is more reactive than hydrogen .	Oxygen is produced unless the solution contains halide ions (chloride, bromide, iodide) when the halogen (chlorine, bromine, iodine) is produced.

Section 9: Aluminium Electrolysis

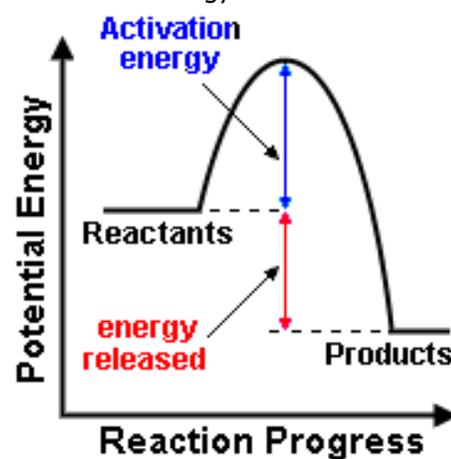
45 Cryolite	Aluminium oxide is dissolved in cryolite to lower its melting point . This saves money on energy costs .
46 Cathode	Positive Al³⁺ ions move to the cathode . Aluminium is produced. Al³⁺ + 3e⁻ → Al
47 Anode	Negative O²⁻ ions move to the anode . Oxygen is made. 2O²⁻ → O₂ + 4e⁻ Wears away as the carbon anode reacts with oxygen to form carbon dioxide .

Chemistry 5: Energy Changes

Section 7 Energy Changes Key Terms

1 Conservation of energy	Energy is not created or destroyed , only transferred from one store to another
2 Exothermic	A reaction that transfers energy to the surroundings so the temperature of the surroundings increases , e.g. combustion and neutralisation reactions. Used in self-heating cans and hand warmers .
3 Endothermic	A reaction that takes in energy from the surroundings so the temperature of the surroundings decreases , e.g. thermal decomposition . Used in sports injury packs .
4 Activation energy	The energy needed for particles to successfully react .
5 Breaking bonds	Energy is needed to break bonds.
6 Forming bonds	Energy is released when bonds are formed.

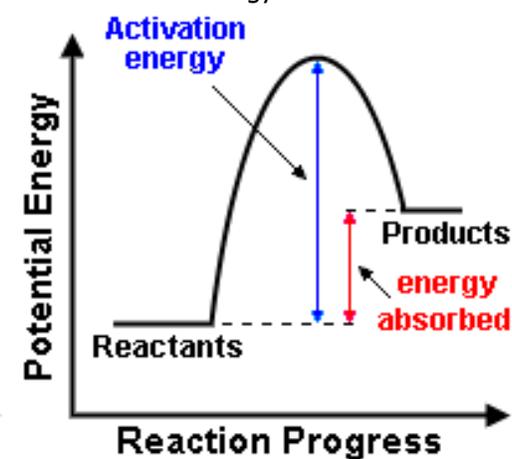
7 Exothermic Energy Profile



Exothermic reaction

9 Energy released from forming bonds is **greater than** the energy needed to break bonds. (HT)

8 Endothermic Energy Profile



Endothermic reaction

10 Energy released from forming bonds is **less than** the energy needed to break bonds. (HT)

Chemistry Chapter 4 – Chemical changes – reactivity series, reduction and oxidation

Write the reactivity series in order from most reactive to the least reactive.

Describe how we use reduction to extract metals from the reactivity series. State the metals can be reduced using carbon.

Describe what reduction and oxidation in in term of oxygen.

HIGHER TIER ONLY: Describe what oxidation and reduction are in terms of electrons.

Describe which metals will react with water and acid and how violent this reaction is.

Complete the table to show which reactions will results in a positive displacement reaction. Represent this with ticks and crosses.

Solution used	Metal being added			
	Magnesium	Zinc	Iron	Copper
Magnesium sulphate				
Zinc sulphate				
Iron sulphate				
Copper sulphate				

Describe why sodium is more reactive than lithium.

HIGHER TIER ONLY: Write the half equation for the extraction of iron.

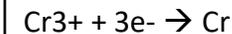
HIGHER TIER ONLY: Write the ionic equation to show the reaction between magnesium and copper chloride solution.

HIGHER TIER ONLY: Write the ionic equation to show potassium and magnesium forming positive ions.

HIGHER TIER ONLY: Write the half equation to show the reaction between magnesium and copper chloride solution.

HIGHER TIER ONLY: Write the balanced ionic equation for the extraction of zinc.

HIGHER TIER ONLY: Identify from these two half equations which is oxidised and which is reduced.





Chemistry Chapter 4 – Chemical changes – metals and acid, soluble salts, neutralisation, pH and strong and weak acids

Write the general word equations for the reactions below:

- Metal + acid →
- Acid + base →
- Metal oxide + acid →
- Metal hydroxide + acid →
- Metal carbonate + acid →

Identify from the formula the acid and write what salts are formed from using them.

HCl
H₂SO₄
HNO₃

Describe how to make a crystallised salt from using a metal and acid.

HIGHER TIER ONLY: Describe what redox reaction is and write the half equation for the reaction iron and sulphuric acid.

Describe how we make a soluble salt from an insoluble solid substance .

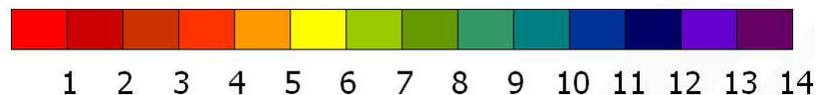
Define the terms:

Acid –

Base –

Alkali -

Using the pH scale below identify what is an acid, alkali and neutral.



Describe what neutralisation is and include the equation.

State 2 methods we could use to identify the pH of a substance.

HIGHER TIER ONLY: Describe the difference between a weak and strong acid and give examples of common acids.

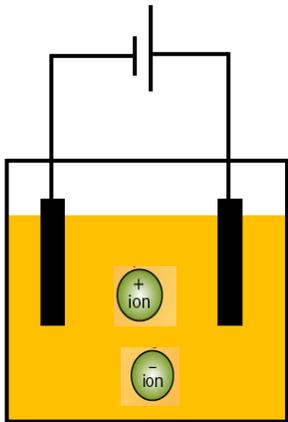
HIGHER TIER ONLY: Describe what happens as the pH decreases by one unit to the concentration of hydrogen ions.

HIGHER TIER ONLY: Describe what concentration is and link this to how we can have a weak but concentrated acid.

Chemistry Chapter 4 – Chemical changes – electrolysis

Describe what electrolysis is.

Label the set up below using the keywords: electrolyte, cation, cathode, anion, anode, D.C power supply and electrode. Draw an arrow to show where the cation and anion migrate to.



HIGHER TIER ONLY: Write the half equation for the electrolysis of sodium chloride solution.

Describe what a simple binary electrolyte is and the state they need to be in for electrolysis to happen.

HIGHER TIER ONLY: Write the half equation for the electrolysis molten copper bromide.

Describe what a preferential discharge is.

Describe what will be discharged at the cathode and anode during the electrolysis of copper sulphate.

Complete the below:

If the ions are halogens then the is produced.

If the ions are not halogens then is produced because ion is discharged.

If the ions are above hydrogen in the reactivity series then is produced.

If the ions are below hydrogen in the reactivity series then is produced.

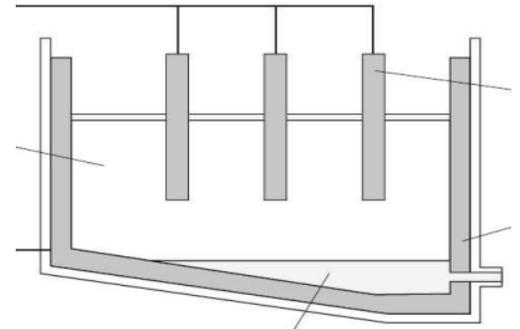
HIGHER TIER ONLY: Describe what OILRIG is.

HIGHER TIER ONLY: Describe which electrode oxidation and reduction occurs during electrolysis.

HIGHER TIER ONLY: Write the half equations at the cathode and anode for the electrolysis of dilute sodium sulphate solution.

State what the ore of aluminium oxide is called and explain why we mix this with cryolite.

Label the below image for the electrolysis of aluminium oxide.



Explain why the carbon anodes need replacing continuously.

HIGHER TIER ONLY: Write the half equations at the cathode and anode for the electrolysis of aluminium oxide.

Chemistry Chapter 4 – Chemical changes – required practical x 2 and maths skills

Describe what order of magnitude is.

Complete the below table:

Conc. of acid in mol/dm ³	Conc. of acid in standard form mol/dm ³	pH
0.1		1
0.01		
0.001		
0.0001		
0.00001		
0.000001		
0.0000001		

Write the variables for the practical for making a pure, dry salt.

Independent variable –

Dependent variable –

Control variables –

Describe a method used to prepare a pure, dry sample of a soluble salt from an insoluble oxide or carbonate.

Explain how to make a purer sample of your salt and why we add the metal in excess.

Draw a diagram to show the set up for the electrolysis of sodium chloride, sodium sulphate, copper (II) chloride and copper (II) sulphate.

Independent variable –

Dependent variable –

Control variables –

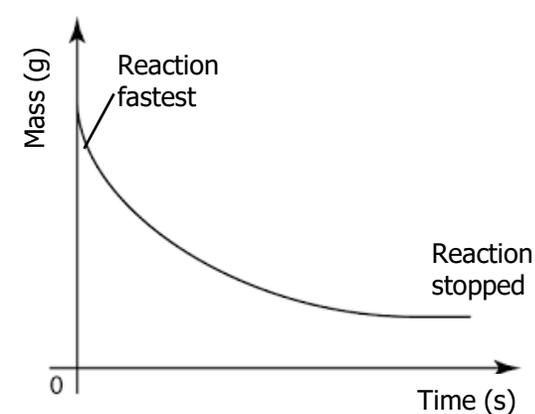
State the result you would expect to see for the electrolysis practical and explain why you would expect to see this.

Write a risk assessment for this practical. Include the risk, hazard and control for at least 1 risk.

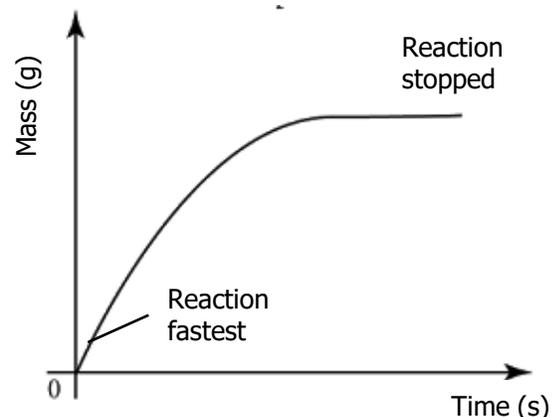
Chemistry 6: Rate and Extent of Chemical Change

1 Calculating rate of reaction:

Mean rate = $\frac{\text{amount of reactant used}}{\text{time taken}}$ or Mean rate = $\frac{\text{amount of product formed}}{\text{time taken}}$



2 Typical graph when measuring reactants used



3 Typical graph when measuring products formed

Section 1: Key terms

4 Collision theory	Reactions occur only when particles collide with enough energy.
5 Activation energy	The amount of energy particles need in order to react.
6 Catalyst	A chemical (or enzyme) that increases the rate of reaction without being used itself (therefore they are not included in an equation). They provide an alternative pathway for the reaction with a lower activation energy.
7 Concentration	The number of particles in a certain volume.

Section 2: Factors Affecting Rate

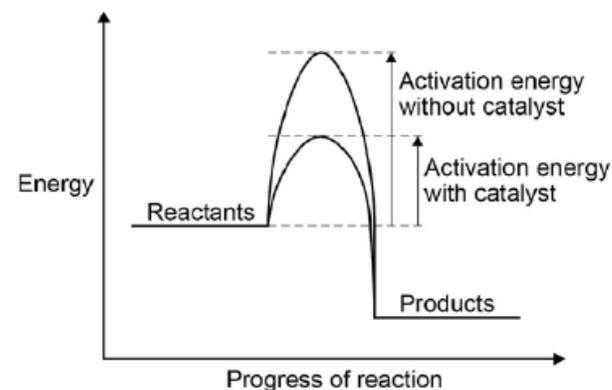
Factor	Effect on Rate	Explanation
9 Concentration of reactants	Increasing the concentration increases the rate of reaction.	Increases the chance of a collision as there are more particles.
10 Pressure of gases	Increasing the pressure increases the rate of reaction.	Increases the chance of a collision as there are more particles.
11 Surface area of solid reactants	Increasing the surface area increases the rate of reaction.	Exposes more of the solid so that there is a greater chance of collisions occurring.
12 Temperature	Increasing the temperature increases the rate of reaction.	Increases speed at which particles move and makes collisions more energetic.
13 Catalyst	Catalysts increase the rate of reaction.	Lowers the activation energy.

Section 3: Reversible Reactions

14 Reversible reaction	A reaction in which the products can also form the reactants. Shown as: $A + B \rightleftharpoons C + D$
15 Exothermic	A reaction that releases heat to the environment.
16 Endothermic	A reaction that takes in heat from the environment.
17 Equilibrium (HT)	Equilibrium is reached when the forward and reverse reactions occur at exactly the same rate. Needs a sealed container.
18 Le Chatelier's Principle (HT)	If a system is at equilibrium and a change is made to any of the conditions, then the system responds to counteract the change.

Section 4: Changing conditions at equilibrium

19 Changing temperature (HT)	<p>If the temperature of a system at equilibrium is increased:</p> <ul style="list-style-type: none"> the amount of products at equilibrium increases for an endothermic reaction the amount of products at equilibrium decreases for an exothermic reaction. <p>If the temperature of a system at equilibrium is decreased:</p> <ul style="list-style-type: none"> the amount of products at equilibrium decreases for an endothermic reaction the amount of products at equilibrium increases for an exothermic reaction.
20 Changing concentration (HT)	<ul style="list-style-type: none"> If the concentration of a reactant is increased, more products will be formed. If the concentration of a product is decreased, more products will be formed.
21 Changing pressure (HT)	<p>For reactions of gases:</p> <ul style="list-style-type: none"> an increase in pressure causes the reaction to favour the side with the smaller number of molecules (as shown by the symbol equation for that reaction). A decrease in pressure causes the reaction to favour the side with the larger number of molecules (as shown by the symbol equation for that reaction).



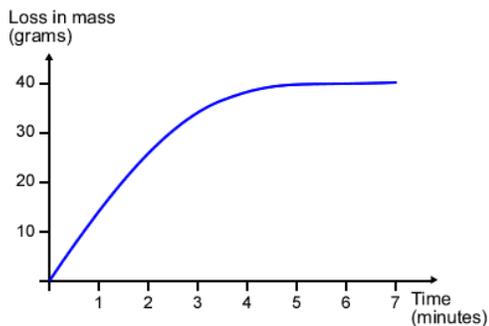
8 Energy profile diagram for a reaction with/ without a catalyst.

Chemistry Chapter 6 – The rate and extent of chemical change – measuring rates, calculating rates and factors affecting rates

State 3 ways of measuring reaction time:

State 3 pieces of equipment we can use to collect gas during a reaction and describe which one will give the most precise results and why.

Describe what the graph below is showing.

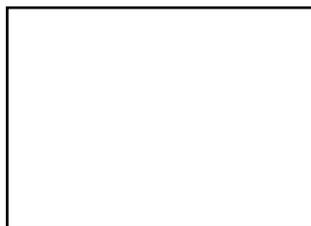


What do you mean by the “rate of reaction”?

State the 5 factors that affect the rate of reaction.

Explain the effect of concentration on the rate of reaction.

Draw a diagram to represent it.



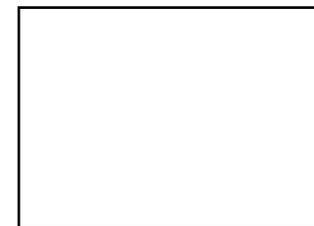
“Low”



“High”

Explain the effect of surface area on the rate of reaction.

Draw a diagram to represent it.



“Large particles”



“Small particles”

State the equation to calculate the mean rate of reaction.

HIGHER TIER: Define the term limiting reagent.

Chemistry Chapter 6 – The rate and extent of chemical change –factors affecting rates and collision theory

Explain the effect of temperature on the rate of reaction.

Draw a diagram to represent it.



“Low”



“High”

Describe how are we can increase the rate of reaction.

Explain the effects of catalysts on the rate of reaction.
Include the definition.

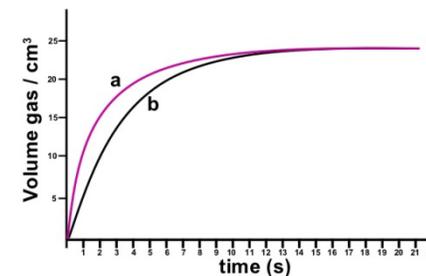
Give examples of catalysts that are widely use in industry.

What is the small amount of energy that needs to be overcome for a reaction to occur?

Describe what collision theory is.

Describe what collision theory is.

Describe what the graph shows below.



Chemistry Chapter 6 – The rate and extent of chemical change – reversible reactions and equilibrium

What are reversible reactions? Include the symbol used to show a reversible reaction.

Describe the hydrated copper sulphate reversible reaction.
HIGHER TIER: State which reaction is endothermic and which is exothermic.

Define the term equilibrium and explain what happens at equilibrium.

If the concentration of the reactants is greater than the concentration of the products what is the position of the equilibrium?

If the concentration of the reactants is less than the concentration of the products what is the position of the equilibrium?

HIGHER TIER: Explain Le Chatelier's Principle.

HIGHER TIER: Using Le Chatelier's principle explain the effect of increasing and decreasing the concentration on the rate of reaction. Include the direction.

HIGHER TIER: Using Le Chatelier's principle explain the effect of increasing and decreasing the temperature on the rate of reaction. Include the direction.

HIGHER TIER: Using Le Chatelier's principle explain the effect of increasing and decreasing the pressure on the rate of reaction. Include the direction.

Chemistry Chapter 6 – The rate and extent of chemical change– 2 x RP and maths

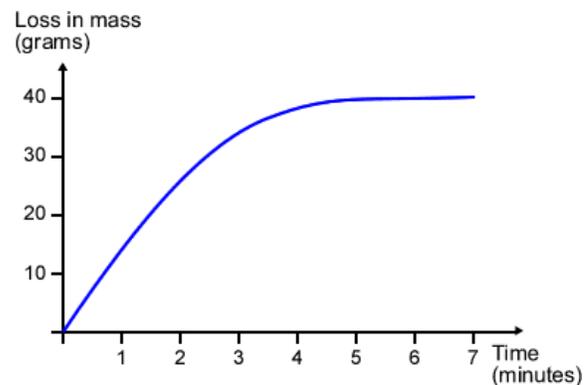
Describe how you draw a graph.

Describe a method used to investigate the rate of reaction for a colour change. Include a diagram of your set up.

Describe a method used to investigate the rate of reaction for volume of gas. Include a diagram of your set up.

Describe how we can find the gradient of a straight line in a graph.

Draw a tangent on the graph to calculate the rate of reaction at approx. 35g.



Independent variable –
Dependent variable –
Control variables -

Independent variable –
Dependent variable –
Control variables -

Explain how this experiment follows Newton's second law of motion.

Write a risk assessment for this practical. Include the risk, hazard and control for at least 1 risk.

Chemistry Chapter 7 – Hydrocarbons – crude oil, fractional distillation and combustion

Describe what crude oil is and why it is a finite resource.

What are hydrocarbons?

Describe the difference between complete and incomplete combustion. Include the equations.

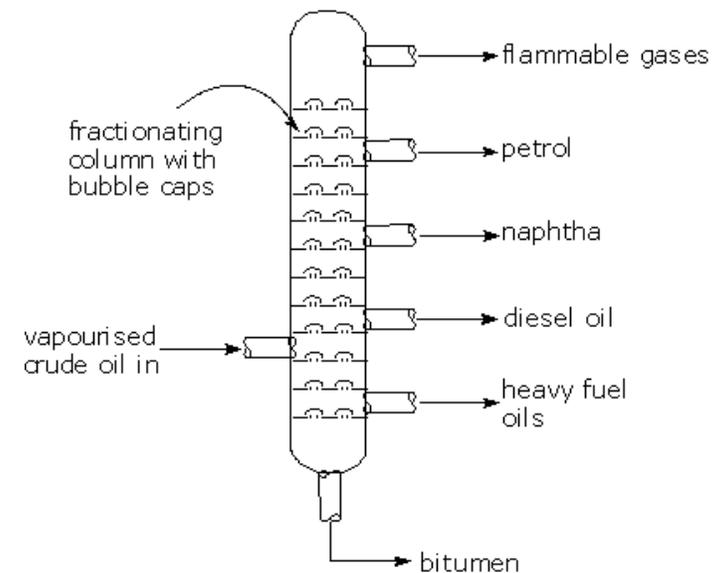
Describe the issues with incomplete combustion.

Balance the below equations and state which one is complete and incomplete combustion.



Describe the properties of hydrocarbons and explain why these trends occur.

Fractional distillation – Explain how we separate out crude oil into useful fractions. **HIGHER TIER** – reference intermolecular forces.



Chemistry Chapter 7 – Hydrocarbons – alkenes, alkanes and cracking

Explain what is meant by “cracking”. Include the process and why we do it.

Monkeys Eat Peanut Butter Positively is a good way to remember the first 5 names for alkanes and alkenes. What are they and why do alkenes not start with the first one?

Describe the difference between intermolecular and intramolecular forces of attraction. Include an example.

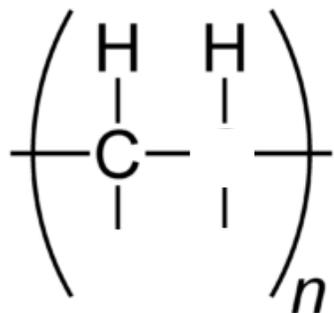
What happens to the following when added to bromine water:

Alkanes –

Alkenes –

What type of bonds are present in hydrocarbons?

Complete the polymer below for poly(ethene).



Complete the table below to summarise the difference between alkanes and alkenes.

	ALKANES	ALKENES
Saturated or unsaturated		
General formula		
Name an example		
Draw an example		

Chemistry 7: Hydrocarbons

Section 1: Key terms

1 Crude oil	A mixture of hydrocarbons formed over millions of years from dead plankton subjected to pressure .
2 Hydrocarbon	A molecule containing hydrogen and carbon atoms only .
3 Alkane	A hydrocarbon containing only single bonds . Follows the formula C_nH_{2n+2} .
4 Fractional distillation	The method of separating hydrocarbons based on their boiling point .
5 Intermolecular force	Weak forces of attraction that exist between molecules .
6 Boiling point	The temperature at which a liquid turns into a gas .
7 Viscosity	The ability of a substance to flow .
8 Flammability	The ability of a substance to burn or ignite .
10 Combustion	A reaction between a fuel and oxygen that produces heat .
11 Complete combustion	Combustion in adequate oxygen . Complete combustion of a hydrocarbon will produce carbon dioxide and water .
12 Incomplete combustion	Combustion in inadequate oxygen . Incomplete combustion of a hydrocarbon produces water and carbon monoxide or carbon particulates .
13 Alkene	A hydrocarbon containing at least one double bond . If they contain one double bond only they follow the formula C_nH_{2n} . Used to make polymers .
14 Bromine water	A chemical that is brown/ orange in colour. If added to an alkene it reacts and changes to colourless . Alkanes do not produce a change in colour.
15 Cracking	The process by which less-useful long-chain hydrocarbons are split to produce an alkane and an alkene .
16 Catalyst	A chemical that speeds up the rate of reaction without being used itself.
17 Covalent bond	A strong bond that exists between non-metal atoms .
18 Fraction	A fraction contains similar length hydrocarbons with a small range of boiling points .

Section 2: Alkanes

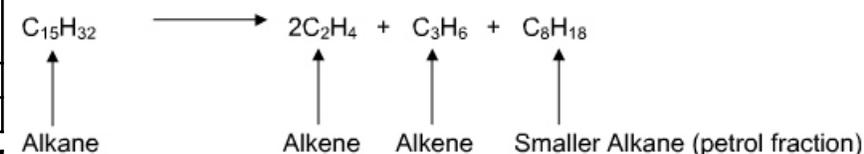
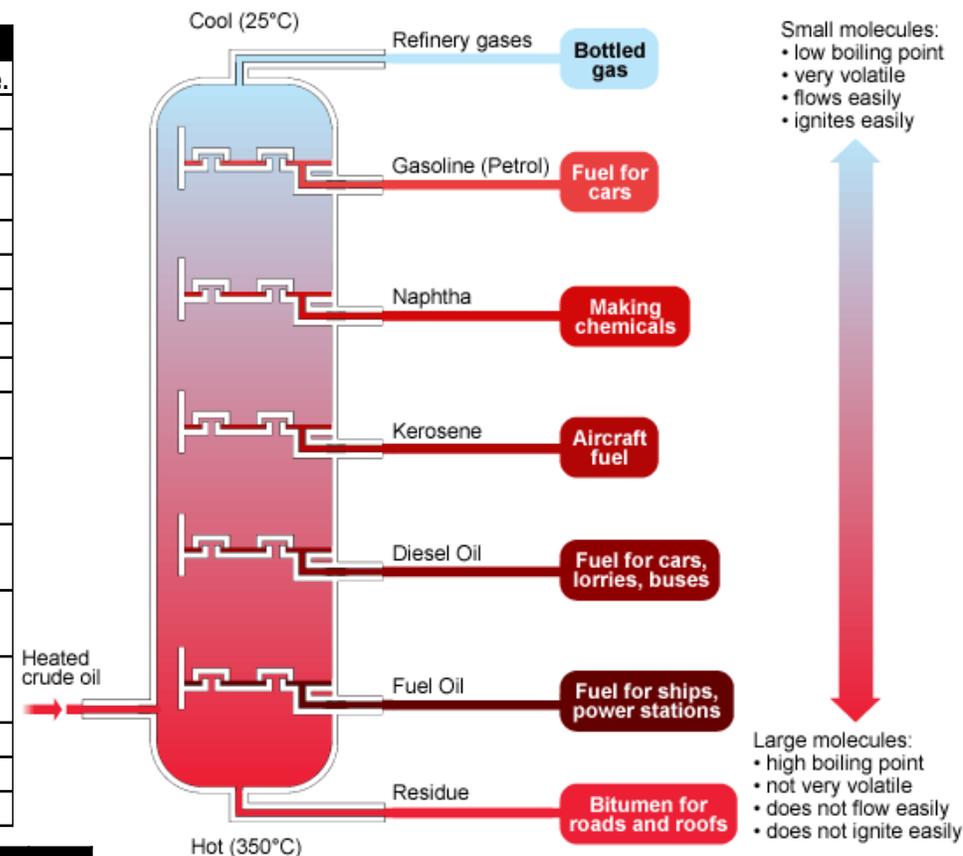
methane CH ₄	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array}$	19
ethane C ₂ H ₆	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$	20
propane C ₃ H ₈	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$	21
butane C ₄ H ₁₀	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$	22

Section 3: Fractional Distillation

23	The crude oil is heated to 400°C.	H
24	Most fractions evaporate and become vapours . The residue doesn't boil and flows to the bottom of the column.	E
25	Hot vapours rise up the column and cool down .	R
26	When the vapours cool to their boiling point they condense and flow out of the column.	C
27	Those with lower boiling points rise further before cooling down.	
28	Refinery gases do not cool down to their boiling point so remain as gases .	

Section 4: Cracking

Cracking Method	Process	Temperature
29 Catalytic Cracking	Fraction is heated in the presence of a zeolite catalyst .	500°C.
30 Steam Cracking	Fraction is diluted with steam and heated .	850°C.



31 Cracking breaks down long-chain hydrocarbons to shorter hydrocarbons and an alkene. The atoms in the products must be the same as the atoms in the reactants.⁶⁷

Chemistry Chapter 8 –Chemical analysis – pure substances, formulations and testing for gases

Define the term pure substance .

Describe how to separate water and ethanol. Using distillation

Describe what a formulation, why they are important in medicines and give other examples.

Describe the difference between a pure substance and a mixture.

Describe how to separate 2 soluble substances.

State physical processes for separating mixtures.

State the tests for the below:

Oxygen –

Hydrogen –

Carbon dioxide –

Chlorine –

Describe briefly how to separation a solid from a solution using filtration and crystallisation

Draw 2 graphs to show a pure substance boiling and an impure substance boiling.

Chemistry Chapter 8 – Chemical analysis– RP and maths

State the equation to calculate R_f values.

Independent variable –

Dependent variable –

Control variables –

Describe a method used to investigate chromatography to identify ink mixtures. Include a diagram of your set up.

State the numbers below to 1 significant figure (sf)

1. 41
2. 8.6
3. 0.478
4. 0.74
5. 15

Write a risk assessment for this practical. Include the risk, hazard and control for at least 1 risk.

State the numbers below to 2 sf.

1. 0.589
2. 457
3. 8.45
4. 89.5
5. 102

Calculate the R_f value when the red spot moved 4.1 cm and the distance the solvent moved is 12.5cm. Show your working out.

State the numbers below to 3 sf.

1. 0.7521
2. 1589
3. 896.7
4. 97.82
5. 102.6

Explain why some colours travel further than others.

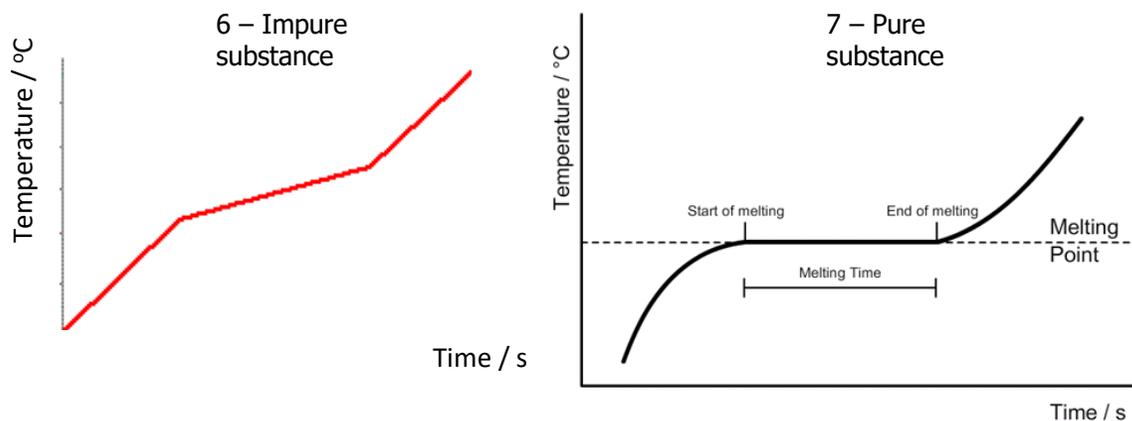
Chemistry 8: Chemical Analysis

Section 1: Key terms

1 Pure	A pure substance is a single element or compound, not mixed with any other substance.
2 Formulation	A mixture that has been designed as a useful product. Formulations are made by mixing the components in carefully measured quantities . Formulations include fuels, cleaning agents, paints, medicines, alloys, fertilisers and foods .
3 Melting point	The temperature at which a substance turns from a solid to a liquid.

Section 2: Impure and Pure Graphs

4	Impure substances do not melt at specific temperatures.
5	Pure substances do melt at specific temperatures (a horizontal line is produced).

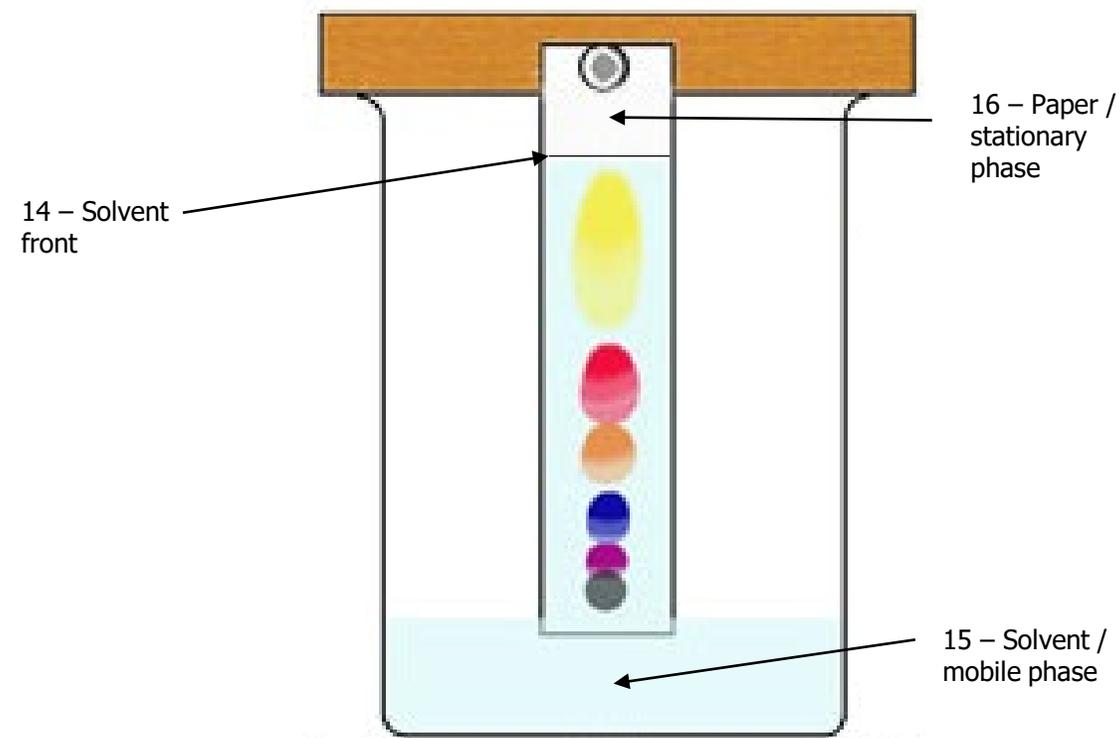


Section 4: Testing for Gases

	Gas	Procedure	Positive Result
17	Hydrogen	Hold a lit splint at the end of a test tube producing gas.	Hydrogen burns with a pop noise.
18	Oxygen	Hold a glowing splint in a test tube of the gas.	The splint relights if oxygen is present.
19	Carbon dioxide	Bubble gas through a solution of limewater .	Carbon dioxide causes the limewater to turn milky .
20	Chlorine	Place damp litmus paper in the gas.	The litmus is bleached white if chlorine is present.

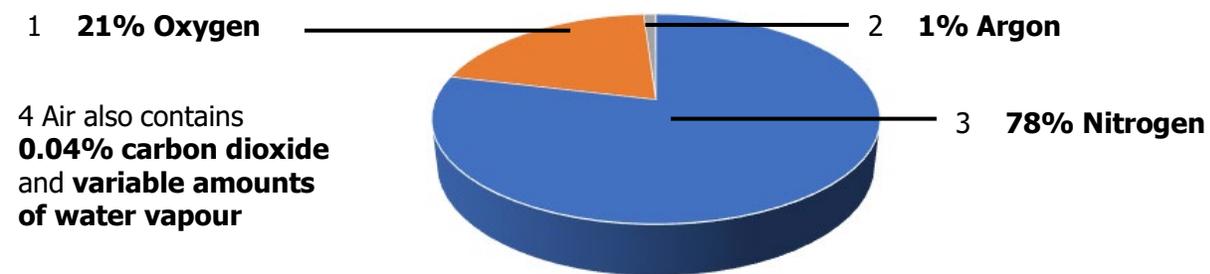
Section 3: Chromatography

8 Chromatography	A method used to separate mixtures into their different chemicals.
9 Solvent	The chemical that dissolves the sample in chromatography.
10 Solvent front	The maximum distance the solvent moves up the paper.
11 Stationary phase	The medium (e.g. paper) through which the mobile phase passes in chromatography .
12 Mobile phase	The solvent (e.g. water) that carries the sample (e.g. ink) in chromatography .
13 R _f value	A value (always less than 1) that shows how far the substance has moved compared to the solvent. Equation: $R_f = \frac{\text{distance moved by substance}}{\text{distance moved by solvent}}$



Chemistry 9: Chemistry of the Atmosphere

Section 1: The Atmosphere



Section 2: Formation of the Atmosphere

5. Early Atmosphere
Atmosphere is **mainly carbon dioxide** with **no oxygen**.

6. 4.6 – 3.6 Billion Years Ago
Volcanoes erupt releasing nitrogen and water vapour. Water vapour condenses and forms the oceans. Some **carbon dioxide dissolves in the oceans. Carbon dioxide is also locked in fossil fuels and sedimentary rocks.**

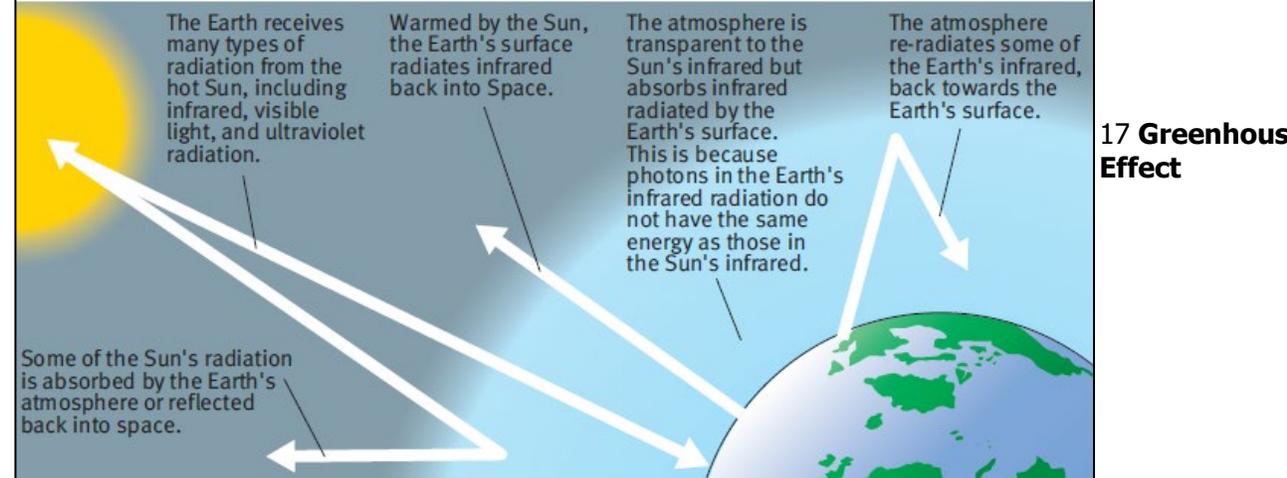
7. 2.7-1.7 Billion Years Ago
Plants evolve and release oxygen through photosynthesis. They take in more carbon dioxide.

Section 2a: Reduction of CO₂ by formation of deposits

8 Coal	Plants absorbed CO₂. They died and decayed. This layer of decaying plants was compressed to form coal.
9 Oil and natural gas	Plankton absorbed CO₂. Plankton died and were deposited in muds on the sea floor. They were covered over and compressed over millions of years.
10 Limestone	Shelled animals absorbed CO₂ to make their calcium carbonate shells. The remains of these animals were compressed to form limestone.

Section 3: Greenhouse Effect and Global Warming

11 Greenhouse effect	The process by which the temperature on Earth is kept high enough to support life by greenhouse gases absorbing radiation radiated by the Earth.
12 Greenhouse gas	Greenhouse gases keep temperatures on Earth high enough to support life. Water vapour, methane and carbon dioxide are greenhouse gases.
13 Short wavelength radiation	The radiation from the Sun. Is able to pass through the Earth's atmosphere and warm the surface of the Earth without being absorbed by greenhouse gases.
14 Long wavelength radiation	The radiation from the Earth's surface. Some is absorbed by greenhouse gases and doesn't escape the atmosphere.
15 Carbon footprint	The total amount of carbon dioxide and other greenhouse gases emitted over the full life cycle of a product or event.
16 Global warming	The increase of the average temperature of the Earth.



17 Greenhouse Effect

18 How humans increase carbon dioxide in the atmosphere	19 How humans increase methane in the atmosphere
Combustion of fossil fuels	Increased animal farming
Deforestation	Decomposition of rubbish in landfill
20 How humans can decrease carbon dioxide concentration	21 How humans can decrease methane concentration
Use alternative forms of energy e.g. wind turbines	Alternative foods – non-animal based
Energy efficiency e.g. more efficient cars	Increased recycling
Carbon capture – capturing CO ₂ from power stations and trapping it	
Carbon off-setting – planting more trees	
Effects of global warming	
22 Some regions will not be able to produce enough food because of drought .	
23 Changes to distribution of species and migration patterns.	
24 Increase in sea levels because of melting of polar ice caps.	
25 Reduction of water supplies in some regions.	

Section 4: Common Pollutants

Pollutant	Formula	Cause	Effect
26 Carbon monoxide	CO	Incomplete combustion of a hydrocarbon fuel.	Toxic gas. Colourless and odourless so hard to detect.
27 Sulfur dioxide	SO ₂	Burning coal or petrol. Both contain sulfur which reacts with oxygen in the air.	Cause respiratory problems (e.g. for those with asthma).
28 Nitrogen oxides	NO _x	In car engines. N₂ and O₂ from air react at high temperatures.	Combine with water vapour to cause acid rain . ¹
29 Particulates	CO ₂	Incomplete combustion of a hydrocarbon fuel.	Global dimming (reduction in sunlight reaching Earth).

Chemistry Chapter 9 – The atmosphere – gases in the atmosphere, early atmosphere, oxygen and carbon dioxide

State the difference between the Earth's early atmosphere and the atmosphere today. Include percentages.

Describe a theory for the Earth's early atmosphere. Include any evidence for these theories.

Explain how oxygen levels increased to the levels it is at today from the early atmosphere and give evidence.

Give the processes and the word equation and balanced symbol equation for the gases remaining constant in the atmosphere aside from water vapour.

Explain why the evidence for the early atmosphere is limited and the difference between proxy and direct evidence.

Explain how carbon dioxide levels decreased to the levels it is at today from the early atmosphere and give evidence.

Chemistry Chapter 9 – The atmosphere – greenhouse gases, climate change and carbon footprint

Explain why greenhouse gases are important. Include the effect of greenhouse gases and the radiation type in your answer.

Describe the effects of climate change on the Earth. Include risks and environmental concerns.

Describe and explain government methods for reducing the carbon footprint and why it is difficult to reduce the levels.

Explain how human activities have led to an increase in climate change.

Describe what carbon footprint is and how we can reduce our own personal carbon footprint.

Chemistry Chapter 9 – The atmosphere – atmospheric pollutants from fuels, properties and effects and maths

Give an equation for complete and incomplete combustion of fuels. State the differences between the two.

Describe how oxides of nitrogen are caused, how it can be reduced and the effect of it.

Describe how sulphur dioxide is caused, how it can be reduced and the effect of it.

Describe how carbon monoxide is caused, how it can be reduced and the effect of it.

Describe how particulates are caused, how it can be reduced and the effect of it.

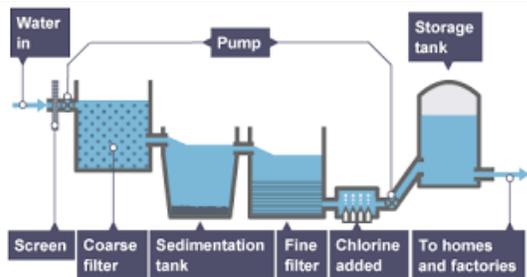
State the equation for percentage yield.

Draw a pie chart to show the composition of air.

Section 1: Key Terms

1 Finite resource	A resource used by humans that has a limited supply e.g. coal.
2 Renewable resources	A resource used by humans that can be replenished e.g. trees. If not managed correctly, the resource may decrease.
3 Potable water	Water that is safe to drink . Has low levels of dissolved salts and microbes .
4 Fresh water	Water that has low levels of dissolved salts . Sea water is not fresh water.
5 Pure water	Only contains water molecules , nothing else.
6 Desalination	A process that removes salt from sea water to create potable water. Expensive as it requires a lot of energy . Only necessary in areas with small amounts of fresh water e.g. Spain.
7 Sewage	Wastewater produced by people . Contains potentially dangerous chemicals and large numbers of bacteria .

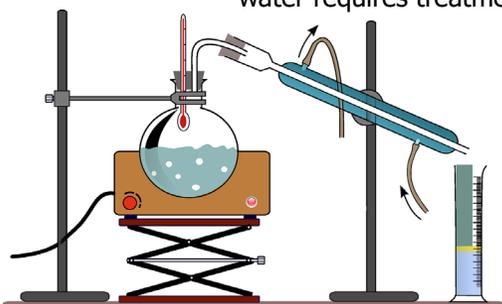
Section 2: Potable Water



8 Obtaining potable water in countries with plentiful fresh water e.g. the UK

- Find a suitable source of fresh water (e.g. a **reservoir**).
- Pass through **filter beds to remove particles**.
- **Sterilise** to kill microbes e.g. by using **chlorine, ozone** or **ultraviolet light**.

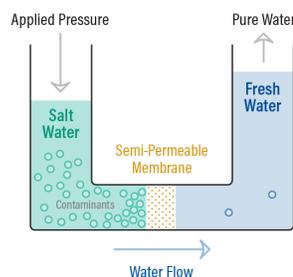
Obtaining potable water in countries with limited fresh water requires treatment of sea water:



9 Distillation:

- Water is heated to **100°C**.
- It **evaporates**, leaving the salt behind.
- A **condenser cools** the water to return it to the liquid state.

Reverse Osmosis



10 Reverse osmosis:

- **Pressure** is applied to the water.
- The **water molecules** move through the **partially-permeable membrane**.
- **Other particles are too large** and are not able to move through.

Section 3: Sewage Treatment

11 Screening and grit removal	Removes rags, paper, plastics etc. that may block pipes.
12 Sedimentation	Suspended particles settle out of the water and fall to the bottom of a sedimentation tank to form the sewage sludge .
13 Anaerobic digestion of sewage sludge	Bacteria digest the sludge in the absence of oxygen . This breaks it down. Methane and carbon dioxide are produced by the bacteria.
14 Aerobic biological treatment of sewage effluent	Aerobic bacteria digest more of the organic matter in the effluent (the treated waste water).

Section 4: Alternative Methods of Metal Extraction

15 Bioleaching	Bacteria grow on low-grade copper ores . They produce a leachate (liquid) that contains copper compounds .
16 Phytomining	Plants are grown on low-grade copper ores . The plants absorb the copper and are then burned . The ash contains copper compounds .
17 Displacement using scrap iron	A method of obtaining pure copper from the copper compounds produced in phytomining and bioleaching. Iron displaces copper from its compounds as iron is more reactive . Cheap .
18 Electrolysis	A method of obtaining pure copper from the copper compounds produced in phytomining and bioleaching. Copper compounds can be dissolved and then the positive copper ions would be attracted to the negative electrode in electrolysis.

Section 5: Life Cycle Assessment

19 Life Cycle Assessment	Life cycle assessments assess the environmental impact of products . A LCA assesses the use of water, resources, energy sources and production of some wastes during the following stages: <ul style="list-style-type: none"> • extracting and processing raw materials • manufacturing and packaging • use and operation during its lifetime • disposal at the end of its useful life, including transport and distribution at each stage.
20 Reuse	The environmental impact of products can be reduced by reusing the product. Only suitable for some products e.g. glass bottles .
21 Recycling	Some materials can be recycled e.g. metals. Metals can be recycled by melting and recasting or reforming into different products .

Chemistry Chapter 10 – Sustainable development – Earth's resources, potable water and waste water treatment

Describe how we can make ways of our life sustainable.

State the 3 main stages in water treatment and the purpose of it.

Describe what is meant by the water footprint.

Define the term finite resource and renewable. Give examples.

Describe the processes involved in sewage treatment and where the waste water comes from.

Describe how we can get potable water from seawater.

Define the term potable water and state where we can obtain potable water from.

Chemistry Chapter 10 – Sustainable development – life cycle assessment, alternative metal extraction and reducing use of resources

State what an LCA is.

Give an example of either plastic or paper as an LCA. You must reference all the stages.

HIGHER TIER – describe the process of phytomining. Include advantages and disadvantages.

What stages are included in LCA's.

Explain why we need to look at ways of reducing finite resources and recycling and reusing materials.

HIGHER TIER – describe the process of bioleaching. Include advantages and disadvantages.

Chemistry Chapter 10 – Sustainable development– RP and maths

State how we should draw a graph. Include reference to line of best fit. Hint – are they always a straight line?

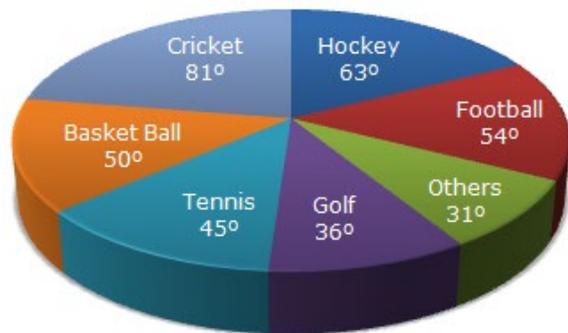
Independent variable –

Dependent variable –

Control variables –

Describe a method used to investigate and analyse the purification of water samples from different sources. Include a diagram of your set up.

When looking at a graph or pie chart describe what information you are able to get from them and where you would find this information. Use the example pie chart for support.



Write a risk assessment for this practical. Include the risk, hazard and control for at least 1 risk.

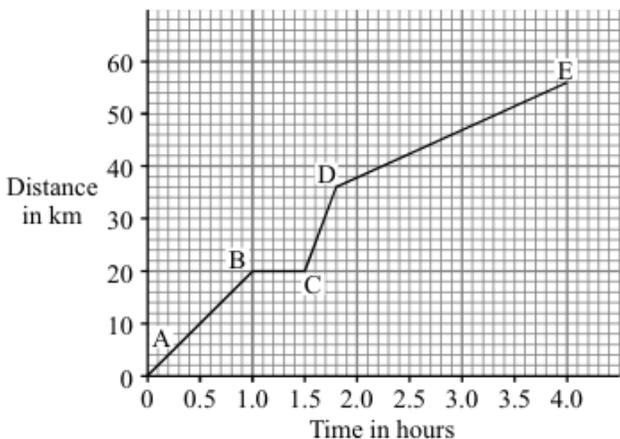
State what results you would expect to see.

Explain why it is important the watch glass is reheated and dried before it is reweighed?

Physics Chapter 5 – Forces– speed and velocity

Define the term speed and give the equation with units.

The graph below shows a cyclist's journey. Describe what is happening in the graph below:



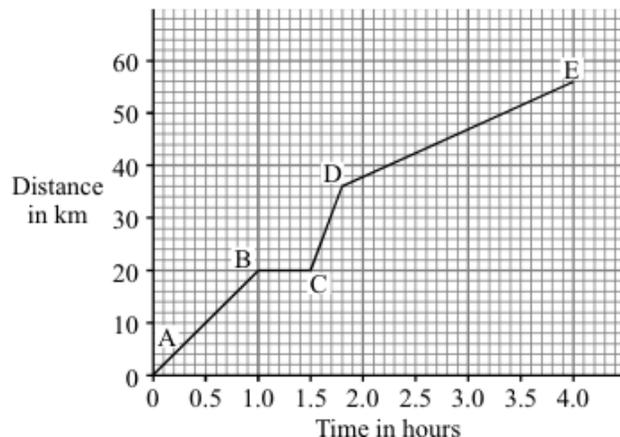
A-B

B-C

C-D

D-E

On the graph calculate the speed of the cyclists between point A and B and D and E.



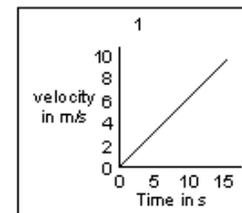
A – B

D – E

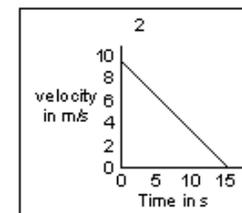
Match the line to the correct diagram.

List A
Velocity–time graphs

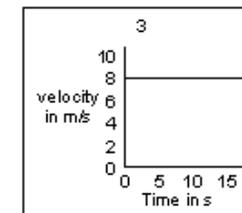
List B
Descriptions of motion



Constant velocity

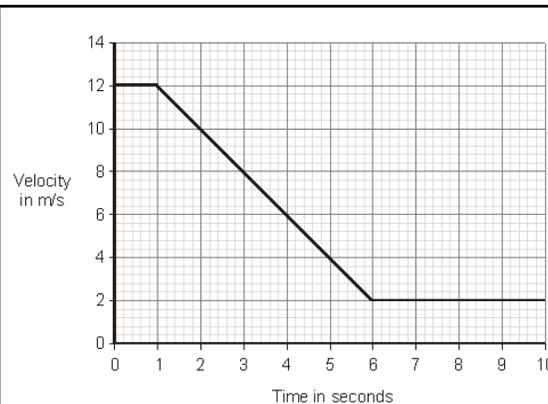


Constant acceleration



Not moving

Constant deceleration



Work out the deceleration of the car and the distance it has travelled:

$$\text{Acceleration} = \frac{\text{change in velocity}}{\text{time taken}}$$

$$\text{Distance} = \text{area under the line}$$

Define the term velocity and give the units.



Physics Chapter 5 – Forces – acceleration, motion

Define acceleration and deceleration.

Give the equation that links acceleration, velocity and time. State the units.

Calculate the acceleration of a car when it increases its velocity to 50m/s from 10 m/s in 5 seconds.

Uniform motion is?

Give the equation for uniform motion and define the symbols below with units.

s
u
v
a

Rearrange the equation for uniform motion to calculate a.

Rearrange the equation for uniform motion to calculate a.

A car accelerates from 15m/s at 4m/s^2 for the next 12m. What is its final velocity.

s =
u =
v =
a =

A train approaching a red signal has a speed of 15m/s. the signal then changes and the train accelerates. By the time it has travelled another 1500m. It is now travelling at 40m/s. What is its acceleration?

A ball is thrown vertically upwards at 12m/s. ignoring air resistance and taking $g = 9.8\text{m/s}^2$. Calculate how high it goes. Remember it will be momentarily stationary at the highest point so its velocity will be 0.

Physics Chapter 5 – Forces– forces, resultant forces, vectors

What is a force?

What are unbalanced forces and when do they occur?

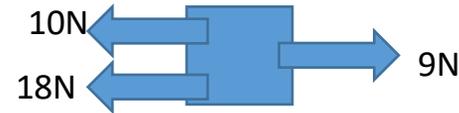
Define the terms scalar and vector. And give examples.

Describe the difference between contact and non-contact forces and give examples of contact and non-contact forces.

What are balanced forces and when do they occur?

HIGHER TIER- A box is pushed in an easterly direct with a force of 110N. The box is then pushed in a northern direction with a force of 70N. Calculate the resultant force. You will need to use Pythagoras' theorem. Draw out the forces and show your working.

Calculate the resultant force acting on the below:



Describe the difference between weight and mass.

HIGHER TIER - Draw a free body diagram to show the force acting on a car accelerating, a tennis ball falling to the ground and an aeroplane traveling at a constant speed.

From the above - calculate the direction. You will need to use trigonometry to determine the direction.

Write the equation that links weight, mass and gravitational field strength. Give the units.



Physics Chapter 5 – Forces – Newton's Laws of motion and inertia

State Newton's three laws of motion:

- 1.
- 2.
- 3.

Calculate the force of an object that has an acceleration of 5m/s^2 and a mass of 50kg .

State how you convert from:

- g to kg
- cm to m

Convert the below to the rightful form:

1. 5cm
2. 6g
3. 800cm
4. 95g
5. 9000g
6. 675g
7. 89.6cm
8. 95cm
9. 9800cm
10. 60.8g

Explain using Newton's first law of motion when the forces acting on an object will result in 0. Make reference to examples.

Calculate the mass of an object when the force acting on the object is 254N and the acceleration is 9m/s^2 .

HIGHER TIER – What is meant by the term inertia and inertial mass? Give the equation to calculate inertial mass. Give an example of an object that has a high inertial mass.

Write the equation that links force, mass and acceleration together.

Calculate the acceleration of an object when the force acting on the object is 100N and the mass is 60kg .



Physics Chapter 5 – Forces –momentum, road safety and energy in a spring

Define the terms:

Reaction time

Thinking distance

Breaking distance

Stopping distance

State what factors affect stopping distance.

State what factors can affect the breaking distance

Describe the dangers associated with a large deceleration.

Sketch a graph to demonstrate Hook's Law that shows there is a linear relationship between force and extension in a spring.

Write the equation:

1. That links force, spring constant and extension and
2. Elastic potential energy, spring constant and extension.

Calculate the spring constant when a spring has an extension of 0.05m and is stretched by a force of 3N.

HIGHER TIER – Describe what momentum is and give the equation with units.

Explain the conservation of momentum principle, include examples in your answer.

If a sprinter with a mass of 50kg runs at a velocity of 10m/s what is their momentum?

A 0.5 kg trolley is pushed at a velocity of 1.2 m/s into a stationary trolley with a mass of 1.5 kg. The two trolleys stick to each other after the impact.

Calculate:

The momentum of the 0.5 kg trolley before the collision

The velocity of the two trolleys straight after the impact

Physics Chapter 5 – Forces – maths skill and 2 x required practical.

Describe why estimates are useful.

Significant figures are what?

Round these numbers up or down:

1. 0.56
2. 78
3. 100.1
4. 0.05
5. 189

Write the numbers below to 1 s.f.

1. 11
2. 10.2
3. 56

Write the numbers below to 2s.f

1. 123
2. 89.51
3. 156

Write the number below to 3 s.f.

1. 1568
2. 0.9874
3. 10.39

Describe a method used to investigate the acceleration of an object. Include a diagram of your set up.

Describe a method used to investigate the relationship between force and the extension of a spring. Include a diagram of your set up.

Independent variable –
Dependent variable –
Control variables -

Independent variable –
Dependent variable –
Control variables -

Explain how this experiment follows Newton's second law of motion.

Write a risk assessment for this practical. Include the risk, hazard and control for at least 1 risk.

Physics 5: Forces

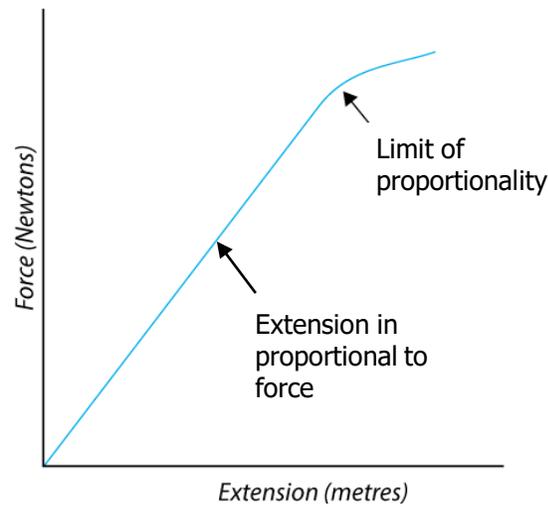
Section 1: Key terms	
1 Scalar	A value with magnitude (size) only , e.g. speed, distance .
2 Vector	A value with magnitude (size) and direction , e.g. all forces, displacement, velocity .
3 Contact force	Force between objects that are touching e.g. friction, air resistance.
4 Non-contact force	Force between separate objects e.g. gravitational force, magnetic force.
5 Weight	The force of gravity acting on an object's mass . Measured using a newtonmeter .
6 Centre of mass	The single point at which the object's weight appears to act .
7 Resultant force	A resultant force is a single force that has the same effect as all the forces acting on an object.
8 Work done	Work is done when an object is moved through a distance . When work is done against friction there is a temperature rise .
9 Momentum (HT)	Moving objects with mass have momentum. Momentum is " mass in motion ".
10 Conservation of momentum (HT)	In a closed system, the total momentum before an event is equal to the total momentum after the event .

Section 2: Equations to learn

	Equation	Symbol equation	Units
11	Weight = mass x gravitational field strength	$W = m g$	Weight – newtons (N) Mass – kilograms (kg) GFS – newtons per kilogram (N/kg)
12	Work done = force x distance	$W = F s$	Work done – joules (J) Force – newtons (N) Distance – metres (m)
13	Force = spring constant x extension	$F = k e$	Force – newtons (N) Spring constant – newtons per metre (N/m) Extension – metres (m)
14	Distance = speed x time	$s = v t$	Distance – metres (m) Speed – metres per second (m/s) Time – seconds (s)
15	Acceleration = $\frac{\text{change in velocity}}{\text{time taken}}$	$a = \frac{\Delta v}{t}$	Acceleration = metres per second squared (m/s ²) Velocity = metres per second (m/s) Time = seconds (s)
26	Resultant force = mass x acceleration	$F = m a$	Force – newtons (N) Mass – kilograms (kg) Acceleration = metres per second squared (m/s ²)
17 (HT)	Momentum = mass x velocity	$p = m v$	Momentum – kilograms metres per second (kg m/s) Mass – kilograms (kg) Velocity = metres per second (m/s)

Section 3: Elasticity

18 Elastic deformation	Occurs when a spring is stretched and can then return to its original length .
19 Inelastic deformation	Occurs when a spring is stretched and its length is permanently altered .
20 Limit of proportionality	The length a spring can be stretched before it no longer is able to return to its original length . Beyond the limit of proportionality, a force-extension graph is curved.



21 Force-extension graph

Section 4: Forces and Braking

21 Stopping distance	The stopping distance of a vehicle is the sum of the distance the vehicle travels during the driver's reaction time (thinking distance) and the distance it travels under the braking force (braking distance).
22 Thinking distance	The distance a vehicle travels while a driver is reacting .
23 Reaction time	The time it takes for a driver to react , typically 0.2-0.9s . Affected by tiredness, drugs, alcohol and distractions .
24 Braking distance	The distance a vehicle travels under braking . Affected by weather conditions (e.g. rain or ice) and the conditions of the brakes and tyres of a vehicle.
25 Braking force	When the brakes are pressed, work done by the friction force between the brakes and the wheel reduces the kinetic energy of the vehicle and the temperature of the brakes increases . The greater the speed of a vehicle, the greater the force needed to stop the vehicle. Large declarations may lead to loss of control or overheating of the brakes.

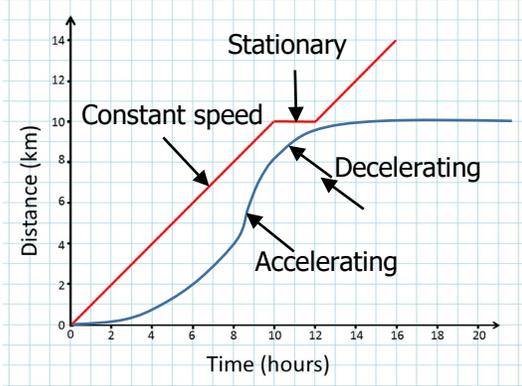
Section 5a: Motion

25 Displacement	The distance an object moves and the direction in which it occurs. A vector quantity.
26 Velocity	The speed of an object in a particular direction .
27 Acceleration	The change of an object's speed in a certain amount of time. If an object is falling near the surface of the Earth its acceleration will be 9.8m/s^2 .
28 Terminal velocity	The maximum speed of a moving object. Occurs when the force moving an object (e.g. gravity) is balanced by frictional forces (e.g. air resistance).
29 Circular motion (HT)	An object moving in a circle has constant speed but changing velocity . This is because the direction in which the object is moving is constantly changing, and velocity is a vector quantity that measures direction and speed.

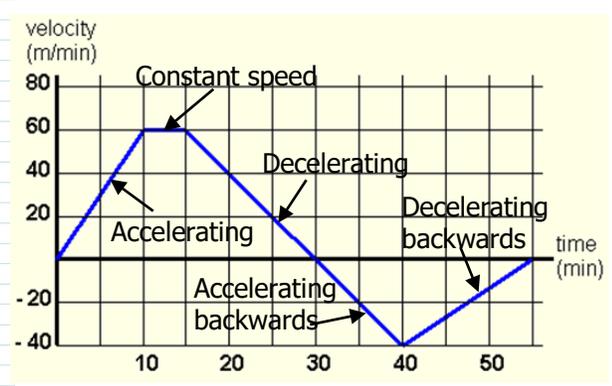
30 Distance-time graph	31 Velocity-time graph
Constant speed - straight line	Constant speed - horizontal line
Accelerating - curved line upwards	Accelerating - straight line with velocity increasing
Decelerating - curved line going towards horizontal	Decelerating - straight line with velocity decreasing
Stationary - horizontal line	Stationary - horizontal line on x-axis (velocity = 0)
	Moving backwards - below x-axis
Gradient of line can be calculated to give speed	Gradient of line can be calculated to give acceleration or deceleration

Section 6: Newton's Laws

36 Newton's First Law	The velocity of an object will only change if a resultant force is acting on the object. If there is no resultant force the object will: - Remain stationary if it was not moving. - Continue at a constant speed if it was already moving.
37 Newton's Second Law	The acceleration of an object is proportional to the resultant force acting on the object, and inversely proportional to the mass of the object, i.e. Force = mass x acceleration.
38 Newton's Third Law	Whenever two objects interact , the forces they exert on each other are equal and opposite .
39 Inertia (HT)	The tendency of objects to continue in their state of rest or of uniform motion .



32 Distance-time graph



33 Velocity-time graph

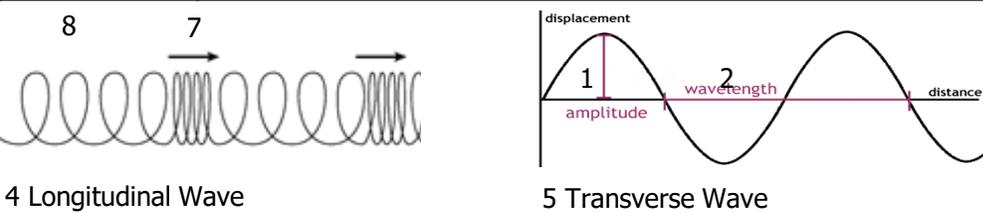
Section 5b: Typical Values of Speed

32 Walking	1.5 m/s
33 Running	3 m/s
34 Cycling	6 m/s
35 Sound in air	330 m/s

Physics 6: Waves

Section 1: Describing Waves

1 Amplitude	The maximum displacement of a point on a wave away from its undisturbed position .
2 Wavelength	The distance from a point on one wave to the equivalent point on the next wave .
3 Frequency	The number of waves passing a point each second .
4 Longitudinal	Oscillations are along the same direction as the direction of travel e.g. sound waves .
5 Transverse	Oscillations are at right angles to the direction of travel e.g. water waves , all electromagnetic waves .
6 Period	The time needed for one wave to pass a given point .
7 Compression	Region in a longitudinal wave where the particles are closest together .
8 Rarefaction	Region in a longitudinal wave where the particles are furthest apart .
9 Absorb	When the energy of an EM wave is taken up by an object .
10 Transmit	When a wave is able to pass through a material.
11 Reflect	The wave bounces off a surface ; the angle of incidence is equal to the angle of reflection .
12 Refract	The wave changes direction when it enters a medium of different density where it has a different speed .



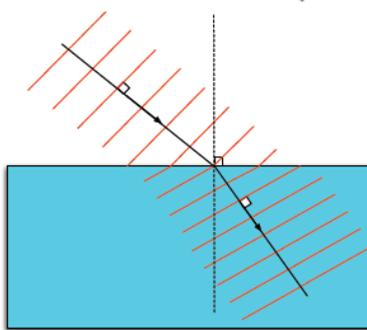
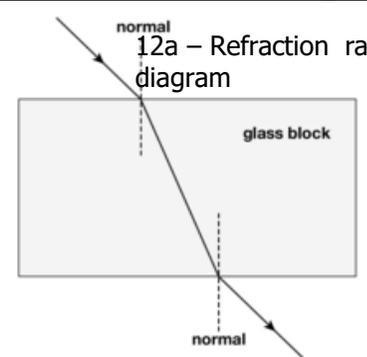
Section 2: Measuring the Speed of Sound

13	Measure the distance to a building .
14	Fire a starting pistol and start a timer .
15	Stop the timer when the echo is heard.
16	Half your value for time .
17	Work out the speed using distance divided by time .

Section 3: Equations to learn

Calculation	Equation	Symbol equation	Units
18 Wave speed	Wave speed = frequency x wavelength	$v = f \lambda$	Wave speed - metres per second (m/s) Frequency - hertz (Hz) Wavelength - metres (m)

Section 4: Refraction Diagrams

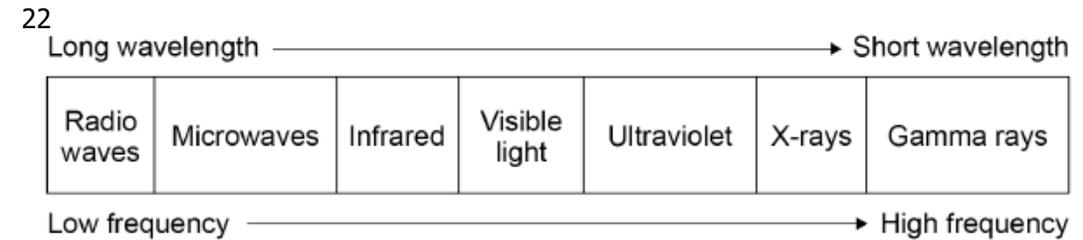


Section 3: Uses and Risks of EM Radiation

EM Wave	Use	Why it's suitable (HT)	Risks
27 Radio Waves	Television and radio	Reflected by ionosphere so can broadcast over long distances .	
28 Microwaves	Satellite communications, cooking food	Able to pass through the atmosphere to satellites . Has a heating effect.	
29 Infrared	Electrical heaters, cooking food, infrared cameras	Has a heating effect. Emitted by objects so can be detected .	
30 Visible Light	Fibre optic communications	Able to pass along a cable by total internal reflection .	
31 Ultraviolet	Energy efficient lamps, sun tanning	Increases amount of melanin (brown pigment) in skin .	Premature skin ageing , increase risk of skin cancer (some can ionize)
32 X-Rays	Medical imaging and treatments	Absorbed by bone but transmitted through soft tissue .	Ionizing - can cause mutation of genes and cancer
33 Gamma Rays	Medical imaging and treatments	Able to pass out of body and be detected by gamma cameras . Can kill cancerous cells .	Ionizing - can cause mutation of genes and cancer

Section 5: The Electromagnetic Spectrum

19 Electromagnetic Spectrum	The collective name for all types of EM radiation . They are all transverse waves that travel at 300,000,000 m/s .
20 Ionising	High energy radiation which can remove electrons leaving ions . If this happens in DNA it can cause a mutation that could lead to cancer .
21 Production	Gamma rays are produced from the decay of an unstable nucleus . Radio waves are produced by oscillations in electrical circuits .



Section 6: Properties of EM Waves and Sound Waves

Property	EM Wave	Sound Wave
23 Speed	300,000,000 m/s	Much slower (around 330 m/s)
24 Medium it can travel through	Can travel through anything, even a vacuum (space).	Solids, liquids, gases
25 Type of wave	Transverse	Longitudinal
26 Wavelength	Very short	Longer

Physics Chapter 6 – Waves – describing waves, transverse and longitudinal , wave speed

Name the parts of the waves:

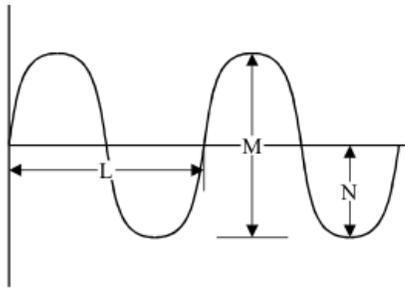
L =

M =

N =

O =

P =



Define the terms:

Amplitude –

Wavelength –

Frequency –

Time period -

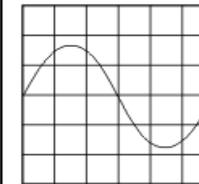
Describe the sounds below:

A:

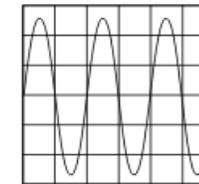
B:

C:

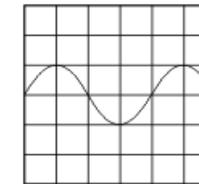
D:



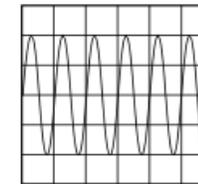
A



B



C



D

Define the term wave and give an example of how we can use waves.

State the equation that links wave speed, wavelength and frequency. Include the units.

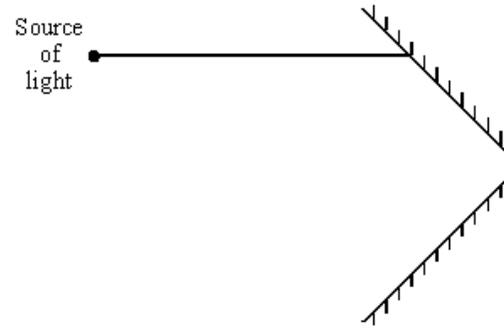
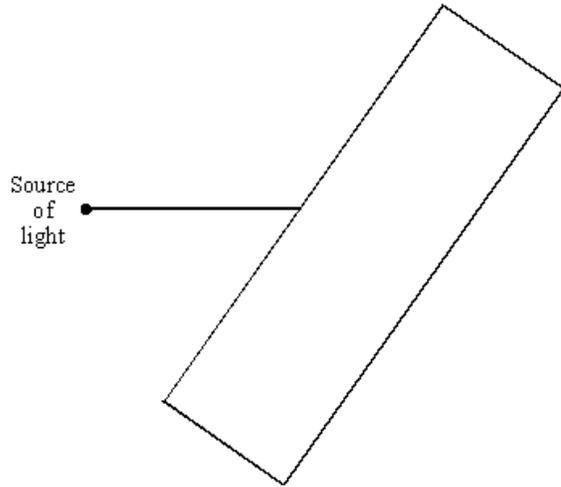
Define the term transverse waves, draw a diagram and give an example:

Define the term longitudinal waves, draw a diagram and give an example:

State the equation that links time period and frequency. Give units.

Physics Chapter 6 – Waves – reflection and refraction

Complete the ray diagrams to show reflection and refraction. Include the labels to show incidence, reflection and refraction ray and the normal line.



Describe what happens to the light ray when it goes from air to a solid.

Describe what happens to the light ray when it goes from a solid to air.

HIGHER TIER: Describe what wavelength dependence is and give an example.

HIGHER TIER: Describe what a wave front is and draw a diagram to demonstrate it.

State the law of reflection.

Define the terms:

Normal:

Reflection:

Absorbed:

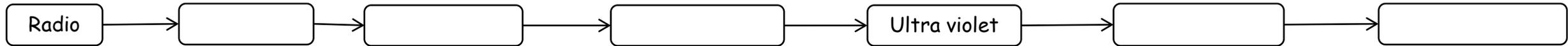
Transmitted:

Describe what refraction is:



Physics Chapter 6 – Waves – electromagnetic waves

Fill in the gaps and add an arrow to your diagram to show longest wavelength, lowest frequency and low energy:



State the wavelength ranges of the waves in electromagnetic spectrum:

R
I
V
U
X
G

HIGHER TIER: Describe how radio waves can be produced in electrical circuits and also the effect that radio waves may have on electrical circuits

HIGHER TIER: Describe the difference in refraction for electromagnetic waves.

Using the space below to state the properties of the electromagnetic spectrum. Include its uses, the hazards and the practical applications. **HIGHER TIER** explain why each electromagnetic wave is suitable for its practical application and the reflection and refraction of radio signals.

Physics Chapter 6– Waves –maths skill and 2 x required practical.

Rearrange the equation to show frequency for the equation period and frequency.

Explain why increasing the speed increases either the frequency or wavelength.

State the variables for the waves investigation:
Independent variable –

Dependent variable –

Control variable –

State errors to do with the wave investigation.

Describe a method used to investigate the speed of waves in a ripple tank and speed of sound on a stretched spring. Include a diagram of your set up.

Describe a method used to investigate the amount of radiation absorbed or radiated by a surface depends on the nature of that surface. Include a diagram of your set up.

State expected results.

Write a risk assessment for this practical. Include the risk, hazard and control for at least 1 risk.

Physics Chapter 7 – Electromagnetism – magnets, magnetic forces, magnetic fields

Draw 2 magnets that repel and attract each other.

Describe the difference between an induced magnet and a permanent magnet.

Draw a diagram to show the magnetic field in the loop of a wire and a solenoid.

On the diagram draw the magnetic field and the arrows showing the direction on a compass.



Describe the Earth's magnetic field. You may draw a diagram to support your answers.

Describe how to increase the strength of an electromagnet and the polarity of the solenoid.

State the naturally magnetic material.

Describe the magnetic effect of a current. Include how to change the strength of the magnetic field.

State the right-hand grip rule.

Physics Chapter 7 – Electromagnetism – **HIGHER TIER** Fleming's left-hand rule, force on a conductor and electric motors

State Fleming's left-hand rule.

Describe the size of the force on a wire carrying a current at right angles to a magnetic field is proportional to?

Explain how an A.C motor works.

Explain how we can increase the force on a wire.

Describe the uses of motors.

Explain the motor effect.

What is the strength of the magnetic field called and give the equation.

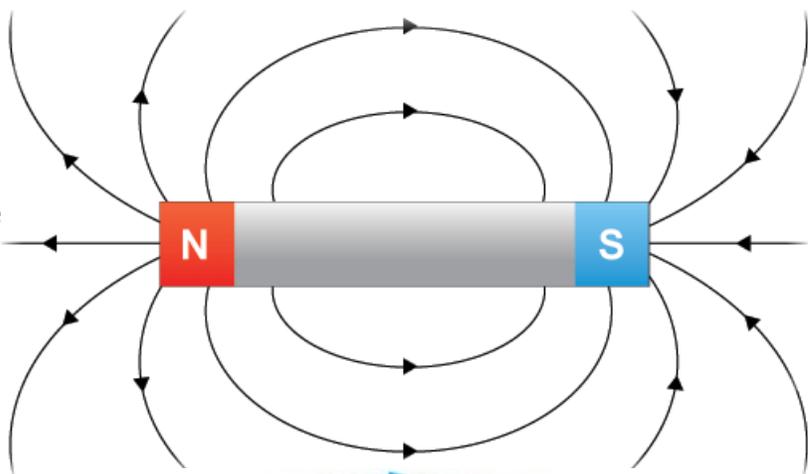
Explain how a D.C motor works.

Explain how we can reverse the direction the motor turns .

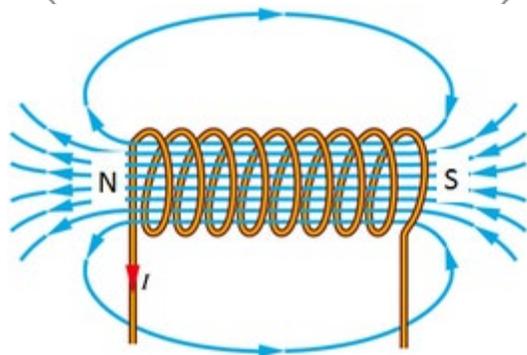
Section 1: Magnetism Key Terms

1 Pole	The places on a magnet where the magnetic forces are strongest .
2 Magnetic Field	The area around a magnet where a force acts on another magnet or magnetic material.
2 Repel	Occurs when two like poles are brought close together. The magnets push apart .
3 Attract	Occurs when two opposite poles are brought close together. The magnets move together .
4 Permanent magnet	A magnet that produces its own magnetic field .
5 Induced magnet	A magnetic material that becomes a magnet when it is placed in a magnetic field . When removed from the field it quickly loses its magnetism .
6 Magnetic material	There are four magnetic materials: iron, steel, cobalt and nickel .
7 Compass	Compasses contain small bar magnets which points to the north pole of the Earth's magnetic field .

8 The magnetic field around a bar magnet. The **field lines** always go **from North to South**

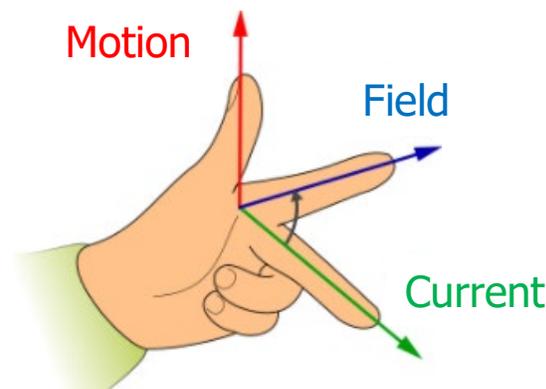


9 The magnetic field in a **solenoid** is concentrated **inside the coil in a uniform direction**, otherwise it acts in the same way as a bar magnet.



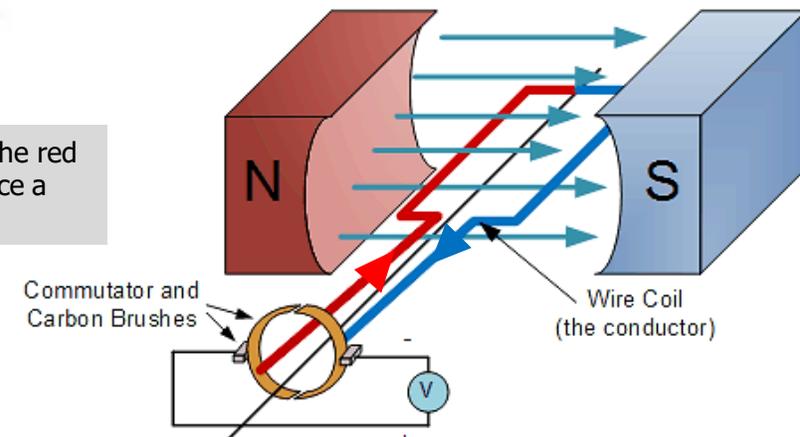
Section 2: Electromagnetism Key Terms

10 Solenoid	A coil of wire that will create a magnetic field when current is passed through it. The magnetic field inside the solenoid is strong and uniform . It acts in the same way as a bar magnet.
11 Electromagnet	A solenoid containing an iron core which increases its strength.
12 Motor effect (HT)	When a conductor carrying a current is placed in a magnetic field , the magnet producing the field and the conductor exert a force on each other . This can be used to create a motor.
14 Fleming's Left Hand Rule (HT)	A rule that shows the relative direction of the current, force and magnetic field in the motor effect.



15 (HT) Fleming's Left Hand Rule. Align fingers to the field and the direction of the current to work out the way the wire moves.

16 (HT) A motor. In this case the red part of the wire would experience a force upwards.



Section 3: Increasing the force of...

17 A Solenoid	18 A Motor (HT)
Add an iron core	Increase the number of coils of wire
Increase the number of coils of wire	Increase the strength of the magnetic field
Increase the current	Increase the current
Move the magnetic material/ magnet closer to the solenoid	

BTEC REVISION NOTES

<p>TOP TIPS</p> <p>EXPLAIN – GIVE A REASON FOR SOMETHING</p> <p>DISCUSS – WRITE ABOUT SOMETHING FROM DIFFERENT POINTS OF VIEW LIKE WRITING ABOUT THE ADVANTAGES AND DISADVANTAGES</p> <p>NAME/GIVE – GIVE A SHORT ANSWER</p> <p>DESCRIBE – WRITE ABOUT WHAT SOMETHING IS LIKE</p> <p>CALCULATE – YOU WILL NEED TO DO SOME MATHS TO WORK OUT YOUR ANSWER AND SHOW HOW YOU DID IT</p> <p>INTERPRET – YOU NEED TO USE THE INFORMATION GIVEN TO WORK OUT THE ANSWER</p>	<p>PHYSICAL FITNESS</p> <p>Cardiovascular (Circulatory) System move blood around the body and is made up of</p> <ol style="list-style-type: none"> 1. Blood vessels 2. The heart 3. Blood <p>Respiratory system moves air into and out of the body. It is made of</p> <ol style="list-style-type: none"> 1. The lungs 2. The airways <p>The two systems together make up the The Cardiorespiratory System</p> <p>The oxygen we breathe and the nutrients we eat are transported around the body in the blood. Our cells use them to make energy. The cardiorespiratory system also allows the body to breathe out waste products like carbon dioxide.</p>	<p>PHYSICAL FITNESS</p> <p>AEROBIC ENDURANCE – The ability of the cardiorespiratory system to work efficiently, supplying nutrients and oxygen to working muscles during sustained (long lasting) physical activity.</p> <p>MUSCULAR ENDURANCE – The ability of the muscular system to work efficiently and continue to contract over a period of time against a light to moderate load. E.g a tennis player holding their racket and playing throughout the game.</p> <p>MUSCULAR STRENGTH – The maximum force (strength) that can be generated (made) by a muscle or muscle group.</p> <p>FLEXIBILITY – Being able to move a joint fluidly (smoothly) through its complete (whole) range of movement</p> <p>SPEED – $\text{Speed (m/s)} = \frac{\text{distance (m)}}{\text{Time (s)}}$</p> <p>There are three types of speed</p> <ol style="list-style-type: none"> 1. Accelerative speed – sprints up to 30 m 2. Pure speed- sprints up to 60 m 3. Speed endurance- sprints with a short recovery period (rest) in between <p>BODY COMPOSITION – The relative ratio (amount) of fat mass to fat-free mass in the body</p>	<p>SKILL – RELATED FITNESS</p> <p>BALANCE – The ability to maintain centre of mass over a base of support</p> <ol style="list-style-type: none"> 1. Static Balance – a still balance like a hand stand 2. Dynamic Balance – a moving balance like a cartwheel <p>POWER – The product (result) of speed x strength e.g. you need power to drive the ball in golf</p> <p>AGILITY – The ability of a sports performer to quickly and precisely (exactly) move or change direction without losing balance or time</p> <p>COORDINATION - The smooth flow of movement needed to perform a motor task efficiently (wasting as little energy as possible) and accurately (without going wrong)</p> <p>REACTION TIME – The time that it takes for a sports performer to respond to a stimulus and initiate (start) their response.</p> <p>Each sport needs different types of physical and skill-related fitness. You need to be able to identify the types of fitness needed for different sports. To do this, think about what the sports performers need to do in that sport.</p>																													
<p>TRAINING PROGRAMMES AND PRINCIPLES</p> <p>TRAINING PROGRAMME – a programme of exercise designed to improve performance.</p> <p>There are four basic principles (guidelines) that a coach can follow</p> <p>Frequency – How often to train per week</p> <p>Intensity – How hard to train</p> <p>Time – How long to train</p> <p>Type – What training method (way of exercising) should be used to improve the type of fitness needed for the sport.</p> <p>There are also seven more principles of training that a coach needs to think about</p> <p>SPECIFICITY – Training should be linked to the sport, activity or physical/skill-related fitness goal</p> <p>INDIVIDUAL DIFFERENCES/NEEDS – The programme should be designed to meet individual training goals and needs e.g. a fitter person would have a harder training programme</p> <p>VARIATION – It is important to do different activities in training to the performer doesn't get bored</p> <p>REST AND RECOVERY -A sports performer needs to rest to allow their body to recover. During recovery the body repairs any damage caused by exercise</p> <p>PROGRESSIVE OVERLOAD - In order to progress (improve), training needs to be demanding enough to cause the body to adapt(change) to improve performance</p> <p>ADAPTATION – How the body reacts to training loads by increasing its ability to cope with those loads</p> <p>REVERSIBILITY – If training stops or the intensity of training is not sufficient (enough) to cause adaptation, training effects will be reversed.</p>	<p>HEART RATE</p> <p>HEART RATE – The number of times the heart beats per minute (bpm)</p> <p>MAXIMUM HEART RATE – also called HR max</p> <p>HR max = 220 – age (years)</p> <p>e.g. the maximum heart rate of a 25 year old is</p> <p>HR max = 220 – age = 220 – 25 = 195 bpm</p> <p>HEART RATE TARGET ZONES</p> <p>Heart rate needs to be high enough to cause adaptation and improve fitness The target zone recommend to improve cardiorespiratory fitness is</p> <p>TARGET ZONE = 60%-85% of HR max (a person's maximum heart rate)</p> <p>WORKING OUT TARGET ZONES</p> <ol style="list-style-type: none"> 1. Calculate maximum heart rate (HR max) or they might give it to you HR max = 220 – age (years) 2. Find upper training threshold = HR max X 0.85 3. Find lower training threshold = HR max X 0.60 4. Write down the lower heart rate followed by the higher heart rate to show the target zone <p>e.g. 220 – 25 (age) = 195 bpm 195 x 0.85 = 165.75 = 166 bpm (upper training threshold) 195 x 0.60 = 117 bpm (lower training threshold)</p> <p>Target zone = 117 bpm – 166 bpm</p>	<p>BORG (6-20) RATING OF PERCEIVED EXERTION SCALE or the BORG (6-20) RPE Scale</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>6</td><td>No exertion at all</td></tr> <tr><td>7</td><td>Extremely light</td></tr> <tr><td>8</td><td></td></tr> <tr><td>9</td><td>Very light</td></tr> <tr><td>10</td><td></td></tr> <tr><td>11</td><td>Light</td></tr> <tr><td>12</td><td></td></tr> <tr><td>13</td><td>Somewhat hard</td></tr> <tr><td>14</td><td></td></tr> <tr><td>15</td><td>Hard</td></tr> <tr><td>16</td><td></td></tr> <tr><td>17</td><td>Very hard</td></tr> <tr><td>18</td><td></td></tr> <tr><td>19</td><td>Extremely hard</td></tr> <tr><td>20</td><td>Maximal Exertion</td></tr> </table> <p>The numbers on the scale represent the different levels of exercise intensity. The BORG (6-20) can be used to estimate a person's heart rate HR (bpm) = RPE x 10 e.g. a performer says they are working extremely hard and give a RPE scale rating of 19 their estimated heart rate is HR (bpm) = RPE X 10 = 19 X 10 = 190 bpm (beats per minute)</p> <p>You can also estimate a RPE scale/Borg scale rating from a heart rate (bpm) e.g. a performer's heart rate is 154 (bpm) RPE scale = HR (bpm) ÷ 10 = 154 ÷ 10 = 15.4 = 15 RPE Scale</p>	6	No exertion at all	7	Extremely light	8		9	Very light	10		11	Light	12		13	Somewhat hard	14		15	Hard	16		17	Very hard	18		19	Extremely hard	20	Maximal Exertion
6	No exertion at all																															
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19	Extremely hard																															
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BTEC REVISION NOTES

TRAINING AND SAFETY

Fitness training methods are different ways of exercising. Each training method improves a different type of physical or skill-related fitness.

Advantages and Disadvantages
Each fitness training method has advantages and disadvantages like

VARIETY – is the training method interesting enough?
INTENSITY – is it easy to vary the intensity?
PURPOSE – does the training method improve the type of fitness you want it to?
COST – Does the training method needs lots of expensive equipment?
SPORT SPECIFIC – can the training method be changed to suit different sports?
SAFETY – Can the training method cause injury. e.g. an advantage of stretching is that it increase flexibility. A disadvantage of stretching is that it can cause muscle soreness.

SAFETY –
Use equipment safely
Use training methods in the right way
Warm-up = (gentle exercise + stretching) **to increase heart rate and help prevent injury**
and **cool down** = (gentle exercise + stretching) **to decrease heart rate and stop muscles becomes sore.**

FITNESS TRAINING METHODS

FLEXIBILITY TRAINING – STRETCHING IS A FITNESS TRAINING METHOD

STRETCHING IMPROVES FLEXIBILITY

STATIC STRETCHING

 – is when you stretch a muscle and hold it in one position. There are 2 types of static stretching.

- ACTIVE** – This is where you use your own muscles to hold the stretch
- PASSIVE** – This is where you use someone or a piece of equipment to help you hold the stretch.

BALLISTIC STRETCHING

 – Is when you make fast movements (bounces). A disadvantage of this type of stretching is have it can strain (pull) your muscles or make them sore.

PROPRIOCEPTIVE NEUROMUSCULAR FACILITATION (PNF)

You need a partner for PNF stretching

- The performer stretches the muscle as far as it can go.
- A partner helps hold the muscle in that position while the performer pushes back against the partner for 6-10s.
- The performer relaxes.
- So the partner can push the stretch a little further.

Muscles have a stretch reflex that stops them stretching too far. PNF works by stopping that reflex so the muscle can be stretched further. It improves mobility, strength and flexibility. It can help people to recover from injuries.

FITNESS TRAINING METHODS

STRENGTH TRAINING

FREE WEIGHTS – are weights that are not attached to a machine
You can use free weights to improve **MUSCULAR STRENGTH AND MUSCULAR ENDURANCE**
You can target particular muscles
You can injury yourself if your technique is wrong

There are two types of exercise with **free weights**
CORE EXERCISES – These work muscles that make the spine and pelvis stable
ASSISTANCE EXERCISES – These work muscles that are specific to a sport or exercise

Always do **core before assistance** exercises
Change between **upper and lower** body exercises
Change between **push and pull** exercises

Weight training is done in **REPS** – one specific exercise and **SETS** – the number of reps you do without a rest
1RM – one repetition maximum – is the heaviest amount you can lift in one rep
The intensity of training can be described as a percentage of 1RM

MUSCULAR STRENGTH	STRENGTH ENDURANCE	ELASTIC STRENGTH
High loads and low reps	Low loads and high reps	Medium loads and medium reps
90% 1RM and 6 reps	50-60% 1RM and 20 reps	75% 1RM and 12 reps

FITNESS TRAINING METHODS

SPEED TRAINING – going as fast as you can for a short distance and then having lots of rest.

HOLLOW SPRINTS – do more than one sprint with a jog or walk in between called the hollow period
INTERVAL TRAINING – do a period of work and a period of rest and recovery. To work on Speed you need periods of higher intensity (close to maximum) for a short time. You can increase the number of rest or recovery periods. E.g. run for 15 seconds as fast as you can and then recover for 3 minutes.
ACCELERATION SPRINTS – you keep increasing the pace over a short distance. You can start either standing still or rolling (easy jogging) and slowly get faster. In between each acceleration sprint you rest by walking or jogging slowly. You can make acceleration sprints harder by doing
HILL SPRINTS
RESISTANCE DRILLS

COACHES NEED TO MATCH TRAINING METHODS TO SPORTS AND USE THE PRINCIPLES OF TRAINING TO GUIDE THEIR PLANNING.

FITNESS TRAINING METHODS

AEROBIC ENDURANCE TRAINING

 - Increasing how long you can exercise for

CONTINUOUS TRAINING – is where you keep doing the same exercise without any rest for at least 30 minutes. You keep at a steady pace and at moderate (medium) intensity so you don't go too fast.
FARTLEK TRAINING – involves changes in intensity with no rest. You can change the intensity by

- changing the speed
- changing the steepness of the ground
- adding weight

Advantages are that you can make it hard or easy to match a performers **INDIVIDUAL NEEDS**. You can use it in lots of different activities like running, cycling and rowing.
INTERVAL TRAINING – This involves periods of working and resting. Work usually ranges between 30 seconds and 5 minutes. Rest period can include sit down, stand still, walk or jog. To improve aerobic endurance you need to have longer more intense periods of working and shorter breaks.
VO2 max = the maximum amount of oxygen uptake. It is the largest amount of oxygen that your body can use every minute. Measured in ml of oxygen per kg of body mass per minute (ml/kg/min). The intensity of training can be measured as a percentage of VO2 max.
CIRCUIT TRAINING – You can adapt a circuit to work on aerobic endurance for example using exercises like skipping and shuttle runs. You can increase the time spend at each station and the frequency of training.

FITNESS TRAINING METHODS

STRENGTH TRAINING

CIRCUIT TRAINING FOR STRENGTH

You can use circuit training to improve muscular strength, power and muscular endurance. You can also adapt a circuit to work on skills like agility and coordination or to work on aerobic endurance.
In circuit training you do different exercises one after another.

- Each exercise is called a station.
- You normally have 6-10 different stations.
- All the stations make up one circuit.
- You need to put the exercises in an order that doesn't work the same muscles straight after each other to stop the muscles getting too tired.

PLYOMETRICS FOR EXPLOSIVE POWER AND MUSCULAR STRENGTH.

The exercises are linked to the sport
The performer uses **maximal force** (as much power as possible). This force is needed to lengthen and then quickly shorten the muscle for example two footed jumping over hurdles.
The working muscle lengthens when you land this is the **eccentric action**
The working muscle shortens quickly when you jump this is the **concentric action**
Used by sprinters, hurdlers, and team games where jumping is important like netball, volleyball and basketball. The disadvantage is that is can make muscles sore.

BTEC Knowledge Organiser Test:

1. There are 6 physical fitness components, complete the words below. (6 marks)

B.....

A.....

S.....

S.....

F.....

M.....

2. There are 5 skill related fitness components, complete the words below. (5 marks)

C.....

R.....

A.....

B.....

P.....

3. Match the correct training zone, to the correct training intensity. (3 marks)

Aerobic Zone 95%-100%

Speed Zone 85%-95%

Anaerobic Zone 60%-85%

4. A) Tim is 32 years old. What would be his maximum heart rate? Show your working in the box. (2 marks)

MHR

5. What does RPE stand for? (1 mark)

.....

6. $RPE \times 10 = \text{Heart rate}$. Work out the following people RPE. (3 marks)

JIM RPE 17

Sally RPE 14

Steve RPE 13

7. Progressive overload makes your training harder. What are the 4 ways this can be done? Fill in the blanks. (4 marks)

F.....

I.....

T.....

T.....

8. For each training method below, write in the correct component of fitness. (6 marks)

PNF Training

Free Weights

Circuit Training

Hollow Sprints

Fartlek Training

Plyometric Training.....

9. Circle the test that could be used for body composition. (1 mark)

BIA 35m Sprint Vertical jump

10. What is the hand grip test measured in? (1 mark)

Seconds Reps KgW

11. Describe one pre-test procedure for the sit and reach test. (1 mark)

.....

اردو	English	اردو	English
حفاظت	to protect	نلکا بند کرنا	to close the tap
بے گھر لوگ	homeless people	بند کرنا	to switch off / extinguish
اس کی ضرورت	to have need of	دوبارہ استعمال والی اشیاء	disposable products
ماحول	the	منصفانہ تجارت	fair trade

Fancy Phrases

- ۱۔ جو مجھے سب سے زیادہ پریشان کرتا ہے وہ ہے ...
- ۲۔ یہ ... ہے کیوں کہ
- ۳۔ میری ذاتی رائے کے مطابق۔۔۔۔
- ۴۔ ایک طرف۔۔۔ اور دوسری ۔

Module 7: global issues (environment) local, national and international areas of interest



adjectives

ری سائیکل شدہ
دوبارہ استعمال۔
سبز نامیاتی مہنگا
آزاد۔ طویل۔
سستے۔ چلنے والے
بے نقاب منفی
مثبت۔ اہم۔ قائل
شمسی۔ خشک /
بجلی

intensifiers

سب سے بڑھ کر / بھی /
بہت زیادہ / انتہائی / شاذ
و نادر / صاف / فی الحال
/ بلکہ / روزانہ / شب و
روز / ہر وقت

time phrases

PAST پچھلے سال / جب میں
جوان تھا / حال ہی میں

PRESENT اکثر / عام طور پر

FUTURE بعد میں / اگلے سال /
جب میں ... سال کا ہوں

Subtopics

- Environmental issues / solutions
- Poverty/Homelessness
- How to be 'green'
- Campaigns / volunteering
- Recycling
- Pollution

Key grammar:

- tenses
- modal verbs
- Impersonal verbs
- Questioning
- Indirect object pronouns

Connectives

however - حالانکہ
On one hand ایک ہاتھ پر
as a result - اس کے نتیجے میں

Key questions to answer

- ۱۔ آپ کے خیال میں کرہ ارض کب بے خطرہ کیا ہے؟
- ۲۔ ہمیں اپنے سیارے کو بچانے کے لئے کیا کرنا چاہئے؟
- ۳۔ کیا آپ کو لگتا ہے کہ سبز درخت مفید ہیں؟
- ۴۔ آپ نے ماضی میں غریبوں کی مدد کے لئے کیا کیا ہے؟
- ۴۔ آپ ماحول کی کس طرح مدد کرتے ہیں؟

				imperfect (I was / used to)	future (I will do)	conditional (I would do)
				استعمال کیا تھا/ کی تھی	استعمال کروں گا / گی	استعمال کرتا/ کرتی
				چنتا تھا/ تھی	چنوں گا/ گی	چنتا چاہوں گا/ گی
				جا چکی / چکا ہوں	جانوں گی/ گا	جانا چاہوں گی / گا
				میں نے کیا	میں کروں گا	میں کروں گی
				میں رکھ چکا/ چکی	میں رکھوں گا	میں رکھوں گی
				جاتا/ جاتی ہوں		
				میں کرتا/ کرتی ہوں		
				رکھتا/ رکھتی ہوں		
				to go		
				to do		
				to have		

Urdu	English	Urdu	English
بچانا استعمال کرنا رابطہ کرنا	To save To use To connect	امیر لوگ طلباء غریب لوگ نوجوان	Rich people... students Poor people Young people
بہتر کرنا بچانا برقرار رکھنا بانٹنا	To improve To avoid To maintain To share	بے روزگاری سماجی مسائل فائدے اور نقصانات اثر	Unemployment Social issues Adv & dis adv Impacts
کم کرنا علحیدہ کرنا	To reduce To separate	خاندانی زندگی قرب کرنا	Family life Bring close
مدد کرنا	To help	غلط استعمال	Mistreat
بند کرنا قبول کرنا	To close To accept	صحت مند نا صحت مند	Healthy Unhealthy

Key questions to answer

آپ ٹیکنالوجی میں کیا استعمال کرتے ہیں؟
آپ کے خیال میں ٹیکنالوجی کے کیا فائدے اور کیا نقصانات ہیں؟
آپ کے خیال میں ٹیکنالوجی نے کون سے سنگین مسئلے حل کیے ہیں؟
ٹیکنالوجی تعلیم میں آپ کی کس طرح مدد کرتی ہے؟
ٹیکنالوجی کب اور کیسے شروع ہوئی؟
ٹیکنالوجی کا ثقافت پر کیا اثر پڑا اور کیوں؟
ٹیکنالوجی سے ہماری سماجی زندگی میں کیا تبدیلی آئی؟
ٹیکنالوجی سے ہماری صحت پر کیا اثرات مرتب ہوئے؟

Subtopics

- Modern technology and our Life style.
- Technology use in Education.
- Future of technology
- History of technology
- Technology and culture.
- Use of technology in Pakistan
- Social problems

Key grammar:

- Reasons
- Pros and cons
- Modal verbs
- Comparisons



Vocab for Technology

سماجی نیٹ ورک۔ پیغام۔ متن۔ اشتراک۔ شناخت۔ براساں۔ مباحثے۔ گزشتہ۔ خطرات۔ انسٹاگرام۔ ٹویٹر۔ لیب ٹاپ۔ اسکائپ۔ تحقیق۔ سرگرمیاں۔ ڈائون لوڈ۔ ڈیلیٹ۔ اسنیپ چیٹ۔ اپ لوڈ۔ مضحکہ خیز۔ گیمز۔ اشتراک۔ کمپیوٹر تریجیح۔ موبائل فون۔ سمارٹ گھڑی۔ کی بورڈ۔ فیس بک۔ نظام زندگی۔ سمت۔ مرتب۔ رابطے برقرار۔ روبوٹ۔ مواصلاتی نظام۔ معلومات میں اضافہ۔ جدید تعلیم۔

Question words

کب۔ کیا۔ کہاں۔ کس کیسے۔ کیوں۔

Opinions

میں محبت کرتا ہوں
یہ مجھے پریشان کرتا ہے
اس سے مجھے + تکلیف ہوتی ہے۔
میرے نقطہ نظر میں۔
یہ مجھے تکلیف دیتا ہے
مجھے پسند ہے
یہ میرے لئے اہمیت رکھتا ہے
مجھے پرواہ نہیں

Module 8 Technology

Fancy Phrases

میرے خیال سے ٹیکنالوجی نے دنیا تبدیل کر دی ہے۔
یہ اس وجہ سے ہے کہ دنیا سمٹ گئی ہے۔
میں ٹیکنالوجی کا روزمرہ زندگی میں استعمال۔۔۔
مستقبل میں میں چاہوں گا کہ ٹیکنالوجی کا استعمال۔

پچھلے سال میں نے ایک لیا۔۔۔

Urdu	English	Urdu	English	Imperfect I used to...	Future I am going to...	Conditional I would...
کام کرنا	To work	کام کرنا/تی ہے	کام کر چکا/ چکی	کام کرنا تھا/ کرتی تھی	کام کروں گا/گی	کام کرنا چاہوں گا/گی
سیکھنا	To learn	سیکھنا / سیکھتی ہے	سیکھ چکا/ چکی	سیکھتا تھا/ سیکھتی تھی	سیکھوں گا/گی	سیکھنا چاہوں گا/گی
استعمال کرنا	To use	استعمال کرتا/	استعمال کر چکا / چکی	استعمال کرتا تھا/	استعمال کروں گا/گی	استعمال کرنا چاہوں گا/گی

A Definition

Euthanasia is the act of bringing about the easy and gentle death of a person, usually someone who is terminally ill or in great pain. For this reason it is often called **mercy killing**. Euthanasia is illegal in the United Kingdom but it was legalised in certain circumstances in the Netherlands in 1994 and in the Northern Territory of Australia in 1997

Types of Euthanasia

There are two principal types of euthanasia:

- Voluntary euthanasia is when the person concerned asks someone else to help them die. They may persuade another person to assist them to die or they may refuse to have the medical treatment necessary to be kept alive.
- Involuntary euthanasia is when the person concerned is no longer in a condition where they can make a decision, for example being in a [Persistent Vegetative State](#). The decision to bring about the death of the person is taken by relatives or medical experts. This is legal in the majority of countries

Euthanasia can also be referred to as being 'active' or 'passive'.

- Active euthanasia is when a specific action is undertaken to bring life to an end - for example, helping a person overdose on painkillers.
- Passive euthanasia is when treatment is withdrawn or life support machines are switched off in order to allow the person to die. This is legal in the majority of countries.

Euthanasia

Religions and Death

Death is one of the most important things that religions deal with. All faiths offer meaning and explanations for death and dying; all faiths try to find a place for death and dying within human experience.

For those left behind when someone dies religions provide rituals to mark death, and ceremonies to remember those who have died.

Religions provide understanding and comfort for those who are facing death. Religions regard understanding death and dying as vital to finding meaning in human life. Dying is often seen as an occasion for getting powerful spiritual insights as well as for preparing for whatever afterlife may be to come.

So it's not surprising that all faiths have strong views on euthanasia.

Why active euthanasia should be allowed

Those in favour of euthanasia argue that a civilised society should allow people to die in dignity and without pain, and should allow others to help them do so if they cannot manage it on their own.

Why active euthanasia should be forbidden

Religious opponents of euthanasia believe that life is given by God, and only God should decide when to end it.

Other opponents fear that if euthanasia was made legal, the laws regulating it would be abused, and people would be killed who didn't really want to die.

Christian Matters of Life and Death Knowledge Organizer



Define

- Assisted suicide
- Voluntary euthanasia
- Non-voluntary euthanasia
- Passive euthanasia

Describe these Christian attitudes to Euthanasia

Acceptance of passive euthanasia

All euthanasia is wrong

Limited use of euthanasia

What are Humanist and atheist arguments against euthanasia?

What are Humanist and atheist arguments for euthanasia?

What is the Christian response to those who are dying?

Define Palliative care

Exam questions

- Outline three Christian beliefs about sanctity of life. (3 marks)
- Explain two reasons why some Christians do not accept euthanasia (4 marks)
- Explain two reasons why Christians believe in life after death. In your answer you must refer to a source of wisdom and authority. (5 marks)
- “Christians should be allow a person to end their own suffering’. Evaluate this statement considering arguments for and against, In your response you should refer to Christian points of view reach a justified conclusion. (12 marks)

EXAM

Home, Town, Neighbourhood and Region GCSE Foundation Tier French Knowledge Organiser

Key Ideas

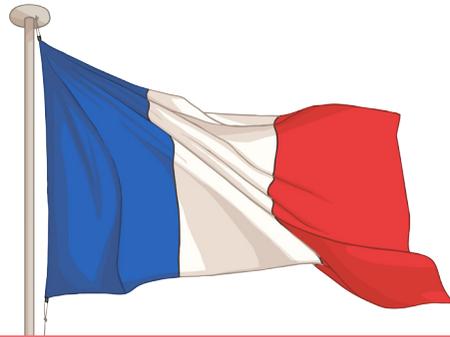
- Les attractions principales de ma ville
- Les avantages et inconvénients d'où j'habite
- Les avantages et inconvénients d'habiter en ville / à la campagne
- Les problèmes environnementaux où j'habite
- Ma maison idéale

Key Vocabulary

Les noms	
un appartement	flat
les attractions	entertainment facilities
la bibliothèque	library
le bowling	bowling alley
la campagne	countryside
la chambre	bedroom
la circulation	traffic
chez moi	at my house
les magasins	the shops
le manque (de)	lack (of)
la pollution	pollution
les transports en commun	public transport
le village	village
la ville	town

Key Phrases

J'habite dans un petit village/une grande ville dans le nord de l'Angleterre.	I live in a little village/big town in the north of England.
Il y a environ 5000 habitants.	There are around 5000 inhabitants.
J'adore habiter à la campagne.	I love living in the countryside.
Dans ma ville on peut trouver un cinéma et un bowling.	In my town you can find a cinema and a bowling alley.
Il n'y a pas de patinoire.	There isn't an ice rink.
Je voudrais avoir un centre commercial.	I'd like to have a shopping centre.
La pollution est un grand problème à Paris.	Pollution is a big problem in Paris.
Il y a beaucoup de circulation.	There is a lot of traffic.
Les transports en commun ne sont pas fiables.	Public transport is not reliable.
Le manque de magasins à la campagne est frustrant.	The lack of shops in the countryside is frustrating.
Je fais des tâches ménagères pour gagner de l'argent de poche.	I do housework in order to earn pocket money.
Je vais en ville pour faire du shopping/aller au cinéma/traîner avec mes amis.	I go to town in order to go shopping/go to the cinema/hang out with friends.



Les verbes

gagner (de l'argent)	to earn (money)
faire le repassage	to do the ironing
faire les tâches ménagères	to do housework
passer l'aspirateur	to vacuum
sortir les poubelles	to take out the rubbish (bins)
traîner	to hang out
visiter	to visit (a place)

Les adjectifs

animé(e)	lively
ennuyeux	boring
historique	historic
intéressant	interesting
joli(e)	pretty
propre	clean
sale	dirty
touristique	touristy

Key Verbs

Infinitif	Présent	Passé	Futur
faire – to do	je fais; il/elle fait; nous faisons	j'ai fait; il/elle a fait; nous avons fait	je ferai; il/elle fera; nous ferons
être – to be	je suis; il/elle est; nous sommes	j'ai été; il/elle a été; nous avons été	je serai; il/elle sera; nous serons
avoir – to have	j'ai; il/elle a; nous avons	j'ai eu; il/elle a eu; nous avons eu	j'aurai; il/elle aura; nous aurons
aller – to go	je vais; il/elle va; nous allons	je suis allé(e); il est allé; elle est allée; nous sommes allé(e)s	j'irai; il/elle ira; nous irons
habiter – to live	j'habite; il/elle habite; nous habitons	j'ai habité; il/elle a habité; nous avons habité	j'habiterai; il/elle habitera; nous habiterons



Key Questions

1. Quels sont les avantages et les inconvénients d'où tu habites ?/ d'habiter en ville / à la campagne ?	What are the advantages and disadvantages of where you live/living in the town/the countryside?
2. Décris un problème environnemental où tu habites.	Describe an environmental problem where you live.
3. Qu'est-ce qu'on peut faire dans ta ville / ton village ?	What is there to do in your town/village?
4. Décris ta maison idéale.	Describe your ideal house.
5. Qu'est-ce que tu as fait récemment dans ta ville / ton village ?	What have you done recently in your town/village?
6. Quelles attractions voudrais-tu voir dans ta ville / ton village ?	What entertainment facilities would you like to see in your town/village?

**Useful Grammatical Structures**

- Use **modifieurs** to modify an adjective, e.g. **assez** (quite); **plutôt** (rather); **un peu** (a bit)
- Use **intensifieurs** to intensify an adjective, e.g. **particulièrement** (particularly); **totalemment** (totally); **complètement** (completely); **si** (so)
- Use **conjunctions** to make longer sentences, e.g. **parce que** (because); **quand** (when); **si** (if)
- Use the **perfect tense with avoir or être** to describe past events. Examples of 'er' verbs include: **je suis allé(e)** (I went); **j'ai gagné(e)** (I earned). Examples of 'ir' verbs include: **je suis sorti(e)** (I left); **j'ai fini** (I finished). Examples of 're' verbs include: **je suis descendu(e)** (I went down); **j'ai répondu** (I responded).
- Use **pour** + infinitive to say 'in order to', e.g. Je vais en ville **pour aller** au cinéma (I am going to town in order to go to the cinema).

Tricky Spellings

l'appartement	flat	Check the double 'p' and 'e' in the middle.
l'environnement	environment	Check the double 'n'.
ennuyeux	boring	Learn this one by heart!
les magasins	shops	'S' not 'z' in the middle.

Tricky Pronunciation**Practise these with your teacher!**

chez moi	at my house
ennuyeux	boring
l'environnement	environment

False Friends

la cave	cellar
la circulation	traffic
les distractions	entertainment venues (cinema, bowling alley etc.)
la librairie	bookshop
la pièce	room (of a house)
la place	(town) square



Jobs, Career Choices and Ambitions: GCSE Foundation Tier French Knowledge Organiser

Key Ideas

- Ton stage en entreprise
- Ton petit boulot
- Ce que tu vas faire après le collège
- Les emplois de tes parents
- Les emplois qui t'intéressent et pourquoi
- Les emplois qui ne t'intéressent pas et pourquoi
- Ton métier idéal et pourquoi

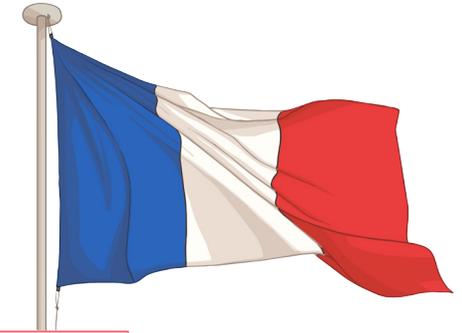
Key Vocabulary

Les verbes

devenir	to become
gagner	to earn
nettoyer	to clean
quitter	to leave
rêver	to dream
travailler	to work

Les adjectifs

agréable	pleasant
bien organisé(e)	well-organised
bruyant(e)	noisy
ennuyeux/ennuyeuse	boring
fatigant(e)	tiring
responsable	responsible
utile	useful
varié(e)	varied



Les noms

l'avenir (m)	future
le bureau	office
la carrière	career
le commerc	business
l'étudiant (m)	male student
l'étudiante (f)	female student
le facteur/la factrice	postman/postwoman
la femme/l'homme (m) au foyer	housewife/househusband
l'instituteur (m)/l'institutrice (f)	primary school teacher
le/la mannequin	model
la mode	fashion
le patron / la patronne	boss
le permis de conduire	driving licence
le stage work	placement
le travail	work
l'usine (f)	factory
le vendeur/la vendeuse	shop assistant

Key Phrases

J'ai décidé que je voudrais être...	I've decided that I would like to be...
Je voudrais devenir/travailler comme...	I'd like to become/to work as...
Je m'entends bien avec...	I get along well with...
Mon père est/Ma mère est...	My dad is/My mum is...
Avant, il/elle rêvait d'être...	Before, he/she used to dream of becoming...
en plein air	in the fresh air
à l'intérieur/à l'extérieur	inside/outside
à l'étranger	abroad
Les heures sont longues	The hours are long
Il est/Elle est au chômage	He/she is unemployed
J'aime soigner les malades	I like to look after patients/ill people
J'aime travailler avec les enfants/les animaux	I like to work with children/animals
Je serais/Le travail serait...	I would be/The work would be...
L'avantage de ce métier, c'est que c'est bien payé	The advantage of this profession is that it is well paid
L'inconvénient de ce métier, c'est que c'est mal payé	The disadvantage of this profession is that it is badly paid



Key Verbs

Infinitif	Présent	Passé	Futur
aller – to go	je vais ; il / elle va ; nous allons	je suis allé(e) ; il est allé; elle est allée ; nous sommes allé(e)s	j'irai; il / elle ira ; nous irons
devenir – to become	je deviens ; il / elle devient ; nous devenons	je suis devenu(e) ; il est devenu ; elle est devenue ; nous sommes devenu(e)s	je deviendrai ; il / elle deviendra ; nous deviendrons
être – to be	je suis ; il / elle est ; nous sommes	j'ai été ; il / elle a été ; nous avons été	je serai ; il / elle sera ; nous serons
faire – to do	je fais ; il / elle fait ; nous faisons	j'ai fait ; il / elle a fait ; nous avons fait	je ferai ; il / elle fera ; nous ferons
travailler – to work	je travaille ; il / elle travaille ; nous travaillons	j'ai travaillé ; il / elle a travaillé ; nous avons travaillé	je travaillerai ; il / elle travaillera ; nous travaillerons

Key Questions

Tu as fait un stage en entreprise ?	Have you done work experience?
Tu as un petit boulot ?	Do you have a part-time job?
Tu as déjà travaillé ?	Have you already worked?
Décris les emplois de tes parents.	Describe your parents' jobs.
Quel est ton emploi idéal ?	What is your ideal job?
Tu voudrais travailler à l'étranger ?	Would you like to work abroad?
Que voudrais-tu faire à l'avenir ?	Pourquoi ? What would you like to do in the future and why?

**False Friends**

la mode	fashion
le stage	work experience
le travail	work
travailler	to work

Tricky Pronunciation**Practise these with your teacher!**

bryant(e)	noisy
est/c'est	is/it is
travailler	to work
l'emploi (m)	job
soigner	to look after

Useful Grammatical Structures

- **Personalise** the opinions of other people, e.g. **selon lui/elle** (according to him/her); **il/elle pense que** (he/she thinks that); **à son avis** (in his/her opinion).
- **Omit the article** when saying which job you do, e.g. **mon père est serveur** (my dad is a waiter); **je voudrais devenir actrice** (I would like to become an actress).
- Be clear on the differences between **male and female jobs**, e.g. **acteur/actrice** ; **musicien/musicienne** ; **boucher/bouchère** ; **coiffeur/coiffeuse**.
- Use **the future tense** to express future plans. Use the immediate future (aller + infinitive), e.g. **je vais jouer, il va jouer, elle va jouer, nous allons jouer, ils/elles vont jouer** ; or form the future tense by using the infinitive of the verb plus the following endings: je jouerai, il jouera, elle jouera, nous jouerons, ils/elles joueront.
- Use **comparatives**, e.g. **plus que** (more than); **moins que** (less than); **aussi ... que** (as ... as).

Key Phrases

à l'étranger	abroad	Check the accents/apostrophes.
déjà	already	Check the accents.
les emplois (m)	jobs	Check the word doesn't become anglicised.
je deviendrai	I will become	Check the vowels.
il/elle rêvait d'être	he/she used to dream of being	Check the accents/apostrophes.



Social Issues GCSE Foundation Tier French Knowledge Organiser

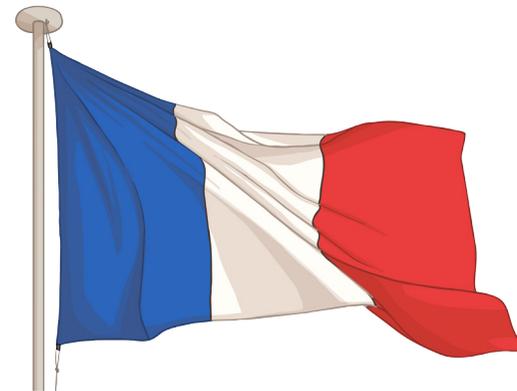
Key Ideas

- Description d'une alimentation saine/malsaine
- Les dangers de la cigarette/de l'alcool
- L'importance du sport pour la santé
- Les sans-abris dans ta ville
- Une association caritative que tu connais

Key Vocabulary

Les adjectifs	
équilibré(e)	balanced
fatigué(e)	tired
gras(se)	fatty
malade	ill
malsain(e)	unhealthy
sain(e)	healthy
sucré(e)	sugary
varié(e)	varied

Les verbes	
(s)arrêter	to stop
combattre	to combat
se détendre	to relax
dormir	to sleep
se droguer	to take drugs
éviter	to avoid
faire un régime	to be on a diet
fumer	to smoke
rester	to stay
se sentir	to feel
tuer	to kill



Key Phrases

Pour le petit-déjeuner/le déjeuner/le dîner, d'habitude, je prends...	For breakfast/lunch/dinner, I usually have...
C'est bon/mauvais pour la santé	It's good/bad for your health
Ça contient beaucoup/trop de...	It contains a lot of/too much...
Pour garder la forme, il faut faire/manger/boire/éviter...	To keep fit, you have to do/eat/drink/avoid...
Le tabac/L'alcool cause...	Tobacco/Alcohol causes...
Il provoque l'obésité/une perte de poids/un gain de poids	It causes obesity/weight loss/weight gain
Mon oncle a arrêté de fumer il y a six mois	My uncle quit smoking six months ago
Il faut faire du sport régulièrement pour se détendre	You must play sport regularly to relax
Il y a beaucoup de sans-abris dans ma ville	There are many homeless people in my town
Je suis membre d'une association caritative qui s'appelle...	I am a member of a charity called...

Key Verbs

Infinitif	Présent	Passé	Futur
faire – to do	je fais; il/elle fait; nous faisons	j'ai fait; il/elle a fait; nous avons fait	je ferai; il/elle fera; nous ferons
être – to be	je suis; il/elle est; nous sommes	j'ai été; il/elle a été; nous avons été	je serai; il/elle sera; nous serons
avoir – to have	j'ai; il/elle a; nous avons	j'ai eu; il/elle a eu; nous avons eu	j'aurai; il/elle aura; nous aurons
manger – to eat	je mange; il/elle mange; nous mangeons	j'ai mangé; il/elle a mangé; nous avons mangé	je mangerai; il/elle mangera; nous mangerons
aller – to go	je vais; il/elle va; nous allons	je suis allé(e); il/elle est allé(e); nous sommes allé(e)s	j'irai; il/elle ira; nous irons
fumer – to smoke	je fume; il/elle fume; nous fumons	j'ai fumé; il a fumé; elle a fumé; nous avons fumé	je fumerai; il/elle fumera; nous fumerons
dormir – to sleep	je dors; il/elle dort; nous dormons	j'ai dormi; il a dormi; elle a dormi; nous avons dormi	je dormirai; il/elle dormira; nous dormirons



Key Questions

Que faut-il faire pour garder la forme ?
As-tu une alimentation saine ? Pourquoi (pas) ?
Est-ce que tu fumes ? Pourquoi (pas) ?
Quels sont les dangers de la cigarette/de l'alcool ?
Selon toi, pourquoi est-ce que c'est important de faire du sport ?
Que penses-tu de la situation des sans-abris ?
Est-ce que tu connais des associations caritatives ?

False Friends

la fumée	smoke
le médecin	doctor
le travail	work
garder	to keep
rester	to stay

Tricky Pronunciation

Practise these with your teacher!

l'alcool	alcohol
l'alimentation	food
l'association caritative	charity
le sommeil	sleep
le tabac	tobacco
le travail bénévole	voluntary work
équilibré(e)	balanced
fumer	to smoke
trop	too (much/many)

Useful Grammatical Structures

- Use **modifiers** to modify an adjective.
Examples include: assez (**quite**); plutôt (**rather**); un peu (**a bit**).
- Use **intensifiers** to intensify an adjective.
Examples include: vraiment (**really**); très (**very**); particulièrement (**particularly**); totalement (**totally**); complètement (**completely**); si (**so**).
- Use **comparatives** to compare two or more items.
Examples include: plus/moins/aussi sain que... (**more/less/as healthy as...**)
- Use **connectives and conjunctions** to make longer sentences.
Examples include: parce que (**because**); car (**as/because**); mais (**but**); cependant (**however**); quand (**when**).
- Use a range of **negatives**.
Examples: je ne mange pas de viande (**I don't eat meat**); je ne mange plus de chocolat (**I no longer eat chocolate**); je ne bois jamais de coca (**I never drink coke**).
- Use the **perfect tense with avoir or être** to describe past events.
Examples include: je suis allé(e) (**I went**); j'ai mangé (**I ate**); j'ai fait (**I did**); j'ai travaillé (**I worked**); j'ai bu (**I drank**); j'ai aidé (**I helped**).
- Use the **future tense** to describe future intentions.
Examples include: je mangerai moins de chocolat (**I will eat less chocolate**).

Tricky Spellings

l'alcool	alcohol	No 'h'
équilibré(e)	balanced	Check the accents
nous mangeons	we eat	Remember to add 'e' before the ending



START

1 **State** three promotional techniques used by a business.

2 **Explain** the purpose of sales promotions for Billy's business.

3 **Identify** three types of sales promotion.

4 **Explain** how advertising could influence a businesses sales.

14 Recently a new competitor has won a licence to operate on the same beach as Billy. **Outline** two difficulties Billy now might face.

13 **Explain** one factor which Billy may consider, before making a choice on the promotional method he might use.

12 **Evaluate** whether Billy should consider investing in a national £60,000 TV campaign.

11 **Assess** how Billy could use segmentation techniques to aid his promotions.

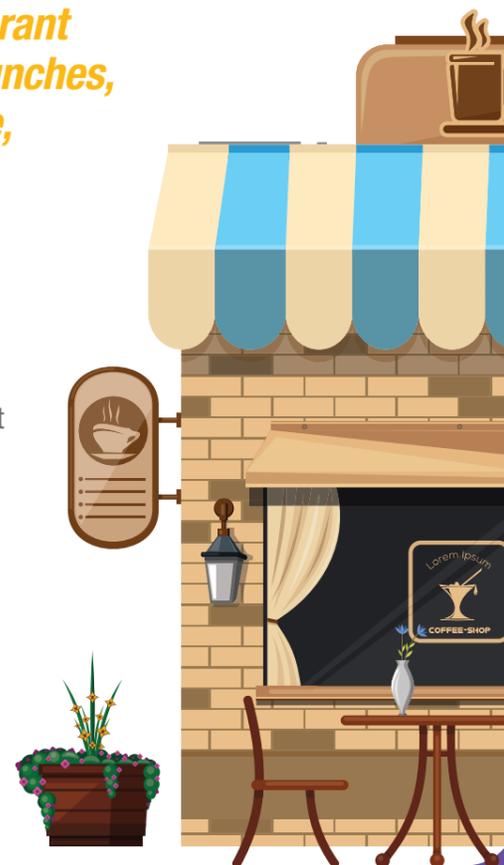
BUSINESS PROFILE

Billy has opened a new café as a pop up restaurant on the local beach. The café sells breakfasts, lunches, drinks along with the occasional dinner service, usually in the form of a 'BBQ on the beach'.

Two years ago, Billy opened a new café/restaurant on his local beach. Billy, the owner, got the original idea for the café from a friend who had enjoyed a picnic on the beach.

Billy now hosts a whole menu service and thanks to the help of a recent celebrity visiting the area, appeared on a programme showcasing his great food and location to a national audience. Whilst the programme was a one off and two minutes of exposure, Billy wants to keep up this momentum and is looking for marketing expertise to promote the business further.

Financially, Billy declared a net profit of just over £20,000 last year, based on sales of £150,000, with sales peaking in August, the main tourist time of the year. Sales were at their lowest in January, as the business posted a loss of £500 per month between November to February. Billy has calculated that 60% of his business is tourist driven.



10 **Explain** why Billy may experience a loss in certain months of the year, but make a profit overall.

9 **Outline** three ways that Billy could use to improve his sales.

5 **Assess** the potential drawbacks of advertising to businesses.

6 **Explain** what is meant by segmentation.

7 **Outline** two ways a business can segment its market.

8 Billy is considering offering a 10% discount to residents who live in the local area. **Assess** how this decision would have impacted the net profit figure for last year.

COMPONENT 3 LEARNING AIM A SUGGESTED ANSWERS

1 State three promotional techniques used by a business.

Any from: advertising, sales promotion, personal selling, public relations, direct marketing.

2 Explain the purpose of sales promotions for Billy's business.

Providing incentives to existing and new customers, to maximise sales, encourage new customers.

3 Identify three types of sales promotion.

Coupons, competitions, money off, loyalty incentives, buy one get one free, discounts.

4 Explain how advertising could influence a businesses sales.

Advertising could increase awareness of the business. It could also persuade and inform customers into buying the products of the business.

14 Recently a new competitor has won a licence to operate on the same beach as Billy. Outline two difficulties Billy now might face.

Billy may now receive less sales, make a loss on his business, lose customers due to a better product/service offered. Billy could consider: promoting his business further, creating more customer loyalty i.e. through loyalty cards, think of differentiation strategies/USPs of his business to make it stand out from the rival.

13 Explain one factor which Billy may consider, before making a choice on the promotional method he might use.

Billy needs to consider the size of his enterprise, his budgetary constraints, appropriateness of his products and his target market before making a choice on a suitable promotional technique.

12 Evaluate whether Billy should consider investing in a national £60,000 TV campaign.

Clearly the previous TV coverage was beneficial to the business, but this was free, thanks to a national TV programme. If Billy considered investing £60,000, this could wipe out his entire profit figure for the year and lead him into a loss. However, the advertising could bring in more sales, therefore boosting sales and potentially profits, however, given the business is seasonal, perhaps a local campaign may be money better well spent.

TIME TO REVIEW YOUR LEARNING... List three content points that you are confident with and three that require some attention.

Confident with	Requires attention
1	1
2	2
3	3

11 Assess how Billy could use segmentation techniques to aid his promotions.

Billy could focus on a specific segment to target his promotions at. This would save his advertising costs and mean the efficiency of his promotions would improve. Billy could also see alternative segments as a new source of income to bring more customers into the business.

10 Explain why Billy may experience a loss in certain months of the year, but make a profit overall.

The business sales appear to be seasonal based on the tourist trade in the area. Therefore, Billy still has his fixed costs to cover in the winter, leading to sales not covering the total costs of the business during these months. During the summer months, the business is able to increase sales to a point which covers the total costs, which leads to a much bigger surplus, hence profit by the end of the year.

5 Assess the potential drawbacks of advertising to businesses.

Drawbacks: cost of advertising, not targeting the correct audience, unable to communicate message clearly, unable to persuade people, brand affected by poor, misleading or damaging advertising.

6 Explain what is meant by segmentation.

Dividing up the market of potential consumers into groups, or segments, based on differing characteristics.

7 Outline two ways a business can segment its market.

Methods of segmentation: demographics, geographic, psychographic, behavioural.

8 Billy is considering offering a 10% discount to residents who live in the local area. Assess how this decision would have impacted the net profit figure for last year.

Sales = £150,000. 40% = £60,000, minus 10% discount = £6,000. Net profit = £14,000 (£6000 reduction)

9 Outline three ways that Billy could use to improve his sales.

Target a different segment, advertise more, create more brand loyalty, develop new menu or events.

START

1 State four types of financial documents businesses use.

2 Outline the purpose of the following documents: invoice, delivery note, statement of account.

3 Outline one reason why it is important that these documents are completed accurately.

4 State four types of payment methods.

14 Explain the difference between liquidity and profitability.

BUSINESS PROFILE

Statement of Comprehensive Income

Two coffee enterprises are competing for business: Business A offers simple, basic coffee, whilst Business B is an upmarket coffee shop, offering a wide range of coffee options.

	Business A	Business B
Expenses	Year 1: £400 Year 2: £500	Year 1: £500 Year 2: £600
Cost of sales	Year 1: £400 Year 2: £300	Year 1: £350 Year 2: £400
Turnover	Year 1: £750 Year 2: £900	Year 1: £1,100 Year 2: £1,200



Figures obtained from Business B's accounts (£)

Trade Creditors	18 000
Dividends	12 500
Stock	34 000
Vehicles	45 000
Debtors	26 000
Land & Buildings	110 000
Bank	12 000
Machinery	150 000
Taxation	19 500
Long term loan	75 000
Capital	130 000
Share Premium Account	40 000
Profit & Loss Account	82 000

5 Identify which of the following are start up and running costs: machinery, electricity, premises purchase, broadband charges, raw materials, business rates, equipment, van.

13 Using the Statement of Financial Position, **calculate** the total assets and liabilities of the business.

6 Give the **formula** for how to calculate turnover (net sales).

12 Outline how both businesses can improve their Gross and Net Profit Margins %.

7 Based on Business A producing 300 coffees in Year 1, **calculate** the average selling price.

11 Calculate the Net Profit Margin % of both businesses in both years

Business A	Business B
Year 1:	Year 1:
Year 2:	Year 2:

10 Calculate the Gross Profit Margin % of both businesses in both years

Business A	Business B
Year 1:	Year 1:
Year 2:	Year 2:

9 Calculate the Net Profit of both businesses in both years.

Business A	Business B
Year 1:	Year 1:
Year 2:	Year 2:

8 Calculate the Gross Profit of both businesses in both years.

Business A	Business B
Year 1:	Year 1:
Year 2:	Year 2:

COMPONENT 3 LEARNING AIM B SUGGESTED ANSWERS

1 State four types of financial documents businesses use.

Any from: invoice, delivery notes, purchase orders, credit notes, receipts, statement of account.

2 Outline the purpose of the following documents: invoice, delivery note, statement of account.

Invoice: to keep a record of a sale. Delivery note: description of a shipment and proof of delivery. Statement of account: statement showing billings to and payments from a customer.

3 Outline one reason why it is important that these documents are completed accurately.

Any from: financial transparency, tax liability, mitigate errors, builds trust, improves payment times, better decision making and forecasting.

4 State four types of payment methods.

Any from: cash, credit cards, debit cards, direct debit, payment technologies.

14 Explain the difference between liquidity and profitability.

Profitability refers to profits which the business has made during the year, whereas liquidity refers to the availability of cash within a business at any point in time. A profitable business may not be a liquid one because it may not have taken receipt of funds due to it.

13 Using the Statement of Financial Position, calculate the total assets and liabilities of the business.

Assets: Land and buildings (110,000) + machinery (150,000) + Vehicles (45,000) + Stock (34,000) + Debtors (26,000) + Bank (12,000) = £377,000

Liabilities: Trade creditors (£18,000) + Taxation (19,500) + Dividends (12,500) + Long term loan (75,000) = £125,000.

12 Outline how both businesses can improve their Gross and Net Profit Margins %.

Improve GPM: reduce cost of sales i.e. bulk buying supplies, sourcing cheaper suppliers increase turnover i.e. more advertising, sales promotions, change the price.

Improve NPM%: reduce expenses i.e. cutting back on unnecessary expenditure, finding alternative suppliers, increase revenue e.g. more advertising, sales promotions, change price - being careful that any increase in costs is not greater than any subsequent increase in turnover.

TIME TO REVIEW YOUR LEARNING...
List three content points that you are confident with and three that require some attention.

Confident with

1

2

3

Requires attention

1

2

3

11 Calculate the Net Profit Margin % of both businesses in both years.

Business A
Year 1: $(50)/750 \times 100$
= -6.67%

Business B
Year 1: $250/1100 \times 100$
= 22.73%

Business A
Year 2: $100/900 \times 100$
= 11.11%

Business B
Year 2: $200/1200 \times 100$
= 16.67%

10 Calculate the Gross Profit Margin % of both businesses in both years.

Business A
Year 1: $350/750 \times 100$
= 46.67%

Business B
Year 1: $750/1,100 \times 100$
= 68.18%

Business A
Year 2: $600/900 \times 100$
= 66.67%

Business B
Year 2: $800/1,200 \times 100$
= 66.67%

6 Give the formula for how to calculate turnover (net sales).

Selling price x number sold.

7 Based on Business A producing 300 coffees in Year 1, calculate the average selling price.

$£750/300 = £2.50$.

8 Calculate the Gross Profit of both businesses in both years.

Business A
Year 1: $750 - 400 = £350$

Business B
Year 1: $1,100 - 350 = £750$

Business A
Year 2: $900 - 300 = £600$

Business B
Year 2: $1,200 - 400 = £800$

9 Calculate the Net Profit of both businesses in both years.

Business A
Year 1: $350 - 400 = (£50)$

Business B
Year 1: $750 - 500 = £250$

Business A
Year 2: $600 - 500 = £100$

Business B
Year 2: $800 - 600 = £200$

COMPONENT 3 LEARNING AIM C

START

1 Define what is meant by 'cash flow'.

2 Identify three inflows and three outflows of Rita's cake business.

3 Define what is meant by fixed and variable costs.

4 Identify which of the following are fixed and variable costs: business rates, insurance, electricity, raw materials, telephone line rental, fuel.

14 Rita is considering taking out a bank loan to expand her business. **Evaluate** whether this option is suitable for Rita's cake business.

BUSINESS PROFILE



Rita has recently set up a cake business and has presented her partially completed cash flow forecast to the bank as follows:

£	May	June	July	Aug	Sep	Oct
Opening bank balance	500	-4,800	-6,000	-6,100	-6,200	-6,500
Receipts						
Loan	5,000	0	0	0	0	0
Cash sales	0	800	1,200	800	1,000	800
Credit sales	0	0	600	1,000	600	800
Total receipts						
Payments						
Purchases of stock	4,000	800	800	800	800	800
Wages	1,000	1,000	1,000	1,000	1,000	1,000
Telephone bills	300	200	100	100	100	100
Shop and fixtures	5,000	0	0	0	0	0
Total payments						
Closing bank balance	-4,800	-6,000			-6,800	



13 Assess suitable courses of action for Rita's business based on the cash flow forecast.

12 Assess the state of Rita's cash flow forecast and how this may affect the business.

11 Calculate the closing bank balance for July, August and September.

10 Calculate the total receipts and total payment rows for Rita's cash flow forecast.

9 Assess the factors Rita's business would need to consider before taking out a source of finance.

5 Outline how you would calculate total fixed costs and the variable cost per unit.

6 Outline how you calculate the break-even point of a business.

7 Rita has calculated that her average selling price will be £2 and her variable cost per product will be 75p. She has calculated her fixed costs at £4000. **Calculate** the break-even point for Rita's business.

8 Identify which of the following are internal and external sources of finance: owner funds, retained profits, loans, credit cards, government grants, hire purchase and leasing, trade credit, venture capital, peer-to-peer lending.

COMPONENT 3 LEARNING AIM C SUGGESTED ANSWERS

1 Define what is meant by 'cash flow'.

The cash flow is the total amount of money being transferred into and out of a business.

2 Identify three inflows and three outflows of Rita's cake business.

Inflows: Cash sales, credit sales, loans. Outflows: raw materials, utilities, supplier payments, equipment, machinery.

3 Define what is meant by fixed and variable costs.

Fixed costs are costs that do not change with the level of output of a business. Variable costs change as output varies.

4 Identify which of the following are fixed and variable costs: business rates, insurance, electricity, raw materials, telephone line rental, fuel.

Fixed costs: business rates, insurance, telephone line rental.
Variable costs: electricity, raw materials, fuel.

5 Outline how you would calculate total fixed costs and the variable cost per unit.

Fixed costs = total costs - total variable costs.
Variable cost per unit = total variable costs / number of units.

14 Rita is considering taking out a bank loan to expand her business. Evaluate whether this option is suitable for Rita's cake business.

Advantages: no equity lost, no loss in control of ownership or decision making, potential access to large sums of money.

Disadvantages: need a good credit rating to access cheapest loans, which is not always possible for a start up business. Collateral against the loan may be required. Loan acts as a liability, affecting the valuation of the business. Monthly ongoing cost for the loan repayments each month.

13 Assess suitable courses of action for Rita's business based on the cash flow forecast.

Increase inflows by increasing sales or source of finance. Reduce the outflows by cutting costs, finding cheaper suppliers.

12 Assess the state of Rita's cash flow forecast and how this may affect the business.

The business has a poor cash flow. The business does not run a surplus in any of the months forecasted. The business has significant start up costs in the first month which adversely affect the business' cash flow from the beginning. Sales are not high enough to meet the demands of outflows in the other months. The business also takes too long to collect payments from customers (credit sales). In addition, the business lacks adequate start up finance. Ultimately the business will run out of money and suppliers may refuse to supply the business, therefore the business may cease to trade.

TIME TO REVIEW YOUR LEARNING...
List three content points that you are confident with and three that require some attention.

Confident with	Requires attention
1	1
2	2
3	3

11 Calculate the closing bank balance for July, August and September.

July (£6,100), August (£6,200) and September (£6,500).

10 Calculate the total receipts and total payment rows for Rita's cash flow forecast.

£	May	June	July	Aug	Sep	Oct
Total receipts	5,000	800	1,800	1,800	1,600	1,600
Total payments	10,300	2,000	1,900	1,900	1,900	1,900

6 Outline how you calculate the break-even point of a business.

Breakeven = Fixed costs / selling price per unit - variable cost per unit.

7 Rita has calculated that her average selling price will be £2 and her variable cost per product will be 75p. She has calculated her fixed costs at £4000. Calculate the break-even point for Rita's business.

$£2 - 0.75 = 1.25$. $4000 / 1.25 = 3200$ units

8 Identify which of the following are internal and external sources of finance: owner funds, retained profits, loans, credit cards, government grants, hire purchase and leasing, trade credit, venture capital, peer-to-peer lending.

Internal sources of finance: owner funds, retained profits.

External sources of finance: loans, credit cards, government grants, hire purchase and leasing, trade credit, venture capital, peer-to-peer lending.

9 Assess the factors Rita's business would need to consider before taking out a source of finance.

Rita would need to consider the liquidity of the business, cash flow position, type of finance suitable for the business, the length of term required, the cost of the source of finance, availability of the source of finance and the advice available with each source of finance.

**Component 3 Learning Aim A Modern Technologies - A1 Modern Technologies
Communication Technologies - Setting up Ad Hoc Networks**

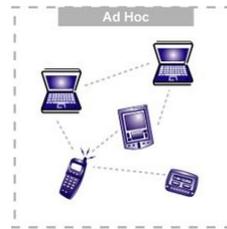
Key Vocabulary	
Bluetooth	A short range technology (10 metres or less) that can connect multiple devices. e.g. mobile phones & speakers
Ad hoc Network	A wireless network that does not rely on fixed hardware such as routers in wired networks.
Personal Area Network	Used for data communication between devices.
Tethering	Where a smartphone acts as an access point, allowing other devices to connect to it to share its mobile broadband connection to the internet.
Personal hotspot	Using a phone's internet connectivity to access the internet from the laptop.
PIN	Acronym meeting Personal Identification Number
Encrypted	Information or data has been converted to a type of code that cannot be understood without a translation key.
USB	Universal Serial Bus. A standard for connection sockets on computers, connecting devices such as mice, keyboards, printers, external hard drives, etc.
Insecure	A connection where data maybe intercepted by other users.
Streaming	Data is sent to your device in a continuous flow when connected to the internet.

Traditional vs ad hoc networks

Traditional networks are made up of several PCs, routers and other devices that are connected using cables and wires.



Ad hoc networks are networks that do not require wires or cables, Modern technology has made it possible for organisations to connect devices when they are needed.



Examples of ad hoc networks:

- PAN
- Open Wi-Fi
- Tethering or Personal Hotspot

Benefits of ad hoc	Drawbacks of ad hoc
✓ They are scalable	✗ They are less secure.
✓ They are flexible	✗ They have a reduced speed.
✓ They require limited setup.	✗ The network can become unorganised.

Issues affecting availability:

- Rural vs city locations
- Developed vs developing countries
- Available infrastructure
- Mobile network coverage
- Blackspots

Component 3 Learning Aim A Modern Technologies - A1 Modern Technologies Features and Uses of Cloud Storage

Key Vocabulary	
Server	A computer that delivers data between machines that are connected to a local network.
Downloading	A file or document can be used when you are not connected to the internet.
Uploading	A file or documents can be used by you or other with access when connected to the internet.
Synchronising	Is when files held on two devices are updated to make sure that both have the same content.

What is cloud storage?

Files and folders are stored remotely rather than on a PC or device.

The files are stored on **servers** so they can be accessed via the internet.

When you want to access the media, the data is **downloaded** or streamed to the device you wish to use it on.

It remains in the file in the cloud unless you delete it.

Data on your device can also be **uploaded** to the cloud.

When is cloud storage available?

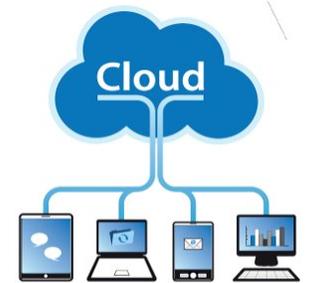
- Only when there's an internet connection.
- If the connection is broken access will be terminated.
- The speed of the connection will impact file upload speed and download stream speed.
- If there is a suitable connection, data and files in the cloud can be accessed 24/7

Features and usage of cloud storage:

- ISPs often give users a cloud storage allocation as part of a phone or tablet contract
- **Scalability** - you can pay for extra storage.
- Services can also be provided by third parties
- Cloud storage is useful for storing backups of your files. Copies of the files are made on different servers so that they are protected if attacked or in case of a natural disaster such as fire or flood
- You can **synchronise** with the cloud.

What can be stored in the cloud?

- Images/Videos
 - Emails
- Contact info
- App Back Ups



What do you store on the cloud?

Cloud Storage Providers:



Benefits of cloud storage	Drawbacks of cloud storage
You can access your data from any device that has an internet connection and a web browser.	If there is no connection you can not access your data. Slow connection also will hinder your experience.
Scalable - You can purchase more storage space easily.	Some providers offer limited storagespace for free, but additional space can be expensive
The data and its security is managed by the provider.	You have no control where or how your data is stored. You must trust the provider to keep your data confidential.

Component 3 Learning Aim A Modern Technologies - A1 Modern Technologies Features and Uses of Cloud Computing



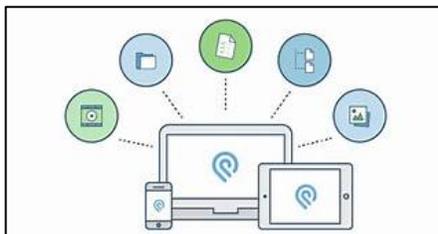
There are two main ways of accessing online applications.

1. Web-based applications which run entirely through browsers
2. Cloud-based applications where your local services and cloud service work together to provide a service.

Benefits of online applications	Drawbacks of online applications
No installation	Must have a reliable internet connection.
Cost effective	
No need for updates	
Accessible from anywhere	
Direct access	

What is file sharing?

Two or more people can work on the same document at the same time.



Benefits of collaboration tools

- Collaboration tools allow users to:
- Add comments to documents
 - Track changes made to the document
 - Use services such as live editing
 - Use chat facilities to discuss proposed changes to documents, plans or drawings before these changes are made in the file.

Example exam question

PublishShare works with writers from all over the world. They use cloud computing technologies for employees and writers to collaborate.

(c) Annotate the diagram to explain how **two** different features of this cloud computing system can be used to aid collaboration.

Your annotation should include the identification of each feature and an explanation to show how the feature can be used to aid collaboration. An example has been provided

(4)



Users icons show all collaborators who else is currently working on a document

Component 3 Learning Aim A Modern Technologies - A1 Modern Technologies

Selection of platforms and services

Key Vocabulary

Stakeholders	These are people with a financial interest or investment In a business or organisation
Downtime	A period of time when a computer and it's services are unavailable.
Geo-data	Geographical information stored in a way it can be used by your device. i.e. your location.

The most common platform types:

- Desktop client
- Notebook
- Tablet
- Smartphone



Features that affect platform selection:

- Screen size
- Portability
- Processing power
- RAM
- Storage capacity
- User interface (keyboard, mouse, touchscreen, voice control, etc)
- Operating system (Apple iOS, Microsoft Windows, Android etc)

What might an organisation consider when selecting a cloud platform?

- Security methods
- Amount of storage space
- Ease of use
- Frequency of updates
- Accessibility
- Cost
- Interface design

Example Exam Question

A photographer/ journalist at a football match takes hundreds of pictures during a game. They will need to select the best picture and write a story before the deadline 2 hours after the game has finished. Using the features below which device would be most suited for his job?

- Screen Size
- Portability (how easy it is to move around)
- Storage capacity
- User interface

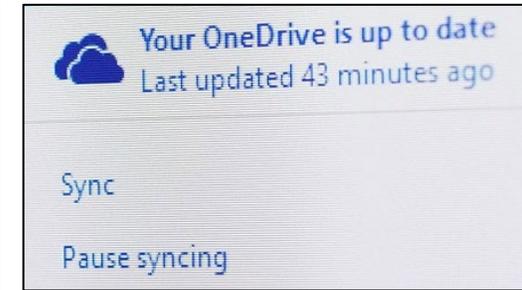


Using Cloud and Traditional Systems Together

Key Vocabulary	
Synchronisation	Process of making two or more data storage devices or programs (in the same or different computers) having exactly the same information at a given time.

Notifications

Cloud systems will send you notifications based on your activity, or what team members with shared access to the same folders you are working on.



Synchronising content over devices

Sometimes applications and files are located on an organisation's own system or user's PC, but they could be in the cloud.

Most organisations and many individuals use a combination of both.

When using a combination of both, synchronisation is particularly important to make sure that all versions of the files are exactly the same.
e.g. A sales person has files stored on their work PC, which are then synchronised to their laptop and are available via a smartphone.

Syncing Apple devices using iTunes:

A user can choose to automatically back up their device to the cloud, and to only sync ticked songs and videos (rather than all content) over Wi-Fi. If the user has several devices that access the same cloud content, all the devices would be updated.

Online/Offline Working

Many workers are not necessarily in the office every day, they may work in another geographically remote office, at home, or while travelling. When working offline, files can be saved in a shared area. They will not be saved immediately in the cloud, but copies of the files are also saved offline on the user's device. When internet access become available, the files will be automatically synced.

Connecting to the internet:

Most laptops connect to the internet using Wi-Fi. If no Wi-Fi connection is available, it may be possible to **tether** laptops to smartphones.

In this way the phone is being used as a **personal hotspot**, which allows the laptop to connect to the internet via the phone.

If no internet connection is possible, the user will work offline and upload or synchronise the content with the relevant systems when an internet connection is available.



Example exam questions:

1. Explain why you should sync content between devices and systems.
2. Explain how a personal hotspot helps with synchronisation.

Component 3 Learning Aim A Modern Technologies - A1 Modern Technologies Choosing Cloud Technologies

There are different factors that organisations will have to consider when choosing cloud technologies that will work for them and their situation. Some of these include:

- The Disaster recovery policies
 - Data Security
 - Compatibility issues

Disaster Recovery Policies

Most cloud technology services offer backup services as part of their set-up costs.

Automatic backing up is usually carried out at quiet periods.

A disaster recovery policy is typically designed to set out the **actions** that will need to take place after a disaster, **for example an attack or natural disaster**, such as a fire or flood, **to restore** an organisation's **services and processes** as quickly as possible.

Cloud technologies can generally be relied on to:

- Be unaffected by attack of disaster as they are located away from the organisation.
- Have appropriate nightly backups - in the event of a disaster very little data is lost.
- Be protected by good security.

Data security

Most cloud computing companies will have several strategies in place to protect the security of their customer information. Any breach could damage their public image and lead to serious consequences for the organisation such as loss of customers and legal action.

As a result, the cloud technologies service provider will employ a range of security measures, including keeping their digital systems protected at their large data centres, where many computers are located under one roof. They will also control access to data and are storing data safely and in an encrypted format where necessary. Broken or outdated digital systems will be appropriately disposed of.



Compatibility

Compatibility isn't usually an issue for organisations when choosing cloud technologies. Most cloud technologies use well-supported and documented operating systems such as Microsoft Windows or Linux. This should enable organisations to run any combination of popular applications and services without an issue.

Benefits of disaster recovery policies	Drawbacks of disaster recovery policies
The can reduce the amount of time it takes to recover following a cyber security disaster.	It is not always possible to think of every single risk that could occur before an attack is carried out.
The set out the roles of each person so everybody knows what to do following an attack.	Once the policy has been created, it needs to be continually updated to ensure new threats have been accounted for.

**Component 3 Learning Aim A Modern Technologies - A1 Modern Technologies
Maintenance, Set-up and Performance Considerations**

Performance considerations

- A fast broadband connection is required or the responsiveness to user requests and synchronisation of devices may be slow.
- Service or storage needs to satisfy all the requirements of the organisation.
- May need to be scalable.
- Software must be responsive to users.
- Proposed cloud software will run on any devices that are used by employees.

Key Vocabulary	
Virtual Machines	Software applications that are designed to behave as if they are a whole computer.
System administrator	A person who is responsible for a technology to make sure they are maintained and reliable.
Spam	Electronic junk mail, usually sent with a commercial purpose.

Downtime

Downtime is usually limited on a cloud computing solution.
Downtime of just a few minutes can be a serious issue for organisations that rely on a continuous 24-hour service.
Downtime can be caused by:

- Interrupted internet connectivity,
- Cyberattacks,
- Updates

Maintenance of cloud computing solutions

Usually automatic because solution providers regularly update processes, which keep the **virtual machines (VMs)** up to date and make sure that the solutions stay healthy and secure.
Organisations may add their own services and updates as part of their security policies.
Most cloud computing solutions have web-based dashboards that can monitor activity levels, such as CPU usage, disk space and network communication.
Additional settings can email the organisation's **system administrator** about potential problems, including high CPU usage, low available disk space etc.

Set up Considerations	
Setting up a server requires	Setting up a cloud computing VM solutions requires.
<ul style="list-style-type: none"> •Hardware purchase •Hardware build or customisation. •Operating system installation and configuration •Applications and services installation and configuration •Protecting from external threats. •Test network connectivity. 	<ul style="list-style-type: none"> •Selecting the cloud computing solution provider. •Creating an account and payment info. •Select type of cloud computing solution required. •Selecting operating system and role of solution •Deploying the device •Performing additional configuration as required.

Benefits of cloud technologies	Drawbacks of cloud technologies
Technologies are generally secure 'out of the box'	So services may not be allowed. E.g. mail servers.
They are up to date	A good internet connection is required.
Automatic backups may be created as part of the plan.	Organisational data is stored on the internet.
Solutions can be depilated easily	Pricing plans maybe more expensive than expected.
Solutions can be re provisioned quickly and without fuss.	Incompatible product may cause issues with data transfer.
Technologies may require less monitoring.	
Technologies may require less manual intervention.	
Disruption of service isgenerally rare.	

Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies Collaborative Technologies

Key Vocabulary	
Version Control	Records changes to documents and files over time so that all versions can be recalled if needed.

Collaborative Technologies

Collaborative technologies enable staff to work together more effectively, allowing them to communicate and share information and documentation more easily.

There are lots of technologies and software to help employees to communicate and collaborate.

e.g. employees on different locations could work together on the designs for a new product, working in the same files at the same time.

Type of collaborative technology	Examples	Uses
Interoffice chat programmes	LiveChat, Office Chat	Useful for answering business questions more quickly than through email
Conferencing software	GoToMeeting	Used to support meetings without employees having to travel
Project support technologies	Google Drive, DropBox	Support document sharing
Project support technologies	FlockDraw	Enables team members to edit images simultaneously in real time

Benefit of collaborative technologies	Description
Global and multicultural workplace	Can help build relationships between people of different ages, gender, religion or culture. Leads to increased creativity and diversity in the workplace.
Inclusivity	Technology has provided functionality to help those who have limitations or disabilities. e.g. people with visual impairments can work on the same documents as people with no impairment by using software to enlarge the text.
24/7/365	Services or facilities open 24/7/365 e.g. Internet content is available 24/7/365 - users are able to access pages at any time of the day or night.
Team flexibility	Teams who work in different locations, countries or time zones can use technologies that allow them to share information and to contribute to projects from remote locations and at different times of the day. The working day can be lengthened e.g. one team can finish as another team in a different time zone begins.

Version Control

If several people are working on the same document, they could each save their document onto their computer, which would create several versions of the same document. They could also overwrite each other's work.

One way to overcome this is to use **version control** which can have the following features:

Workflow - only one person can work on a document at a time. One person at a time has edit access, the other people only have read access.

History - a log of what has been changed and who has changed it is kept. You can see the changes that have been made and then agree or disagree with them.

Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies Using Modern Technology When Managing Teams: Communication and Collaboration

Tools for collaboration

Modern technologies have made it much easier for managers to monitor the activities of their teams.

There are many tools that can be used to promote collaboration e.g. BaseCamp.

These tools include several features, such as:

- To-do area,
- Message board,
- Schedule.

Communicating as a team

Many organisations used chat programs to help staff in different departments or locations have a quick discussion.

One of the main benefits of this software is that you can see which of your colleagues is online, so it is clear who can be contacted.

Other available settings include "busy", "unavailable" or "offline".

NAME	EMAIL	ACTIONS	ACTIVITY
Claire	-	<input type="button" value="Go to chat"/>	● Chatting
Client	-	<input type="button" value="Message"/>	● Browsing
Support Team	-	<input type="button" value="Go to chat"/>	● Chatting
Client	-	<input type="button" value="Message"/>	● Browsing
Suzie	s.novak@gmail.com	<input type="button" value="Go to chat"/>	● Chatting
John	-	<input type="button" value="Message"/>	● Browsing
Pam	pam@gmail.com	<input type="button" value="Message"/>	● Browsing
Thom	thom@gmail.com	<input type="button" value="Go to chat"/>	● Chatting
Client	-	<input type="button" value="Go to chat"/>	● Chatting
Pam Beesly	pam.beesly@company...	<input type="button" value="Go to chat"/>	● Chatting
Eric	-	<input type="button" value="Message"/>	● Browsing

Benefits of using collaborative and communication software to manage teams:

- Storing and managing relevant working files in a single location.
- Ensuring that the file being worked on is the most up to date (as there is only one working copy of the file).
- Archiving previous versions of the file.
- Using features of the software to allow team members to work on files at the same time.
- Communicating with the whole team simultaneously.
- Providing group support by the manager.
- Saving discussions (in case they are needed later).

Example Exam Question

The use of collaborative technologies will allow PublishShare's employees to work from home.

(d) Explain **two** benefits to PublishShare of allowing its employees to work from home.

(4)

1

.....

.....

2

.....

.....

**Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies
Using Modern Technology When Managing Teams: Scheduling and Planning**

Key Vocabulary	
URL	stands for Uniform Resource Locator and is the address of a page on the World Wide Web.

Scheduling and Planning

When you create a new project in planning software you can set a start and end date and it will automatically calculate the number of days involved.

When managing teams, you could use project planning software to allocate tasks and control the schedule.



Setting up a team

- You can set up a team by inviting team members using their email address.
- The team member is then notified and is given a URL and password to access the system.
- When you invite users you can assign a role to them which will determine their level of access to the system.
- To add activities to the project you use the calendar function.
- Each participant then receives an email notifying them of any additions or changes to the calendar.

Benefits of using scheduling and planning software to manage and work within teams

Benefit	Description
Access	Files and folders can be stored in one place so that all members of the team can access them.
Tracking	Project managers can track progress and monitor the activities of team members.
Version control/archive	Older versions of documents can be archived to ensure the documents being used are always the most recent ones. The archive is a file of all the previous versions of documents.
Timelines and deadlines	Project deadlines and key milestones can be automatically synchronised with team member calendars.
Communication and collaboration	Software automatically allows for variations in time zones. This enables workers in different time zones to see when they need to do tasks in their own time zone

Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies Communication with Stakeholders

Communication Platforms

There are lots of communication platforms available, for example:

- Email,
- Social media,
- Text messages

Communication with Stakeholders

Organisations use a wide selection of communication technologies to connect with their stakeholders, from their corporate websites to social media platforms such as Facebook.

What is a stakeholder?

An organisation's stakeholders include:

- Customers,
- Employees,
- Suppliers,
- Anyone else with an interest in the organisation.



Technologies for Communication

Channels	Description
Websites	Provide a range of content, including information on products or services, prices, stock information and special offers so that customers can buy items online.
Social media	Organisations can communicate in a much more relaxed way e.g. customers can ask for advice about a product.
Email	More formal method of communication that has largely taken over from letters as the email is received almost instantly.
Voice communication	Brings people together without them being in the same place. Can be live video as well as audio. This technology is often used to deliver training. The presenter can display presentation slides on the screen and participants can hear the presenter speak.
Live chat	Some organisations offer technical support and customer service using live chat, where a text messaging app is used to support a conversation. Users usually have to log into their account to access this feature.

How to choose the right communication technologies

Organisations must think carefully about which communication channels they should use in different situations to share information, data or other media. Communications can largely be classified as either private/direct or public.

Private Communications

Communications between specific individuals. Only the people involved should be able to see the messages.

For example:

Customer queries, such as order/payment information or requests for payment
Customer payment details, including account details and payment methods
Customer contact details, such as phone numbers or changes of address

Public Communications

Anyone can see the information that has been communicated.

For example:

Product information, such as special features,
Price reductions and other special offers,
Advice on using a product.

Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies Accessibility and Inclusivity

Key Vocabulary	
ALT Text	is alternative text that describes an onscreen image for users with visual impairments.

Accessibility and Inclusivity

Computers should be capable of being accessed and used by everyone, but some users have physical challenges that make aspects of computer use difficult or impossible.

Technologies that help users overcome some of these challenges are becoming increasingly available.

Interface Design

Organisations must think about how a website looks when it is viewed on different devices.

The screen size affects what is visible and how it is displayed. Websites that do not adjust for different devices are known as **non-responsive** websites.

For example, the Amazon website. Amazon's solution is to provide apps for different devices to make sure their content looks its best on any device. They also have a mobile website that reflects the app design.

Interface Layout

The layout of screens also contributes to inclusivity and accessibility of web content.

The content should be simply laid out with clear differences between the sections, with simple input and navigation controls that allow all users to easily interact with what is onscreen.

The screen size affects what can be displayed and how it is displayed.

Accessibility Features

Most operating systems have built-in accessibility features, such as magnifiers, the option to change the colour schemes and even to use the computer without a display, mouse or keyboard.

Other accessibility tools available include:

- Screen readers - which read the content of the screen to the user.
- Software that converts speech to text
- ALT text - allows the addition of text-based description of each image on a website for the benefit of blind or partially sighted users.



Inclusivity

Inclusivity is about the different ways to involve employees who have useful skills to contribute, but who are not able to work in the traditional way
e.g. someone recovering from an operation who is not able to drive to work yet but could work from home.

Organisations can allow their employees to work more flexibly permanently.

This could be by allowing them to work hours that suit their childcare commitments or to choose working hours and locations that suit them.

Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies
How Modern Technologies Impact on an Organisation (Part 1)

Key Vocabulary	
Distributed Data	Split into lots of bits and stored in different places.
Dispersed Data	Multiple copies of the same data in different locations.

Impacts of infrastructure on an organisation:

- Costing what is needed to buy and set up services
- Training for staff
- Implementing and testing time for the technology before staff use it in their work
- Maintaining technology - if software is not updated it may not work correctly
- Running costs of hardware e.g. printer ink
- Implementing a strategy to ensure that data is backed up and secure

Managers must weigh up the costs of technology against the benefits it will bring.

Security of distributed/dispersed data

Data that is **distributed** or **dispersed** can be stored over more than one server and network. The locations of the different bits or copies of data need to be mapped so that the data can be found when it is needed.

Benefits and Drawbacks of Technologies

Technologies	Description	Benefits	Drawbacks
Communication technologies (devices)	It is now common practice for managers to be issued with laptops, mobile phones and tablets	Less paperwork to carry as files can be accessed electronically	Can be intrusive as staff can be contacted day and night, which can impact on the employee's work/life balance
Local platforms	Software installed and used locally	May run faster than a web-based alternative	Cannot be accessed outside the office
Web-based platforms	Software installed and used online	Can be accessed from anywhere	May run more slowly than local alternatives connectivity is poor or demand is high
Availability	Because of the costs of technology, many organisations try and find different ways of using what they have, rather than simply buying more.		

Benefits of distributed data	Drawbacks of distributed data
The data is less likely to be lost because it is not all in one place.	There are more locations to keep secure
Security is greater because criminals would not know where the data is being stored.	Locations of data need to be tracked so that the system knows where the data is
The data can be accessed over different networks	It can take a little longer to access data that is further away
Greater reliability	Additional software is often required

Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies
How Modern Technologies Impact on an Organisation (Part 2)

Organisations that use technology are usually accessible 24/7

Benefits and drawbacks for customers of 24/7 access	
Benefits	Drawbacks
Orders can be placed and accounts accessed at any time of the day or night	Usually you must wait until your purchase is delivered and pay extra if you want it delivered quickly
No need to stand at the till to pay for purchases as you can buy online	You cannot see or touch the product before you buy it
Lower prices as there is more competition	Security worries - it is a legitimate website?
More choice as you can access a much wider range of products	You often must pay for delivery, or higher rates for faster delivery
No need to spend money on transport or parking	Returning items can be challenging and you may have to wait to receive a refund.
Able to check your bank balance and pay bills at any time of the day or night	
Ability to transfer money from one account to another without having to go to the bank	

Benefits and drawbacks for organisations of 24/7 access	
Benefits	Drawbacks
You can access more customers over a wider geographical area. Your potential customer base is anyone, anywhere in the world, you are only limited on where you are willing and able to ship products.	Many customers still like to visit a shop or business and speak to a person
You may not have to pay the costs of having premises. Many online businesses do not have a presence in the high street.	You have to make sure you build good relationships with customers as you will have more competition.
Online businesses may be cheaper to set up.	
You can collect information about your customer's browsing and shopping habits, which could enable you to improve how you target different types of customers with your different products	

**Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies
How Technologies Impact the Way Organisations Operate**

Key Vocabulary	
Wiki	this is a web page (or pages) that has been developed collaboratively by a group of people

Digital technologies have made communication and working together in organisations much more efficient and accessible.

Benefits and Drawbacks of Collaborative Technologies.		
Technology	Benefits	Drawbacks
File sharing	Using software such as OneDrive or DropBox enables employees to work together and share development responsibilities and activities	There is a new to make sure that employees are always using the most up-to-date version of a document
Wikis	Web pages that can easily be edited by members of a team e.g. Wikipedia	You need to check that information is correct, particularly if you are responsible for a commercial wiki
Blogs	This is an abbreviation of web logs, which are often created about a specific topic	They need to be regularly updated to keep their audience interested
Chat Systems	Interoffice chat systems are useful for helping staff access information or those seeking decisions quickly	These systems can be time wasting if they are used for social rather than business discussions
Tele/videoc onferencing	Staff in different locations can attend meetings virtually which saves significant travel time and money and enables collaboration and decision-making	A high bandwidth communication link is required to transmit and receive high-quality images.

Technology and Accessibility

Many organisations now support the use of wearable technologies. The benefit for staff is that they are easily accessible, they can receive phone calls and read emails without accessing their phones.

Many of these wearable technologies have sensors that can capture health and fitness information, so staff are reluctant to wear them as the organisation has access to data that they want to keep private. By law, organisations are required to make accessibility adaptations to the working environment if a member of staff has an accessibility or health-related issue.

Technology and Remote Working

More and more people can access paid work that does not require them to go to a specific place of work.

The benefits to the organisation are:

- Access to a wider and more diverse range of potential employees.
- Less office space is required if some staff work from home, resulting in cost savings.

Drawbacks to the organisation:

- Employee is not on site, limiting the interaction between colleagues and opportunities for ad hoc meetings and impromptu discussions.

Some employees choose to install monitoring software on their employee's computers to check the hours they are working and the activities they complete. This can be demoralising to employees who do not feel trusted.

Component 3 Learning Aim A Modern Technologies - A2 Impact of Modern Technologies
How Technologies Impact Individuals

How technology impacts individuals

Devices like smartphones have changed the way we communicate and entertain ourselves.

For example: We can play music, videos or games on handheld devices when travelling. We can stream music while working.

Using technology has now become common in the workplace and has made many aspects of work much easier, such as being able to access a work diary from anywhere.

Impact on individual wellbeing

Technology impacts on the way you feel about yourself and the world around you.

Technology can impact positively on the wellbeing of individuals, but this is not always the case, for some people there can be negative consequences as well.

Working flexibly and choosing your working style

If you can work flexibly, during hours that suit you and your family, this can improve your morale and reduce personal stress levels.

Working flexibly does require employees to be self-disciplined and organisations may monitor your activity.

Impact of Technology

The impact of technology	What it really means	Benefit or drawback
Contact with others	Can talk to other people about things in your life that are going well or badly, but too much contact can be intrusive	Benefit and drawback
Self-confidence	Being able to research things makes you more confident, if you are sure the information is correct and reliable	Benefit
Lack of confidence	Some of us need reassurance about what we are doing and we need input from others to feel confident about what we are doing	Drawback
Separation from a stressful environment	Technology means that you can escape into computer games, videos or music to remove yourself from stress	Benefit
Control of your own schedule	People who use electronic diaries or schedules often feel more in control of their personal and working lives because they know where they need to be	Benefit
Ability to control your schedule to meet the needs of your family	Technology gives you the confidence that you can adapt your schedule to meet the needs of your family	Benefit
Less time commuting to or between offices	Technology could make you more productive if you can work from home or can be based in a single place and take part in virtual meetings	Benefit
Loneliness	Just because you can talk to someone via a device or app does not mean that you are not lonely	Drawback
Depression	People who work a lot on their own can become isolated and depressed because they are not interacting with others	Drawback



Year 11 Architecture

Keywords	Definition
Assessment Objectives	4 different criteria's that you need to meet throughout your project.
Observe	Study an image carefully
Annotation	A note by way of explanation or comment added to a text or image
Pencil Pressure	How hard or light you press
Artist Response	Creating work inspired by an artist and references their style
Colour theory	Using colour to represent emotion or expression
Realism	When art accurately depicts reality
Abstract	A subjective representation/interpretation of a theme
Monoprint	A print that is unique and only achieved once
Saturation	The depth and brightness of colour
Refine	Make minor changes to correct, clarify and perfect
Contemporary	Belonging or occurring in the present
Mark making	The way you create marks using media
Tonal Drawing	Drawing with a range of tones and value are

Key Information that I learnt

Art Techniques through media experimentation

How to create a tonal drawing and detailed observational drawing

Create a final piece that incorporates past artists/techniques

I can use observational skills to replicate and recreate images and subject matter

Evolve and record a creative journey

Techniques and Media

Brusho



Acrylic paint



Monoprint



Pencil Crayon



Watercolour



Collage



Using Acrylics

To blend, you want to mix three colours on your palette:

- Starting colour
- Mid colour
- End colour

Lay down the starting colour, then add dabs of the mid colour next to it and blend lightly into each other - do the same with the end colour next to the mid colour. Use short, careful strokes

Do not start with the details!!! It will take you twice as long!

Starting colour Mid colour End colour

Too dry Too wet Damp to a point + plenty of paint on the brush

Small pile of paint - lots to pick up and slower to dry. Colour mixed over large area of palette - quick to dry and not much paint to pick up.

Start with the background colours with a larger brush. Make sure you colour match these first few colours. Then you can start adding darker values, lighter tints and details with the smaller brushes.

Value scales using line

Stippling

Scumbling

Shading

Smudging

Crosshatching

132

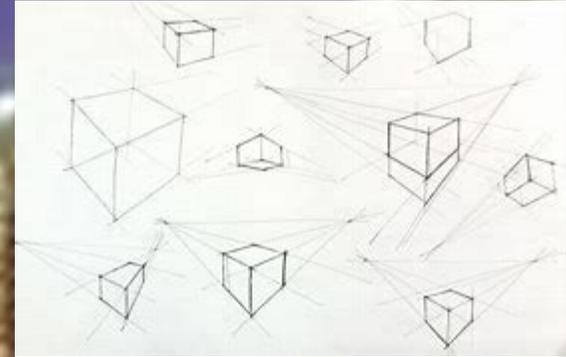
A01 EXPLORE
 BEGIN TO LINK A THEME TO YOUR CHOSEN ARTISTS WORK
 WRITTEN ANALYSIS
 LINK ARTISTS WORK TO IDEAS AND ARTWORK



Look at example sketchbooks – each page should contain your own art work alongside annotation. Make sure your work links to your project and previous work.

Year 11 Architecture

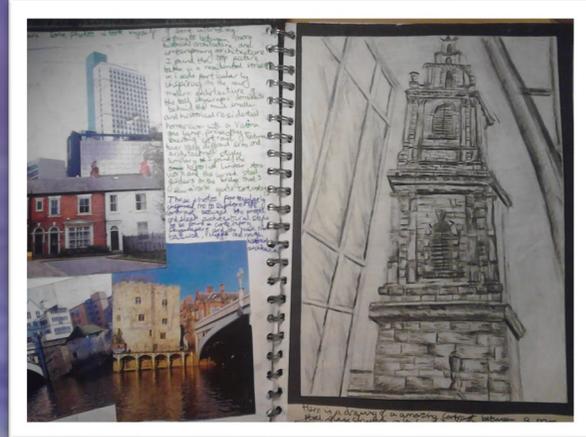
You will know the difference between 1 and 2 point perspective and be able to apply it to drawing buildings.



A02 EXPERIMENT WITH A RANGE OF MEDIA
 LINKING TECHNIQUES TO ARTISTS AND THEMES
 TEXTILES OF MEDIA
 CLAY WATERCOLOUR
 MIXED MEDIA PHOTOGRAPHS PEN AND INK



Art that will Inspire me
 Vorticism
 Zaha Hadid
 Ouizi
 Ian Murphy
 Antonion Mora



1. Choose 2 pieces of art that you have created and evaluate what was successful and unsuccessful about each piece
2. Can you explain which media you enjoyed using most and what advice would you give to someone else using it?
3. Choose two artists and evaluate their techniques and how they have inspired you
4. Write at least 2 paragraphs reflecting on the project. Include how you would improve next time, what skills you have evolved and what has inspired you
5. Did you use your booklets to track your progress? Add notes to your booklet that will help you with your next project e.g. creating a mind map should also be informative, visually attractive and reflect the theme

A03 IDEAS LINKING TO ARTISTS WORK
 OBSERVATIONAL DRAWINGS
 ALL ARTWORK LINKING TOGETHER PLANS, DESIGNS IN A RANGE OF EXPLANATIONS
 DIFFERENT MEDIA ANNOTATION



Art Marking System			
Level	Ability	Marks	9-1
Convincingly	Exceptional Ability	24	9
Clearly	Exceptional Ability	23	9
Adequate	Exceptional Ability	22	9
Just	Exceptional Ability	21	9
Convincingly	Highly Developed	20	8
Clearly	Highly Developed	19	8
Adequate	Highly Developed	18	8
Just	Highly Developed	17	7
Convincingly	Consistent Ability	16	7
Clearly	Consistent Ability	15	6
Adequate	Consistent Ability	14	6
Just	Consistent Ability	13	5
Convincingly	Moderate Ability	12	5
Clearly	Moderate Ability	11	4
Adequate	Moderate Ability	10	4
Just	Moderate Ability	9	4
Convincingly	Some Ability	8	3
Clearly	Some Ability	7	3
Adequate	Some Ability	6	3
Just	Some Ability	5	2
Convincingly	Minimal Ability	4	2
Clearly	Minimal Ability	3	2
Adequate	Minimal Ability	2	1
Just	Minimal Ability	1	1

ANNOTATION

Artist Page

1. Present the artist's name in an interesting font-look for the original signature
2. Find 3 relevant facts about artist?
3. What inspired them?
4. What materials did they use?
5. Find 5 adjectives to describe their work
6. Do you like their work? Explain

A04 FINAL MEANINGFUL PIECE OF WORK
 INFORMED SHOW UNDERSTANDING
 RESPONSE LINKS
 LINK BETWEEN VISUALS AND ARTISTS TO ARTISTS WORK
 PRESENTATION RELEVANT

1. What are Natural Hazards?

Natural hazards are physical events such as earthquakes and volcanoes that have the potential to do damage humans and property. Hazards include tectonic hazards, tropical storms and forest fires.

What affects hazard risk?

Population growth
Global climate change
Deforestation
Wealth - LICs are particularly at risk as they do not have the money to protect themselves



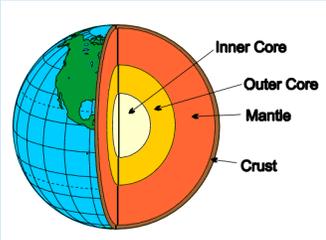
2. Structure of the Earth

The earth has 4 layers

The inner core
The outer core
The mantle
The crust

The crust is split into major fragments called tectonic plates. There are 2 types: Oceanic (thin and younger but dense) and Continental (old and thicker but less dense)

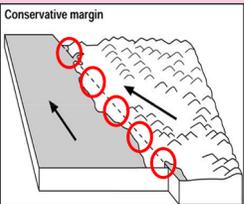
These plates move and where they meet you get tectonic activity (volcanoes and earthquakes).



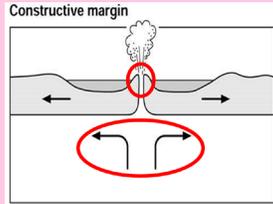
There are 2 theories of why plates move: convection currents and ridge push, slab pull.

Plates either move toward each other (destructive margin) away from each other (constructive) or next to each other (conservative)

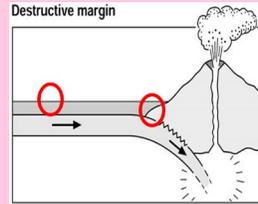
3. Plate Margins



Plates slide past each other. As the plates move at different speeds they get stuck. The pressure builds up and the sudden release of pressure causes an earthquake.



When plates pull away from each other cracks and fractures form. Magma forces its way into the cracks and makes its way to surface to form volcanoes.



When two plates move towards, if one is made from oceanic crust and the other is continental crust the denser oceanic crust sinks under the continental. This is known as subduction. The crust is destroyed and melts to form magma.

4. Effects of Tectonic Hazards

Primary effects happen immediately. Secondary effects happen as a result of the primary effects and are therefore often slightly later.

Primary - Earthquakes

- Property and buildings destroyed
- People injured or killed
- Ports, roads, railways damaged
- Pipes (water and gas) and electricity cables broken

Secondary - Earthquakes

- Business reduced as money spent repairing property
- Blocked transport hinders emergency services
- Broken gas pipes cause fire
- Broken water pipes lead to a lack of fresh water

Primary - Volcanoes

- Property and farm land destroyed
- People and animals killed or injured
- Air travel halted due to volcanic ash
- Water supplies contaminated

Secondary - Volcanoes

- Economy slows down. Emergency services struggle to arrive
- Possible flooding if ice melts
- Tourism can increase as people come to watch
- Ash breaks down leading to fertile farm land

Unit 1

The challenge of Natural Hazards



5. Responses to Tectonic Hazards

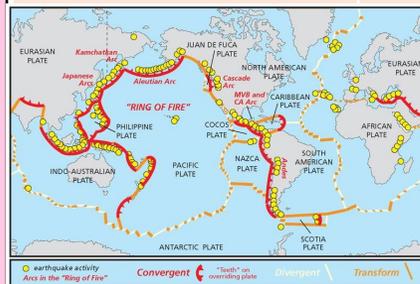
Immediate (short term)



- Issue warnings if possible
- Rescue teams search for survivors
- Treat injured
- Provide food and shelter, food and drink
- Recover bodies
- Extinguish fires

Long-term

- Repair and re-build properties and infrastructure
- Improve building regulations
- Restore utilities
- Resettle locals elsewhere
- Develop opportunities for recovery of economy
- Install monitoring technology



6. Comparing Earthquakes – Christchurch New Zealand (HIC) and Haiti (LIC)

Christchurch – Feb 2011

Haiti - Jan 2010

Primary Effects

181 deaths
2000 injured
50% of city centre buildings damaged.
80% of the city without electricity.

316, 000 deaths
1 million people homeless
Water and electricity cut off

Secondary Effects

Businesses were out of action causing loss of income and jobs.
Damage to roads through liquefaction made it difficult for people and emergency services.

Landslides buried people and buildings
Cholera and other diseases spread due to little clean water and large number of dead bodies
1 in 5 people lost their jobs as so many buildings were destroyed.

Immediate Responses

Chemical toilets provided for 30,000 residents.
Areas were zoned to classify damage/ cost of repairs.
International aid was provided in the form of money (around \$6-7 million) and aid workers.

International aid and equipment sent but this didn't reach many areas for weeks
810, 000 people placed in aid camps.
Tents, blankets and medical supplies sent but took a month to reach most areas
4.3 million people were provided with food rations.

Long term responses

Paid \$898 million in building claims.
Provided temporary housing.
Water and sanitation was restored for all residents by August.
80% of roads cleared by August.

6 months later 98% of rubble still on the roads restricting access.
1 million people still without homes after 1 year.
Support for people without jobs (70% of the population) with cash/food for work projects.
Water and sanitation eventually supplied to 1.7 million people.

LICs suffer more than HICs from natural disasters because they are not as prepared and struggle to react effectively

7. Monitoring

Seismometers measure earth movement.
Volcanoes give off gases

Prediction

By observing monitoring data, this can allow evacuation before event

Protection

Reinforced buildings and making building foundations that absorb movement
Automatic shut offs for gas and electricity

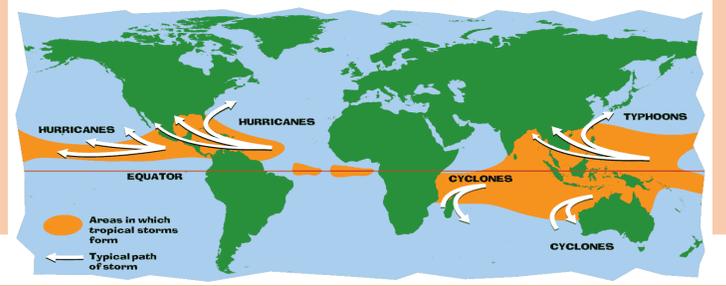
Planning

Avoid building in at risk areas
Training for emergency services and planned evacuation routes and drills.

<p>1.1 Define what natural hazard means.</p> <p>1.2 Give two examples of natural hazards.</p> <p>1.3 Give two factors that affect hazard risk.</p> <p>1.4 Why are LICs more at risk?</p>	<p>3.1 Volcanoes are found at which margin?</p> <p>3.2 Earthquakes are the only hazard found at which margin?</p> <p>3.3 Describe how volcanoes form at destructive margins.</p> <p>3.4 Describe how earthquakes are caused at conservative margins.</p> <p>3.5 True or false: violent earthquakes occur at constructive margins.</p>	<p>5.1 Describe three examples of immediate responses to tectonic hazards.</p> <p>5.2 Describe three examples of longer term responses to tectonic hazards.</p>	<p>7.1 How are earthquakes and volcanoes monitored?</p> <p>7.2 What is the advantage to being able to monitor and predict tectonic hazards?</p> <p>7.3 How are buildings protected against hazards?</p> <p>7.4 Describe two ways countries can plan for tectonic hazards.</p>
<p>2.1 Name the four layers of the earth.</p> <p>2.2 What are the two theories behind why plates move?</p> <p>2.3 Plates that move toward each other are what type of margin?</p> <p>2.4 What direction do the plates move at constructive margins?</p> <p>2.5 Plates move side by side at which margin?</p>	<p>4.1 What does the term secondary effects mean?</p> <p>4.2 Give 2 examples of possible primary effects of an earthquake.</p> <p>4.3 Give 2 examples of possible primary effects of a volcanic eruption.</p> <p>4.4 Give 2 examples of possible secondary effects of an earthquake.</p> <p>4.5 Give 2 examples of possible secondary effects of a volcanic eruption.</p>	<p>6.1 What is the name and date of the LIC earthquake case study.</p> <p>6.2 Name the HIC earthquake case study and year.</p> <p>6.3 How many people died in both case studies?</p> <p>6.4 Name a secondary effect of both case studies.</p> <p>6.5 How many people were placed in aid camps in Haiti and how many people were given food rations?</p> <p>6.6 What % of the roads were cleared by Aug in Christchurch?</p>	

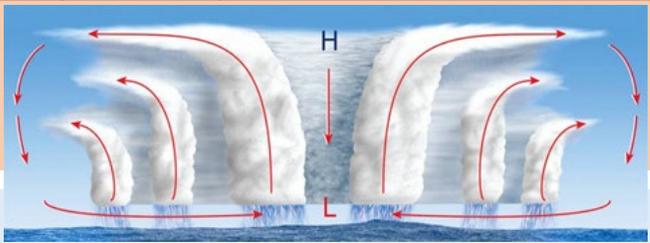
1. Tropical Storms

Occur in low latitudes between 5° and 30° north and south of the equator (in the tropics). Ocean temperature needs to be above 27° C. Happen between summer and autumn.



2. Sequence of a Tropical Storm

HEAVY	HEAT	The sun HEATS the sea/ocean.
ELEPHANTS	EVAPORATE	Warm, moist air EVAPORATES and rises.
REALLY	REPLACE/ REPEAT	More air rushes in to REPLACE the air that has just evaporated. It is also evaporated.
CAN	CONDENSATION/ CLOUDS	As the air rises it CONDENSES to form thick CLOUDS.
SQUASH	SPIN/SPIRAL	The earth's rotation causes the clouds to SPIN, forming the tropical storm's distinctive spinning shape.
STRAWBERRY	SINKING AIR = EYE	Cold air SINKS in the centre of the storm forming the EYE of the storm.
MARSHMALLO WS	MOVE	It MOVES in the prevailing wind direction (east to west)
LOLS	LAND/LOSE ENERGY	It reaches LAND and LOSES energy as its energy source (warm water) is gone. Friction of the land also reduces its energy.



Climate change will affect tropical storms too. Warmer oceans will lead to more intense storms – but not necessarily more frequent ones.

4. Extreme weather in the UK

- Rain** – can cause flooding damaging homes and business.
 - Snow & Ice** – causes injuries and disruption to schools and business. Destroys farm crops.
 - Hail** – causes damage to property and crops.
 - Drought** – limited water supply can damage crops.
 - Wind** – damage to property and damage to trees potentially leading to injury.
 - Thunderstorms** – lightning can cause fires or even death.
 - Heat waves** – causes breathing difficulties and can disrupt travel.
- UK weather is getting more extreme due to climate change. Temperatures are more extreme and rain is more frequent and intense leading to more flooding events. Since 1980 average temperature has increased 1 degree and winter rainfall has increased.

3. Typhoon Haiyan, Philippines, November 2013

Primary Effects	Secondary Effects
At least 6340 killed 27,000 injured 30,000 fishing boats destroyed 90% buildings in Tacloban destroyed Habitats & Crops destroyed	\$14 Billion of damage Water supply polluted 130,000 houses destroyed, leaving 4.2 million homeless Public Order – Looting Airports unusable for supplies

Immediate Responses	Long-term Responses
People were evacuated to 1200 evacuation centres that were created USA – search and rescue (aircraft/helicopters) Food sent from Philippine Red Cross Emergency hospitals from France, Belgium and Israel (FBI) Emergency shelter kits from UK	UN appeal raised \$300 million. Typhoon warning systems have been improved. People are now better educated about how to respond.



Prediction	Planning	Protection
Monitoring wind patterns allows path to be predicted. Use of satellites to monitor path to allow evacuation	Avoid building in high risk areas Emergency drills Evacuation routes	Reinforced buildings and stilts to make safe Flood defences e.g. levees and sea walls Replanting Mangroves

4. March 2018 Beast from the East

Polar Vortex, Low pressure from Siberia. Temperatures dropped to -10°C
Wind Chill of -22°C. Wind speeds exceeding 70mph

Primary Effects
<ul style="list-style-type: none"> 10 killed across the country. Snow drifts in excess of 7m in rural locations. Hundreds stranded for up to 36hrs on the M80 Motorway in Scotland and A roads in Devon.

Secondary impacts
<ul style="list-style-type: none"> NHS cancelled non-urgent operations and clinics. Thousands of homes left without power. Schools across the country closed for up to 3 days.

Management strategies
<ul style="list-style-type: none"> Armed forces deployed to rescue drivers and drive NHS workers to work. Taxi firms offering to shop and fetch medicine/ supplies for elderly people. Met office issues 'Red' weather warning to stop people from travelling. Snow ploughs, gritters and tractors go out in force to clear snow and roads.

8. Managing Climate Change

Mitigation
<ul style="list-style-type: none"> Alternative energy production will reduce CO₂ production. Planting Trees – helps to remove carbon dioxide. Carbon Capture – takes carbon dioxide from emission sources is stored underground. International Agreements e.g. the Paris Climate Agreement.

Adaptation
<ul style="list-style-type: none"> Changes in agricultural systems need to react to changing rainfall and temperature patterns and threat of disease and pests. Managing water supplies – eg. by installing water efficient devices and increasing supply through desalination plants. Reducing risk from rising sea levels would involve constructing defences such as the Thames Flood Barrier or restoring mangrove forests, or raising buildings on stilts.

5. Climate Change – natural or human?

Evidence for climate change shows changes before humans were on the planet. So some of it must be natural. However, the **rate** of change since the 1970s is unprecedented. Humans are responsible – despite what Mr Trump says!

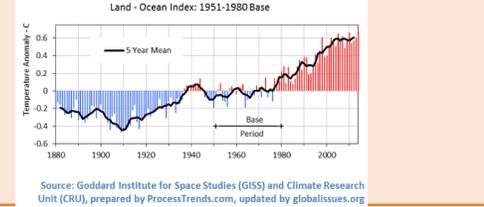
Causes

Natural	Human
<ul style="list-style-type: none"> Orbital changes – The sun's energy on the Earth's surface changes as the Earth's orbit is elliptical its axis is tilted on an angle. Solar Output – sunspots increase to a maximum every 11 years. Volcanic activity – volcanic aerosols reflect sunlight away reducing global temperatures temporarily. 	<ul style="list-style-type: none"> Fossil fuels – release carbon dioxide with accounts for 50% of greenhouse gases. Agriculture – accounts for around 20% of greenhouse gases due to methane production from cows etc. Larger populations and growing demand for met and rice increase contribution. Deforestation – logging and clearing land for agriculture increases carbon dioxide in the atmosphere and reduces ability to planet to absorb carbon through photosynthesis.

6. Effects of Climate Change

Social	Environmental
<ul style="list-style-type: none"> Less ice in Arctic Ocean increases shipping and extraction of oil and gas reserves. Droughts reduce food and water supply in sub-Saharan Africa. Water scarcity in South and South East UK. Increased flood risk. 70% of Asia is at risk of increased flooding Increased extreme weather 	<ul style="list-style-type: none"> Sea level rise leads to flooding and coastal erosion. Ice melts threaten habitats of polar bears. Coral bleaching and decline in biodiversity.

Global Temperature, 1880 - 2014



7. Evidence for Climate Change

The Met Office has reliable climate evidence since 1914 – but we can tell what happened before that using several methods.

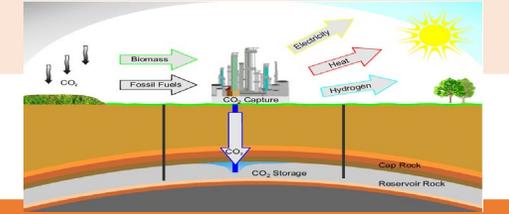
Ice and Sediment Cores
<ul style="list-style-type: none"> Ice sheets are made up of layers of snow, one per year. Gases trapped in layers of ice can be analysed. Ice cores from Antarctica show changes over the last 400 000 years. Remains of organisms found in cores from the ocean floor can be traced back 5 million years.



Pollen Analysis
<ul style="list-style-type: none"> Pollen is preserved in sediment. Different species need different climatic conditions.

Tree Rings
<ul style="list-style-type: none"> A tree grows one new ring each year. Rings are thicker in warm, wet conditions This gives us reliable evidence for the last 10 000 years.

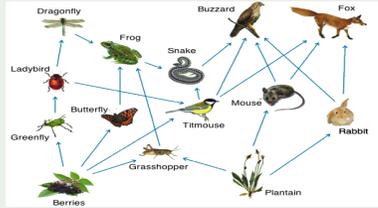
Temperature Records
<ul style="list-style-type: none"> Historical records date back to the 1850s. Historical records also tell us about harvest and weather reports.



<p>1.1 Between which lines of latitude do tropical storms form?</p> <p>1.2 How warm does the ocean need to be?</p> <p>1.3 What are tropical storms called in the Atlantic Ocean?</p> <p>1.4 What are they called in the Pacific?</p> <p>1.5 What are tropical storms called in Australia?</p>	<p>3.1 Where and when did Typhoon Haiyan occur?</p> <p>3.2 Identify two primary effects of Typhoon Haiyan.</p> <p>3.3 Identify two secondary effects of Typhoon Haiyan.</p> <p>3.4 Identify two immediate responses to Typhoon Haiyan.</p> <p>3.5 Identify two long term responses to Typhoon Haiyan.</p> <p>3.6 What does PPP stand for?</p> <p>3.7 Give an example of each in relation to tropical storms.</p>	<p>5.1 Identify 3 natural causes of climate change.</p> <p>5.2 Describe 3 natural causes of climate change.</p> <p>5.3 Identify 3 human causes of climate change.</p> <p>5.4 Describe 3 human causes of climate change</p>	<p>7.1 Describe how ice cores are used as evidence for climate change.</p> <p>7.2 What is pollen analysis?</p> <p>7.3 How are tree rings used as evidence for climate change?</p>
<p>2.1 Describe the formation of a tropical storm.</p> <p>2.2 What makes the air spin?</p> <p>2.3 Why is the eye calm?</p> <p>2.4 What will cause the tropical storm to lose energy?</p> <p>2.5 How will climate change affect tropical storms?</p>	<p>4.1 Why is the UK weather getting more extreme?</p> <p>4.2 What is your UK extreme weather case study?</p> <p>4.3 Give 2 examples of primary effects of the Beast from the East.</p> <p>4.4 Give 2 examples of secondary effects of the Beast from the East.</p> <p>4.5 Describe the management strategies for the Beast from the East.</p>	<p>6.1 Identify 3 social effects of climate change.</p> <p>6.2 Why would declining fish in some areas be a problem?</p> <p>6.3 Identify 3 environmental effects of climate change.</p>	<p>8.1 Identify two ways to mitigate climate change.</p> <p>8.2 What is carbon capture?</p> <p>8.3 How can people adapt to climate change?</p>

1 Interactions within an ecosystem

The different parts of the ecosystems interact so it functions effectively. If one part changes, it will effect the whole ecosystem. It includes food chains, food webs and the nutrient cycle.

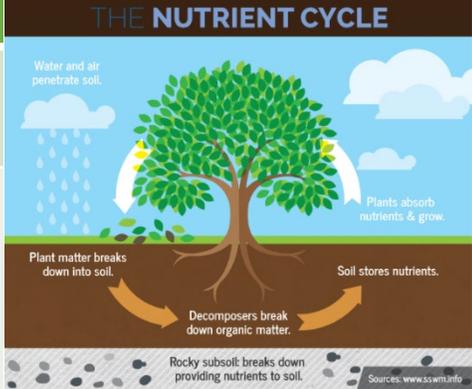


Small Scale Ecosystem: Pond

Freshwater ponds provide a variety of habitats for plants and animals, There are big variations in the amount of light, oxygen and water within the ecosystem so different species flourish in different parts of the pond.

Above the surface: animals that breathe oxygen like insects and birds
Below the surface: animals that breathe through their gills such as frogs and fish.
Pond Margin: lots of light and oxygen so you would reeds and other plants growing here.

Change in an ecosystem: Change can cause naturally or be a result of human activity. E.G. if more perch (fish) was added to a pond there would be a decline in frogs because the fish would eat. Them this would lead to an increase in insects as there would be less frogs to eat them.



Unit 1: b AQA The Living World

2 What is an ecosystem

An ecosystem is the **(biotic) living** and **(abiotic) non-living** parts of an environment and the relationships that exist between them.

Biotic	Animals, plants, trees, insects, bacteria, fungi
Abiotic	Soil, rock, water, air, sun

Key term	Definition
Abiotic	Relating to non living things
Producer	An organism or plant that is able to absorb energy from the sun through photosynthesis
Consumer	Creature that eats herbivores (primary) or other consumers (secondary)
Decomposer	An organism that breaks down dead tissue which is then recycled to the environment
Ecosystem	A community of plants and animals that interact with each other and the physical environment
Food chain	The connections between different organisms that rely on one another as their food source
Food web	A complex hierarchy of plants and animals relying on each other for food
Nutrient cycling	A set of processes whereby organisms extract minerals necessary for growth from soil and water before passing them on though the food chain

Location of global biomes 6

Temperate Deciduous Woodland:
 Areas like the UK have a milder climate than you expect at this distance from the Equator. The warmer/cooler currents from the North Atlantic/Pacific Drift Current helps maintain warmer temperatures.

Tropical Rainforests:
 In the tropics, the sun's rays are at a high angle in the sky for a whole year. Rays are concentrated over a smaller area than the poles.

The Tundra:
 Average temperature is the main factor affecting plant growth. Temperature gradually decreases as you move away from the Equator. As latitude increases, so temperature decreases.

Deserts: Continentality, the effect of distance from the sea, also affects vegetation. Away from the sea, the land heats up in the hot season and cools quickly in the cold season. The increases the annual temperature ranges and reduces precipitation.

7 Global Ecosystems - BIOMES

Polar – Arctic/Antarctic
 Very low temperatures and dry conditions – cold desert – Temperatures can fall below -50°C. Arctic hare, Arctic fox, little vegetation

Tundra – Northern Europe and Canada
 Low growing plants adapted to cold, windy and dry conditions. Reindeer, wolves. Ground is frozen for most of the year. Snow.

Taiga – Canada and Scandinavia
 Mainly coniferous forests – trees which are evergreen. Pine needles are difficult to decompose so soil has few nutrients. Temperatures may reach 10°C. Moose, wolves, bears.

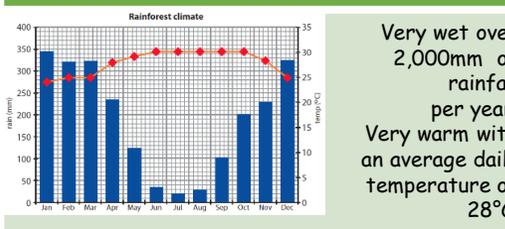
Temperate Deciduous – 30°-40° N of Equator – UK
 Mainly Deciduous forest – trees lose their leaves in winter, these decompose add in nutrients to the soil. Spring flowers before the tree canopy grows.

Hot Desert – Roughly 30° N and S of equator
 High daytime and low night time temperatures, very dry, less than 250mm a year. Little vegetation, sandy soils.

Savannah – between Rainforest and Deserts
 Distinct wet and dry seasons. Large herds graze the grasslands, providing food for predators such as lions and leopards.

Tropical Rainforest – Along the Equator
 High temperatures and heavy rainfall with no seasons. Cover 6% of Earth's surface. Over 50% of world's species live here.

3 Rainforest climate



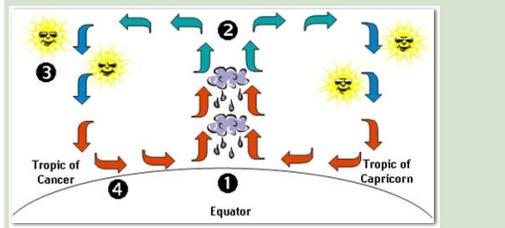
4 Distribution of Rainforest s



Very wet over 2,000mm of rainfall per year. Very warm with an average daily temperature of 28°C.

The sun's rays are more intense at the Equator which results in high temperatures and convectional rain caused by evaporation.

Rainforests, such as the Amazon, lie near the Equator. This means that the sun's rays are more concentrated in these regions and this produces convectional rain.



8 Distribution of Hot Deserts and Hot Desert climate

There are four factors which form desert areas:

- The presence of **high pressure**, creating cloud-free conditions
- Cold ocean currents** – which limit evaporation
- Mountain ranges** to create rain shadows
- Continentality** - distance from the sea

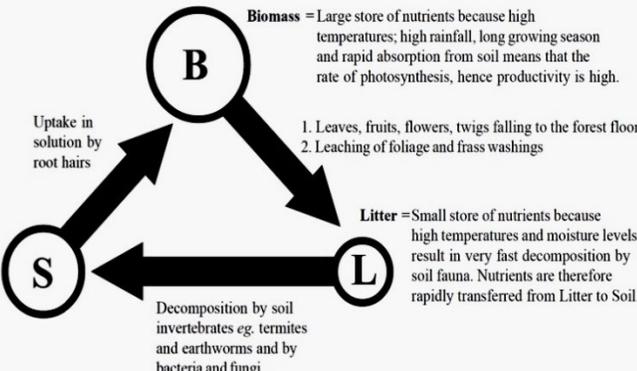
The climate is very **hot**. Summer day time temperatures can exceed 40°C. At night the temperature can drop below 0°C. The climate is very **dry** with less than 250 mm of rainfall a year.

<p>1.1 Describe the nutrient cycle</p> <p>1.2 Identify your example of a small scale ecosystem.</p> <p>1.3 What do you find at the pond margin?</p> <p>1.4 What do you find above the surface of the pond?</p>	<p>3.1 Describe the climate of the tropical rainforest.</p> <p>3.2 What is the average temperature?</p> <p>3.3 How much rain falls annually?</p> <p>3.4 Using the diagram explain why it rains at the equator.</p> <p>3.5 If air is rising at the equator is it an area of high or low pressure?</p>	<p>5.1 What is the producer?</p> <p>5.2 What is the consumer?</p> <p>5.3 Define decomposers.</p> <p>5.4 Describe the nutrient cycle.</p>	<p>7.1 Describe the polar ecosystem.</p> <p>7.2 Describe the tundra ecosystem.</p> <p>7.3 Where do you find the desert ecosystem?</p> <p>7.4 Where do you find the temperate deciduous forests?</p> <p>7.5 Describe temperate deciduous forests.</p> <p>7.6 Where do you find tropical rainforests.</p>
<p>2.1 Define ecosystem</p> <p>2.2 What are biotic components?</p> <p>2.3 Give examples of biotic elements.</p> <p>2.4 What are abiotic components?</p> <p>2.5 Give examples of abiotic components.</p>	<p>4.1 Tropical rainforests are found on which line of latitude?</p> <p>4.2 Describe the distribution of the tropical rainforests.</p> <p>4.3 Explain why the temperature at the equator stays the same.</p> <p>4.4 Explain why it rains so much on the equator.</p>	<p>6.1 Why are there so few plants in the tundra?</p> <p>6.2 Why are the rainforests hot and poles cold?</p> <p>6.3 Describe the ecosystem of the UK.</p>	<p>8.1 Describe the climate of the desert.</p> <p>8.2 Identify two reasons why deserts are hot and dry.</p>

1 Physical Characteristics of TRF's	
Emergent Layer	 Tall trees often reaching 50m high. Kapok trees are very fast growing, to compete with other trees to reach the sunlight.
Canopy Layer	 A mass of leaves, trees grow quickly to reach the light. The leaves sustain the trees through photosynthesis. The majority of species live here - moist air and presence of flowers, seeds and nuts which sustain the food chain.
Under canopy Layer	 It is very dark. Trees are branchless as there is little sunlight for photosynthesis, so it is not worth growing leaves.
Shrub layer	 Very dark, poor soils, high humidity

Plant adaptation in TRF's	2	Animal adaptation in TRF's
Buttress roots - Massive ridges help them to support large trees. The shallow roots also spread out under the soil to absorb rainwater which quickly evaporates and to take up nutrients from the poor soils.	Drip tips - plants have leaves with pointy tips . This allows water to run off the leaves quickly without damaging or breaking them.	Sloth uses camouflage and moves very slowly to make it difficult for predators to spot.
		Monkey has long arms and legs to jump through the trees, it can use its prehensile tail as a 5 th limb to reach fruit in the emergent layer.

3 The Balance between components of TRF's



Biomass = Large store of nutrients because high temperatures; high rainfall, long growing season and rapid absorption from soil means that the rate of photosynthesis, hence productivity is high.

Litter = Small store of nutrients because high temperatures and moisture levels result in very fast decomposition by soil fauna. Nutrients are therefore rapidly transferred from Litter to Soil.

Soil = Decomposition by soil invertebrates eg. termites and earthworms and by bacteria and fungi

Value of tropical Rainforests

Home to more than half the world's plant and animal species.

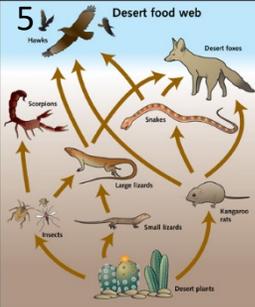
They are home to an estimated 50 million indigenous forest people.

responsible for 20% of the world's rainfall.

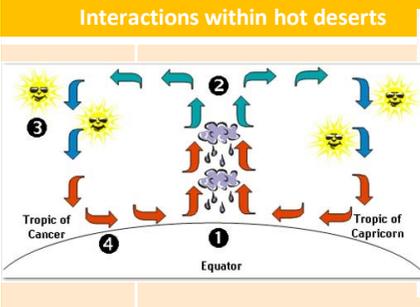
4 Case Study – Malaysia Rainforest

Causes of deforestation		Impacts of deforestation	Sustainable Management
Cattle farming	Clear land for massive, commercial cattle farms.	<ul style="list-style-type: none"> Loss of species Forests catch CO2, deforestation releases CO2 Loss of nutrients in soils Disruption of the food web Loss of indigenous people's traditional way of life (31% of indigenous lands already logged illegally) 	Eco-tourism this creates jobs for local people. The money is used to protect the TRF
Logging	Cutting down hardwood trees to sell.		International agreements to protect TRF's
Mining	Digging to extract iron, copper and gold to sell.		Selective logging of mature trees ensures that the rainforest canopy is preserved.
Building roads	Logging companies, cattle ranches, and mines need roads to reach them, this increases the accessibility of the rainforests and increases deforestation.		
Urban growth	Increasing population = increasing urban areas.		
Subsistence farming	Local farmers clear the land using slash and burn and grow only enough food for their family to eat. This causes 20% of deforestation in the rainforest.		

5 Desert food web



Interactions within hot deserts



DESERT

Conditions:
Hot (cold at night)
Extremely dry

Summary:
Main store = Soil
Slow transfer (due to dryness)

Plant adaptation in deserts	6	Animal adaptation in deserts
Cacti: Can store up to 5 tonnes of water. Thorns or spikes to stop animals from eating them and reduce transpiration.	Perennial plants Desert perennials often survive by remaining dormant during dry periods of the year, then springing to life when water becomes available.	Camels: <ul style="list-style-type: none"> Second set of eyelashes Wide feet so as not to sink into the sand Storing fat in humps
		Fennec Fox: <ul style="list-style-type: none"> Nocturnal for cooler temperatures Burrowing to avoid hot surface temperatures

7 Desertification - causes	Reducing the risk of desertification
Population growth - the population in some desert areas is increasing. In places where there are developments in mining and tourism, people are attracted by jobs.	Planting more trees - the roots of trees hold the soil together and help to reduce soil erosion from wind and rain.
Overgrazing - an increasing population results in larger desert areas being farmed. Sheep, cattle and goats are overgrazing the vegetation. This leaves the soil exposed to erosion	Magic stones – Large stones are laid in lines along the contour lines of the land, smaller stones were placed behind the large stones, sediment accumulates along the stone line instead of being washed away.
Climate change - the global climate is getting warmer. In desert regions conditions are not only getting warmer but drier too. On average there is less rain now in desert regions than there was 50 years ago	Water management - water can be stored in earth dams in the wet season and used to irrigate crops during the dry season. This is an example of using appropriate technology to manage water supplies in the desert environment.

8 Case Study – The Thar Desert – India

Development Opportunities	Challenges of developing hot deserts
<ul style="list-style-type: none"> Tourism - tens of thousands visit every year to see the Jaisalmer fort, attend the annual desert festival or to explore the desert by camel safari. Local people benefit by providing food and accommodation or acting as guides. Mineral extraction - Sanu limestone and gypsum are mined and used in the building industry. These minerals are used all over India and exported across the world. Energy production - The Jaisalmer Wind Park is the largest wind turbine farm in India. The project provides renewable electricity to the Northern regional electricity grid. 	<ul style="list-style-type: none"> Water shortages - Low annual rainfall – water is a scarce resource. High temps and strong winds mean high evaporation rates. Demand for water is increasing as population grows and farming and industry have developed. Accessibility - High temps cause tarmac to melt. Strong winds blow sand over roads. Some places are only accessible by camel Extreme temperatures - High evaporation rates – results in water shortages affecting people and plants and animals. Working outside in the heat of the day is difficult for farmers.

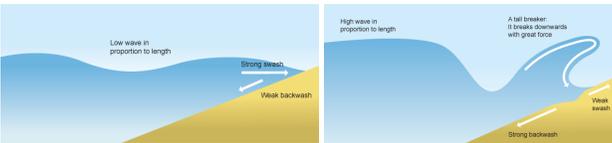
<p>1.1 Identify the 4 layers of the rainforest.</p> <p>1.2 Describe the shrub layer of the rainforest.</p> <p>1.3 How tall do the trees grow in the emergent layer?</p> <p>1.4 Why are there so few plant in the under canopy?</p>	<p>3.1 Describe the nutrient cycle.</p> <p>3.2 Explain why there is such high biodiversity in the rainforest (biomass).</p> <p>3.3 Why is there such a lack of nutrients in the soil?</p> <p>3.4 What is the role of bacteria and funghi?</p> <p>3.5 How do the nutrients get from the soil back to the biomass.</p>	<p>5.1 Describe the climate of the desert?</p> <p>5.2 Why are deserts hot?</p> <p>5.3 Why is cold at night?</p> <p>5.4 Are deserts found in low or high pressure areas? Explain why.</p>	<p>7.1 Identify 2 causes of desertification.</p> <p>7.2 Explain how overgrazing causes desertification.</p> <p>7.3 Identify two strategies used to reduce the risk of desertification.</p> <p>7.4 Explain how planting more trees can reduce the risk of desertification.</p> <p>7.5 Describe what magic stones are.</p> <p>7.6 Explain how magic stones can reduce the risk of desertification.</p>
<p>2.1 What adaptation allows the emergent trees to grow so tall?</p> <p>2.2 What are drip tips?</p> <p>2.3 How do drip tips help plants in the rainforest?</p> <p>2.4 How have sloths adapted?</p> <p>2.5 How does this help the sloth?</p> <p>2.6 How does the prehensile tail help the monkey in the rainforest.</p>	<p>4.1 Identify two causes of deforestation.</p> <p>4.2 Explain how road building increases the risk of deforestation.</p> <p>4.3 Identify two impacts of deforestation.</p> <p>4.4 Describe selective logging.</p> <p>4.5 Explain how ecotourism can help reduce deforestation.</p>	<p>6.1 What adaptation allows cacti to survive even though the rainfall is unreliable?</p> <p>6.2 Describe how cacti reduce water loss from heat.</p> <p>6.3 Identify two adaptations of the camel.</p> <p>6.4 Describe how the fennec fox has adapted to the desert.</p>	<p>8.1 Name the desert used as your case study.</p> <p>8.2 Identify two opportunities.</p> <p>8.3 Identify two challenges.</p> <p>8.4 Explain how mineral extraction can help develop the desert.</p> <p>8.5 Explain why the climate can limit development in the desert.</p> <p>8.6 Explain why accessibility can limit development.</p>

Key Information: The UK has a range of diverse landscapes

1	Key terms	Definitions
	Deposition	Occurs when material transported by the sea is dropped due to the sea losing energy
	Erosion	The wearing away and removal of material by a moving force
	Longshore drift	Zig zag movement of sediment along the shore caused by swash and backwash
	Mass movement	The downhill movement of weathered material under the force of gravity
	Transportation	The movement of eroded material
	Wave fetch	The distance the wind blows over the surface of the sea

Key Information: The coast is shaped by a number of physical processes

Constructive waves	Destructive waves
Powerful swash, Weaker backwash Long wave length, Low wave height Gentle beach	Weak swash, Strong backwash Short wave length, Higher wave height Steep beach



3	Weathering	The breakdown of rocks caused by the day-to-day changes in the atmosphere. Weathering attacks the top of the cliff.
	Freeze-thaw	Water collects in cracks. At night this water freezes and expands. The cracks get larger. In the day the temperature rises and the ice melts (thaws). The repeated freezing and thawing weakens the rock = breaks apart
	Biological weathering	Plant roots grow in cracks in the rocks and break them apart. Animals burrow into weak rocks and break it apart.
	Chemical weathering	Carbon dioxide and sulphur dioxide mix with rainwater to produce acid rain. This reacts with rocks. e.g. $\text{rainwater} + \text{CO}_2 = \text{carbonic acid}$. $\text{Carbonic acid} + \text{calcium carbonate}$ (in rocks such as limestone) = calcium bicarbonate which is soluble = rock dissolves.

Mass movement	Downward movement of material under the influence of gravity
Sliding	Land moves downhill along a line of weakness
Slumping	Rotational slip of saturated soil and weak rock
Rock falls	Fragments of rock break away from the cliff face

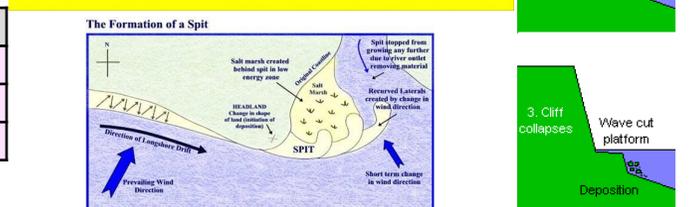
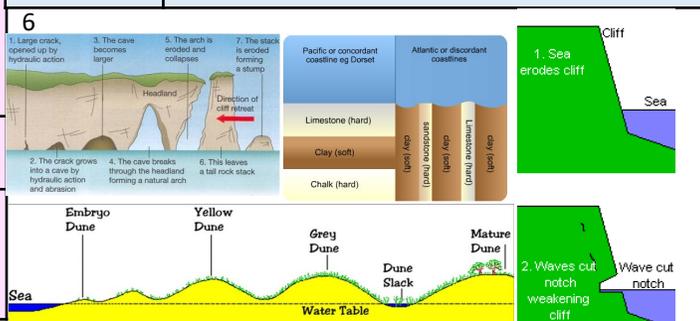
GCSE Physical Landscapes in the UK – Coasts Knowledge Organiser

4 Erosion and Transportation

Erosion	The wearing away or removal of rocks.
Hydraulic Action	The force of the waves hitting the cliffs removes material
Abrasion	Material in the sea hits against the cliffs and removes rocks and soil, like sandpaper.
Solution	Chemicals in the water dissolve the cliff.
Attrition	Material in the sea crash into each other and break into smaller pieces.

Key Information: Distinctive coastal landforms are the result of rock type, structure and physical processes

Key terms	5	Definitions
Arch		A wave eroded passage through a headland
Bar		When a spit grows across a bay to create a lagoon
Beach		The zone of deposited material that extends from the low water line to the limit of storm waves
Cave		Large hole in the cliff caused by waves forcing their way into cracks in the cliff
Cliff		A steep high rock face formed by weathering and erosion along the coastline
Headlands and bays		Headlands are promontories of resistant rock and bays lie in between where these have been eroded back
Sand dunes		Coastal sand hill above the high tide mark
Spit		A finger of sediment extending from the shore caused by deposition
Stack		An isolated pillar of rock left when an arch has collapsed
Wave cut platform		A rocky level shelf representing the base of retreated cliffs



Swanage – erosional features	Durdle Door (arch) Durlston Head (headland) Durlston Bay (bay) Old Harry (stack)
Swanage – depositional features	Studland sand dunes Poole Harbour – spit

Key Information: Different management strategies can be used to protect coastlines from the effects of physical processes

7	Beach nourishment	The addition of new material to a beach artificially. Cheap (£500,000 per 100 metres), easy to maintain, constant maintenance, sand from seabed destroys organisms
	Beach reprofiling	Changing the profile or shape of the beach
	Dune regeneration	Action taken to build up dunes and increase vegetation to strengthen the dunes and prevent excessive coastal retreat. Maintains natural environment, cheap, time consuming, areas off limit, limited area £200 – £2000 per 100 metres
	Gabion	Steel wire mesh filled with boulders. £50,000 pre 100 metres. Cheap, improves cliff management, unattractive, last 5 – 10 years
	Groyne	Wooden barrier built out into the sea to stop longshore drift. £150,000 each, cheap, widen beach, unattractive, causes problems down the coast
	Hard engineering	Use of concrete and large artificial structures to defend the coast
	Managed retreat	Allowing cliff erosion to occur as nature takes its course. Cheap, natural process, loss of land, relocation of people
	Rock armour	Large boulders dumped on the beach as part of the coastal defences. £20,000 per 100 metres, quick to build, expensive to transport rock, rocks might not blend in
	Sea wall	A concrete wall to reflect the energy of the sea and prevent erosion. £5000 - £10,000 a metre, effective barrier, promenade on top, expensive, high maintenance
	Soft engineering	Managing erosion by working with natural processes

8 Example of a coastal management scheme : Lyme Regis, Dorset England (coastal town popular with tourists)

Reasons for management	Unstable cliffs Powerful waves from the south west cause rapid erosion Sea wall has breached many times causing destruction to properties
Management strategy	Lyme Regis Environmental Improvement scheme set up in 1990s. Phase 1 & 2 included: New sea wall and promenade Cliff stabilisation Sand and shingle beach to absorb wave energy Phase 4 New sea wall for extra protection Cliffs stabilised to protect peoples homes Total cost: £43 million (phase 3 did not go ahead due to costs)
Resulting effects and conflicts	Positives: New beaches have increased visitor numbers and seafront businesses are doing well. New defences have withstood stormy winters and the harbour is better protected. Negatives: Increased visitor numbers have created conflicts due to traffic congestion and litter. Some think the new defences spoil the natural landscape and the new sea wall interferes with natural processes causing further erosion downstream.

<p>1.1 Define deposition?</p> <p>1.2 What is erosion?</p> <p>1.3 What is longshore drift?</p> <p>1.4 Define mass movement?</p> <p>1.5 What is transportation?</p> <p>1.6 Define the term fetch?</p>	<p>3.1 Identify the three types of weathering.</p> <p>3.2 Define mass movement</p> <p>3.3 Describe chemical weathering</p> <p>3.4 Describe the process of a rockfall</p> <p>3.5 Describe a landslide</p> <p>3.6 How do landslides differ from slumping?</p> <p>3.7 Describe biological weathering</p> <p>3.8 Describe the process of freeze-thaw weathering</p>	<p>5.1 What are headlands and bays?</p> <p>5.2 Define a spit.</p> <p>5.3 Define a wave cut platform</p> <p>5.4 Define a beach.</p>	<p>7.1 What is dune regeneration and is it an example of soft or hard engineering?</p> <p>7.2 Identify a disadvantage of sea walls.</p> <p>7.3 Describe the strategy of groynes, which process do they interrupt.</p> <p>7.4 Give a disadvantage to managed retreat.</p> <p>7.5 How does building sea walls help to manage flooding?</p> <p>7.6 Give an advantage and disadvantage to beach nourishment.</p>
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<p>2.1 Name the two types of waves</p> <p>2.2 Describe the properties of a constructive wave</p> <p>2.3 Describe the properties of a destructive wave</p> <p>2.4 Identify two differences between constructive and destructive waves</p> <p>2.5 Which wave erodes material from the beach?</p> <p>2.6 Which wave has the strongest swash?</p>	<p>4.1 Name the 4 types of erosion.</p> <p>4.2 Name the 4 types of transportation.</p> <p>4.3 Describe the process of longshore drift.</p> <p>4.4 Define attrition</p> <p>4.5 Define hydraulic action</p> <p>4.6 Describe how traction differs from saltation.</p> <p>4.7 Which type of erosion is also a type of transportation?</p>	<p>6.1 Describe the formation of a wave cut platform.</p> <p>6.2 Describe the formation of a spit.</p> <p>6.3 Describe the formation of a stack starting from the crack in the cliff face.</p> <p>6.4 Describe the sequence of dune formation beginning with an embryo dune.</p>	<p>8.1 Name the area of coast used as your example of coastal management.</p> <p>8.2 Why was management of the coast necessary?</p> <p>8.3 What was done as part of phase 1 and 2?</p> <p>8.4 What happened to phase 3?</p> <p>8.5 Describe phase 4.</p> <p>8.6 Identify two positives of the scheme.</p> <p>8.7 Identify two negatives of the scheme.</p>
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History Paper 3 – Germany- Topic 1: Treaty of Versailles and Weimar Germany 1919-29

Treaty of Versailles and Weimar Germany 1919-29: Timeline

Treaty of Versailles and Weimar Germany 1919-29: Key Questions

1	9th Nov 1918	Kaiser abdicates (resigns from being monarch)	19	Why was ToV so harsh?	<ol style="list-style-type: none"> The war had led to millions of deaths, almost 10 million servicemen The war destroyed thousands of building and communities e.g. Ypres in Belgium No previous war had caused as much damage . People were very angry with Germany
2	11 th Nov 1918	Armistice (ceasefire) signed. Politicians who sign this called 'November Criminals' by Nazis	20	Why did German's think ToV was too harsh	<ol style="list-style-type: none"> Reparations too high. Germans supported politicians who promised to stop paying them (like the Nazis) War Guilt was very embarrassing. Causing Germans to support politicians who promised to rip up the admission. (like the Nazis) Felt defenceless. Caused them to support politicians who promised to rebuild the army. (like the Nazis) Losing land was humiliating and harmed the economy. Caused them to support politicians who promised to take the land back. (like the Nazis)
3	Jan 1919	Spartacist Uprising			
4	June 1919	Treaty of Versailles signed			
5	August 1919	Weimar Constitution signed			
6	1920	Kapp Putsch	21	What threats did Weimar Republic face 1919-23?	<ol style="list-style-type: none"> 1919 Spartacist Uprising- communists led by Rosa Luxemburg tried to take control of Berlin. Stopped by right wing groups e.g. Freikorps 1920 Kapp Putsch. General Kapp tried to take over Berlin. Stopped by a general strike 1923 French Invasion of the Ruhr. Germany stopped paying reparations. In response France invaded the Ruhr area to take coal and steel. In response the German government told workers to go on strike. To pay the striking workers the government printed more paper money. 1923 Hyperinflation: printing money led to prices increasing and the value of the mark decreasing rapidly. In November 1923 a loaf of bread cost 200 million marks. Germans were starving and could not afford rent or fuel. 1923 Munich Putsch; Nazis tried to take control of Munich the capital of the German region of Bavaria.
7	Jan 1923	French invasion of Ruhr			
8	Nov 1923	Hyperinflation			
9	Nov 1923	Munich Putsch			
10	1924	Dawes Plan			
11	1925	Locarno Pact			
12	1926	Germany joins League of Nations	22	Causes of Weimar economic Recovery	<ol style="list-style-type: none"> 1923 Retenmark. New currency put an end to hyperinflation 1924 – Dawes Plan – loans to Germany from USA 1929 Young Plan – reduced monthly reparations payments
14	1929	Young Plan			
15	1929	Peter Kurten , the 'Vampire of Dusseldorf' murders 11 people			
16	1930	The film 'Blue Angel' is Released	23	'Who experienced a Golden Age 1925-29?	<ol style="list-style-type: none"> Women gained the right to vote and became doctors and teachers. Women gained social freedoms e.g. go out alone to bars, smoke and drink alcohol. Artists like George Grosz painted modern art that criticised old fashioned ideas. There was massive increase in cinema attendances with film stars like Marlene Dietrich in 'The Blue Angel' being very popular Factory owners and the rich had no debts because of hyperinflation. Jobs: Germany a leader in steel and chemical production. Factory workers wages increased by 60%. Housing improved. The Weimar government built 2 million new homes. Homelessness fell by 60%. Bauhaus architecture improved workers housing
Treaty of Versailles and Weimar Germany 1919-29. key words					
17	Treaty Of Versailles; terms BRAT	<p>B = Blame. Germany had to take blame for the war. War Guilt Clause; 231. The part of Treaty Germans hated the most. Humiliating.</p> <p>R = Reparations; compensation to Allies. Set at £6.6 billion in 1921</p> <p>A = Army; limited to 100,000 men. No air force, no tanks, no submarines</p> <p>T = Territory; Germany lost land e.g. Alsace-Lorraine, Saar, all African colonies</p>	24	Who did not experience a Golden Age 1925-29?	<ol style="list-style-type: none"> Germans with traditional views disliked social changes, modern art, cinema music and architecture Traditional Germans blamed increases in crime on social changes e.g. –Peter Kurten 'The Vampire of Dusseldorf Middle class savings were wiped out by hyperinflation. The price of wheat was very low meaning farmers were very poor Many disabled soldiers were not paid their war pension because the Weimar Government was disorganised
18	Hyperinflation	When prices rise quickly and the value of money decreases quickly.			

History Paper 3 — Germany- Topic 2: Nazi Party 1919-33

Timeline			Key Events		
1	1919	Hitler joins German Workers Party (DAP)	15	Hitler's early Life	<ol style="list-style-type: none"> 1. Devastated by the death of his mother in 1907 2. Shortly after he was rejected from art college, destroying his dream of becoming an artist 3. For the next 5 years Hitler slept rough in parks and earned pennies painting postcards
2	1920	25 Point Programme released – DAP changes it's name to National Socialist German Workers Party (NSDAP) or Nazi for short.	16	Hitler in World War I	<ol style="list-style-type: none"> 1. Hitler volunteered to fight in World War I 2. He won the highest German medal for bravery. The Iron Cross First Class 3. He felt betrayed by the Weimar Politicians signed the armistice. He saw them as 'November Criminals' 4. He believed in the 'Dolchstoß' – 'stab in the back' myth. That communists and Jews had betrayed Germany by causing the armistice.
3	1921	Hitler becomes leader of the Nazi Party	17	Early Nazi Party	<ol style="list-style-type: none"> 1. 1919 Hitler joins the DAP. Hitler started making speeches at meetings and discovered he was good at public speaking 2. He discovered that people agreed with the topics he spoke about e.g. November Criminals, Dolchstoß, hatred of the ToV, hatred of Jews, Hatred of communists. 3. 1920 Nazis publish 25 Point Plan. Included ideas about cratering an Empire, excluding Jews from society and destroying the ToV 4. 1921 becomes leader- 'Führer' - of Nazi Party. Hitler decides that he should have ultimate power and be questioned by no one. This called the <i>Führerprinzip</i> (Führer principle) 5. 1921 SA (brownshirts) formed to protect the Nazi Party.
4	Nov. 1923	Nazi Party has 55,000 members			
5	Nov. 1923	Munich Putsch			
6	1924	Hitler writes 'Mein Kampf' whilst in prison	18	Causes of Munich Putsch 1923	<ol style="list-style-type: none"> 1. The Nazis thought the time was right to take power by force in November 1923. 2. Long term; hatred of the ToV, in particular war guilt and reparations. Hatred of November Criminals and Weimar Republic. 3. Short term: Nazi popularity increased; membership reached 50,000. War hero General Ludendorff gave his support to the Nazis. The French invaded the Ruhr and the Weimar Government did not fight back. 4. Trigger: hyperinflation made living conditions terrible and the Weimar government even more unpopular.
7	1924-1929	The 'Lean Years'.	19	Consequences of Munich Putsch 1923	<ol style="list-style-type: none"> 1. Hitler's trial was a propaganda success. 2. In prison Hitler wrote Mein Kampf which set out his beliefs 3. Hitler changed tactics; the Nazis would gain power by elections. The Nazis were not very successful at gaining votes until after 1929. Therefore 1925-29 was called the 'Lean Years' by the Nazis. 4. He announced changes at the Bamberg Conference in 1926 e.g creation of Hitler Youth and the SS, Hitler's personal bodyguard. 5. However, economic success of Weimar Republic 1925-29 means Nazis are not successful in elections. Known as the Lean Years
8	1926	Hitler Youth created			
9	1926	SS. Hitler's bodyguard created.			
10	1929	Wall Street Crash . US stock market crashed causing the whole world to suffer economically in the Great Depression .	20	Causes increase in popularity of Nazis 1929-33	<ol style="list-style-type: none"> 1. 1929 Wall Street Crash causes the Great Depression. USA recalls loans from Germany. By 1932 6 million workers are unemployed. 2. Weimar Government had no money to deal with the serious economic problems caused by the Depression 3. This resulted in increasing support from extremist parties promising to solve the problem of unemployment by sharing resources e.g. the Communist party (KPD). This worried the middle class, upper class and farmers who did not want to share their money and land. 4. The Nazis exploited the problem of unemployment and fear of communism to gain support. They promised jobs for the workers and to destroy the KPD 5. Hitler repeated these messages again and again in persuasive speeches that led to increased support 6. Josef Goebbels was Head of Propaganda and used clever tactics to increase support. e.g. slogans, posters, rallies, newspapers, radio, aeroplanes 7. Rich, communist fearing businessmen e.g. Krupp, Bosch and Thyssen paid for propaganda that led to increased support. 8. Nazis win 230 seats in the Reichstag. 37% of the vote in July 1932
11	1932	6 million German workers unemployed			
12	1932	Hitler uses an aeroplane to visit 5 cities in one day and give speeches			
13	July 1932	Nazis win 230 seats in the Reichstag. 37% of the vote	21	Hitler becomes Chancellor 1933	<ol style="list-style-type: none"> 1. Bruning bans the SA. Brüning planned to buy land from farmers and give it to the unemployed. Both ideas are very unpopular 2. Brüning resigns and is replaced by von Papen Von Papen suggests abolishing the Weimar constitution as it keeps failing to provide stable governments 3. Von Schleicher warns Hindenburg that this will lead to Civil War. Hindenburg forces von Papen to resign. 4. Hindenburg appoints von Schleicher as Chancellor. He plans to create a Querfront (cross front). With a range of different Parties in a coalition, including the communists. 5. Papen and Hitler persuaded Hindenburg that this meant communists would take over. Hindenburg sacked von Schleicher 6. Papen said he would control Hitler. He said he could 'make Hitler squeak'. 7. Hitler becomes Chancellor on 30th January 1933
14	January 1933-	Hitler becomes Chancellor of Germany (equivalent of Prime Minister in Britain)			

History Paper 3 – Germany- Topic 3: Control through the Police State

Timeline			Key Events		
1	February 1933	Reichstag Fire	14	Hitler becomes dictator of Germany 1934	<ol style="list-style-type: none"> February 1933 Reichstag Fire. A Communist is arrested for starting the fire. Hitler uses Article 48 to pass the Decree for the Protection of German People. This allows him to arrest over 4000 communists. This allows the Nazis to gain more seats in the Reichstag. March 1933 Reichstag passes the Enabling Act. This gave Hitler the power to make laws without the Reichstag's approval. In effect the Reichstag voted it self out of existence. Germany was no longer a democracy. Hitler was dictator. May 1933 Hitler removes left wing opposition. Hitler banned all political parties except for the Nazi Party. This meant the Communist Party and the SPD could not longer oppose Hitler. Hitler also banned trade unions. This meant that workers could not organise resistance to the Nazis. June 1934 Night of the Long Knives. Hitler removes opposition within his party. On 30th of June 1934 Ernst Rohm and 100 SA leaders were invited to a meeting. When they arrived they were arrested by the SS and shot. August 1934 Hindenburg died. Hitler merged the jobs of Chancellor and President. He made himself Fuhrer of Germany. August 1944. Army swore loyalty to Hitler, his power was secure with the army's support.
2	February 1933	Decree for the Protection of German People			
3	March 1933	Enabling Act			
4	May 1933	Hitler bans Trade Unions and all other Political Parties			
5	May 1933	First book burning			
6	1933	First concentration camp built at Dachau			
7	July 1934	Night of the Long Knives			
8	August 1934	Hindenburg died	15	How did the SS control Germany?	<ol style="list-style-type: none"> Set up by Heinrich Himmler in 1925 The SD (Sicherheitsdienst). The SD spied on opponents, and informed the Gestapo who to arrest. Gestapo: Led by Reynhard Heydrich. Used information from the SD to arrest and imprison opponents. Concentration camps. first concentration camp crated 1933 at Dachau. People arrested by the Gestapo would be sent to the camps as punishment. People's Courts. Hitler controlled the courts so that it was more difficult for anyone to oppose him. Opponents did not receive fair trials. This scared people into obedience.
9	August 1934	Hitler merges Chancellor and President and becomes Fuhrer of Germany			
10	August 1934	Army swears oath of loyalty to Hitler as Fuhrer			
11	1934	People's court created	16	Propaganda methods	<ol style="list-style-type: none"> Posters: encouraged loyalty and respect for Hitler. Others criticised Jews and communists. Rallies and parades. Meant to show power and strength. Phots of rallies in newspapers. Films were shown in cinemas e.g 1935 rally in Nuremberg filmed called 'Triumph of the Will' Radio: Cheap People's Radios beamed Hitler's speeches directly into German homes. Film: Even entertainment films had Nazi messages. E.g. Hitler Youth Quex. anti communist. Art:. promoted family life and hard work. Berlin Olympics: 1936, meant to show superiority of Aryan race and encourage sport
12	1935	'Triumph of the Will released'			
13	1936	Berlin Olympics			
17	Censorship methods	<ol style="list-style-type: none"> Book burning: students burnt books in Berlin by Jews and communists Newspapers: Nazi newspaper Volkischer Beobachter = 'People's Observer'. All other papers banned Radio; People's Radios could not receive foreign stations like the BBC Art and Music: modern art and jazz was banned 			
18	Opposition from Church	<ol style="list-style-type: none"> Catholics: Catholic priests criticised the Nazis and were arrested and sent to concentration camps. 400 were sent to Dachau by 1939. These priests were seen as martyrs and Catholic churches were packed every Sunday. This opposition was limited to criticising Hitler in church and giving loyalty to the Pope. It was never a serious threat to the Nazi regime. Protestants. Protestant Pastors who criticised the Nazis were arrested and sent to concentration camps. Pastor Niemoller organised the 'Confessional Church' was imprisoned at Dachau between 1938 and 1945. However, this opposition was limited to criticising Hitler. It was never a serious threat to the Nazi regime. 			
19	Opposition from Youth	<p>Edelweiss Pirates</p> <ul style="list-style-type: none"> Edelweiss Pirate groups were working class children. They listened to banned swing music and wrote anti Nazi graffiti They wore clothes considered extreme by the Nazis. Dark shorts, checked shirts and white socks They had fights with local groups of Hitler Youth They loved the countryside and often went hiking and camping. <p>the Swing Youth</p> <ul style="list-style-type: none"> Swing Youth organised parties to dance to American swing music, smoke and drink alcohol. They did not take part in the activities of the Hitler Youth. 			

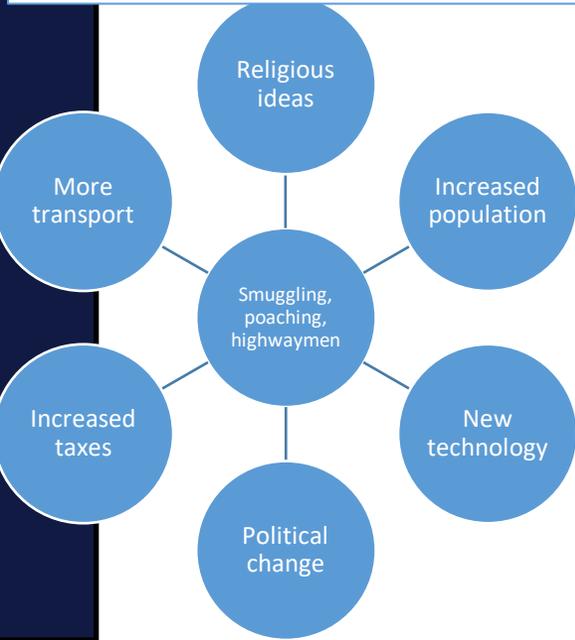
History Paper 3 – Germany- Topic 4: Life in Nazi Germany 1934-39

Timeline			14	Policies to women	<ol style="list-style-type: none"> Marriage and Family : Women were encouraged to be married, be housewives and raise large, healthy, German families. 1933 Law for the Encouragement of Marriage gave loans to married couples with children. 1933 the Sterilisation Law forced people to be sterilised if they had a physical or mental disability. As a result 320,000 were sterilised . On Hitler's Mother's Birthday, 12th August, medals were given out to women with large families. They also received 30 marks per child. Lebensborn 'source of life', unmarried Aryan women could 'donate a baby to the Fuhrer' by becoming pregnant by 'racially pure SS men' Appearance: long hair worn in a bun or plaits. Discouraged from wearing trousers, high heels, make up or dyeing and styling their hair. Work: Propaganda encouraged women to follow the three K's – Kinder Kuche and Kirsche – 'children cooking and church'. The Nazis sacked female doctors and teachers. Concentration camps: Women who disagreed with Nazi views, had abortions and criticised the Nazis were sent to concentration camps. By 1939 there were more than 2000 women imprisoned at Ravensbruck.
1	1933	Law for the Encouragement of Marriage	15	Policies to youth	<ol style="list-style-type: none"> Education: <ul style="list-style-type: none"> Schools: performance in PE more important than academic subjects. Separate schools for boys and girls Napola schools were run by the SS. They focussed on military training and fitness. After leaving school students went straight into the army. Adolf Hitler Schools were for the best members of the Hitler Youth. They focussed on Nazi policies and glorifying Hitler. After leaving school students went to work for the Nazi Party itself. Teachers: compulsory for teachers to join the Nazi Party, those that refused were sacked Subjects boys; the was an focus on military training, girls extra lessons on cookery and sewing to encourage them to be good housewives. Taught in biology about the superiority of the Aryan race. Taught that Jews and other races were inferior and Germans should not marry these races. Youth groups <ul style="list-style-type: none"> Hitler Youth (boys) <ul style="list-style-type: none"> 1936 membership was compulsory for all children from the ages of 14-18 Boys wore a military style uniform and completed activities deigned to prepare them for the army e.g. shooting weapons, camping, marching, League of German Maiden's (Girls) <ul style="list-style-type: none"> This was the girls branch of the Hitler Youth. Girls wore uniforms, but learnt cookery, housework, caring for babies and small children, looking after their future husband.
2	1933	the Sterilisation Law			
3	1934	Jews banned from public spaces e.g. parks and swimming pools			
4	1936	Hitler Youth Compulsory			
5	1933	Boycott of Jewish shops led by SA			
6	1935	Nuremburg Laws – Reich Citizenship Law and Law for the Protection of German Blood			
7	1936	Membership of Hitler Youth compulsory			
8	1936	Jews banned from professions e.g. doctors teachers, lawyers			
9	1938	Kristallnacht			
10	1935	Reich Labour Service			
11	1936	Rearmament starts			
12	1938	Strength through Joy KdF created			
13	1938	Volkswagen 'sold' to workers			
16	Policies to minorities	<p>Anyone who did not conform to the Nazi ideal of Aryan race or having a large family was persecuted e.g. Jews, gypsies, mentally and physically disabled and homosexuals.</p> <ol style="list-style-type: none"> 1933: Boycott of Jewish shops by SA removed economic rights 1934 : Jews were banned from public spaces such as parks and swimming pools, removed social rights 1935: Nuremburg Laws –Reich Citizenship Law: meant that only Aryans could be German citizens. Jews lost all their rights, including the right to vote, removed political rights. Law to protect German Blood: made marriage or sexual relationships between Aryans and Jews illegal removed social rights 1936: Jews banned from professions, doctor, lawyer, teacher, removed economic rights 1938 9 November, Kristallnacht Goebbels organised attacks across Germany on Jewish shops, homes and synagogues. 100 Jews were killed and 20,000 were arrested and sent to concentration camps. 7500 Jewish businesses and 191 synagogues were destroyed. Economic and social rights removed 1939: Jews banned from Aryan schools. Jews forced to live in ghettos. Removed social rights. 			
17	Polies for employment and living standards	<p>The Nazis were successful at reducing unemployment. In1932 6 million were unemployed. By 1939 it was 300,000.</p> <ul style="list-style-type: none"> Reich Labour Service: 1935 it was compulsory for all men aged 18-25 to serve in the Reich Labour Service for 6 months , clearing leaves from parks, working on farms Public building programmes Nazis spent billions on public building programmes. E.g. swimming pools, schools and autobahn (motorways) 37 billion marks by 1938 Building the autobahn employed 125, 000 men. Rearmament: Hitler reintroduced conscription. The army grew from 100,000 men in 1933, to 1.4 million men by 1939. Millions of men were employed producing goods the for the army Billions were spent on making weapons; tanks, aircraft and ships invisible unemployment: Nazis used sneaky tactics to keep the official unemployment figures down. Official figures did not include the following. Jews, housewives not counted in statistics <p>Nazi Policies to raise living standards 1933-1939 – The German Workers Front (DAF)</p> <ul style="list-style-type: none"> Strength Through Joy set up trips, for example, concerts, theatre, museum, sporting events, camping holidays and cruises to other countries. St In 1938 10 million Germans went on trios organised by Strength Through Joy . Few workers could afford the cruises Beauty of Labour A department of Strength through Joy that improved working conditions. Building better canteens, swimming pools and sports facilities. However, few workers wanted to use their spare time to build these Volkswagen the 'People's Car' (Volkswagen) scheme. Workers could pay 5 marks a month, eventually allowing them to own their own car – a luxury usually only available to the very rich. However, no worker ever received a Volkswagen. 			

20th century crime Mastery test

1. Write the crime being described and the factor causing the crime:

- Car theft
- Computer
- crime
- Terrorism
- Drug smuggling
- Drink driving
- Not wearing a seat belt
- Benefit fraud
- Domestic violence



<p>Mick Philpott lived with his wife, girlfriend and 6 children. He controlled the house through aggression and fear. He took money from the two women so he did not have to work. When they threatened to leave him he burnt down their house and the 6 children died.</p> <p>April 2013</p>	<p>In Britain cars have had to have seat belts by law since 1968. But it wasn't the law that you had to wear a seat belt until 1983.</p>	<p>The 7 July 2005 London bombings (often referred to as 7/7) were a series of coordinated suicide bomb attacks in central London which targeted civilians using the public transport system during the morning rush hour.</p> <p>Four Islamist extremists separately detonated three bombs in quick succession. Fifty-two civilians were killed</p>	<p>Recent research suggest there are 300 major importers into the UK, 3,000 wholesalers, and 70,000 street dealers.¹ The illegal drug market in the UK has been estimated at £4–6.6 billion a year (based on 2003/04 figures).</p>
<p>Crime:</p> <p>Factor causing the crime:</p>	<p>Crime:</p> <p>Factor causing the crime:</p>	<p>Crime:</p> <p>Factor causing the crime:</p>	<p>Crime:</p> <p>Factor causing the crime:</p>
<p>A COUNCIL fraud squad in Scotland nabbed 24 benefit cheats during 2009 The team found £175,498 of benefits had been overpaid. This was by people claiming jobseekers allowance when working. Or housing benefit when the are sub letting their property.</p>	<p>Government Report 2011: Cyber crime costs the UK £27 billion a year. Cyber crimes include scammers and hacking people's accounts to steal credit cards</p>	<p>June 2014 Corey Davies, 20, had been drinking alcohol when he took his sister and her partner out for a spin in his new white convertible BMW, The engaged couple had a nine-week-old son Harley left orphaned by the tragic death of his parents.</p>	<p>The BMW X5 is the most stolen car in Britain, new figures revealed yesterday/Wednesday.</p> <p><i>Daily Mirror, March 2015</i></p>
<p>Crime:</p> <p>Factor causing the crime:</p>	<p>Crime:</p> <p>Factor causing the crime:</p>	<p>Crime:</p> <p>Factor causing the crime:</p>	<p>Crime:</p> <p>Factor causing the crime:</p>

20th Century Punishment Mastery test

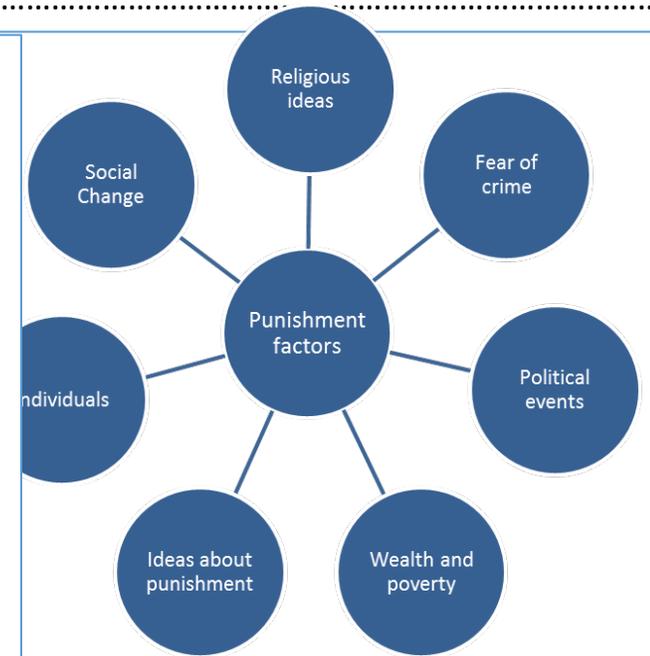
1. Which of these statements is untrue.
- Transportation is used today as a punishment
 - Parole is 20th Century punishment
 - Fines were used in the middle ages and today
 - The Death Penalty was abolished the 1960's in Britain
 - Prisons especially for under 18s were created.

2. Describe 3 things that happened the night Derek Bentley was arrested

- i).....
.....
.....
- ii).....
.....
.....
- iii).....
.....
.....

What is a conscientious objector?

Why were conscientious objectors treated differently from World War I to world War II?



3. The factor that lead to modern day punishments is _____
This is because _____
Another factor that lead to modern day punishments is _____ This is because _____

The Norman Conquest!

The 3 Claimants		
1	Edwards the Confessor	The very religious English King who died without leaving the country with an heir
2	Heir	The person who should be next in line for the throne.
3	Witan	The group of noblemen who select and crown the new King.
4	Harold Godwinson	The Earl of Essex who was the most powerful nobleman in England. He was chosen by the Witan to become King. He also claimed that Edward had selected him as King on his deathbed. His sister is the wife of Edward the Confessor.
5	William of Normandy	Powerful French Duke who claimed Edward offered him the throne. He had previously helped Edward in a series of battles.
6	Harald Hardrada	King of Norway who also had a claim to the throne of Denmark. The Vikings had previously been ruled by Norwegian Kings before 1042 (when Edward took the throne of England). Was a brave fighter and was supported by Tostig Godwinson – Harold Godwinson's brother.

Stamford Bridge		
7	Invasion	Both William and Harald Hardrada prepared armies to invade England after Harold Godwinson was named King. Hardrada landed in the North of England.
8	Preparation	Harold prepared his own army to defend England.
9	Decision	Harold marched his army to the North of England in order to defend from the threat of Harald Hardrada (who had just landed). Harald had landed in England with 300 Viking longboats. Harald Hardrada immediately declared himself King of England.
10	March	Harold marches 198 miles to the North of England. The march took a total of 5 days. Harold's men became exhausted.
11	Surprise Attack	Harold's army take the Viking's by surprise,. Hardrada had not anticipated the English marching North so quickly. His men are caught resting.
12	Shield Wall	Harold's army break through the tight Viking formation known as the shield wall. This places Harold Godwinson in a strong position to win the battle.
13	Battle of Stamford Bridge	The battle in which Harold Godwinson defeats Harald Hardrada. Hardrada is forced to return to Norway. Only 24 out of his 300 ships return home after the battle.
Consequences		
14	Fatigue	A state of extreme tiredness. Harold's army would have been in a state of fatigue after the lengthy march North, intense subsequent battle, and resultant march south.
15	Elimination of rival claimant	The removal of a clear rival to the throne. The battle of Stamford Bridge ensured Harold could divert all of his resources to fighting on single frontier against William.
16	Depletion of army and resources	The act of running out of, or becoming extremely low on key equipment and personnel. Many of Harold's best warriors had been killed at Stamford Bridge, leaving his army depleted and increasingly vulnerable to William. Harold could usually count on having over 2000 Housecarls fight with him. But over half of these men had been killed at Stamford Bridge.

Battle of Hastings		
17	Housecarl	Professional soldiers, highly trained, who are fiercely loyal to Harold. They carry shields and wear protective gear.
18	Fyrd	Working men who called up to help the King in times of danger. They were trained as fighters and carried swords and spears. Many joined Harold's army on the march south from Stamford Bridge. Ordinary working men used their farming tools like pitchforks to fight.
19	Wind	When sailing, boats would be dependent on the wind to carry them safely across seas. William was fortunate that the wind changed direction in his favor while Harold was fighting at Stamford Bridge.
20	William's army	<ul style="list-style-type: none"> Norman Knights. William's best soldiers who were well-paid, highly trained, and loyal. They carried heavy iron clubs covered in spikes. They rode on horseback. Norman Archers. These were trained and well paid members of the army. Wore little armor. Could fire 6 arrows a minute, and kill a man from 180 meters.
21	Senlac Hill	The hill on which Harold positioned his army. Maintaining the high ground was a key feature of medieval battle.
22	Rumour	A rumour began to circulate that William had been killed. He removed his helmet to show his face and reassure his soldiers.
23	Shield Wall	Harold's Housecarls formed a shield wall which was difficult to penetrate.
24	Trick	Norman soldiers attacked up the hill and feigned retreating in order to tempt the English off the top of the hill. The Fyrd chase the Normans, leaving the protection of the Shield Wall. They are massacred by the Normans.
25	Harold's Death	Harold Godwinson is shot in the eye by an arrow from a Norman archer. This caused some of the Fyrd to become fearful and run away. The Housecarls protect Harold's body but are killed.
Factors for William's victory		
26	Luck → 19	
27	William's preparation → 19, 20	
28	William's leadership → 22, 24	150
29	Harold's weaknesses → 10, 13, 14, 16, 18	

Norman Changes

Social Changes

1	Anglo-Saxon	The people who had previously inhabited England, prior to the Norman Conquest.
2	Norman	The French invaders and occupiers of England in 1066.
3	Society	The term used to define the world people live in, and the way they communicate within this world.
4	Feudal System	The system of hierarchy introduced by the Normans in order to maintain control.
5	Baron	Powerful members of the highest class in England, who rented land off the King in return for their loyalty.
6	Tenant	The name given to someone who rents land off of the King.
7	Peasant	The individuals at the bottom of the Feudal System. They were the most populous group in England, and were mainly farmers.
8	Hierarchy	A rigid structure which places people in order of their social importance.
9	Social upheaval	The process through which one group in society is displaced by another, more dominant group.

Impact of social change

10	Erosion of Saxon Culture	Anglo-Saxon culture withered and died soon after the Norman conquest. Saxon beer halls were replaced by Norman castles full of French-speaking wine-drinkers.
11	Linguistic change	The English language became greatly influenced by the arrival of French-speaking Normans. Terms such as 'tremble' and 'fierce.'

Political Changes

12	Politics	The word relating to the running of a country.
13	Law and Order	The system through which new laws are created in England in order to ensure that the country stays under control.
14	Trial by ordeal	A method used to determine if someone was guilty of committing a crime or not. The accused would be forced to hold a hot iron rod for 5 seconds. If their hand healed, they were innocent, if not, they were guilty.
15	Trial by combat	A Norman method of trial where the victim and the accused would fight to the death to determine someone's guilt.
16	Wergild	A Saxon fine paid to the victim of a murdered person's family.
17	Murdum	A Norman fine paid to the King in cases of murder.
18	Motte and Bailey Castle	A castle made of wood and mud that was easy to erect.
19	Stone walled castle	A castle made of stone fortifications that was difficult to penetrate.

Impact of political change

20	Security of the crown	The English crown was secured for William as he eliminated Saxon influence in England.
21	Norman Justice	Norman justice was established, giving William a method through which he could control his population through the rule of law.
22	Physical security	William gave himself physical security over England due to the building of castles. These were left as a constant reminder of Norman dominance.

Economic Changes

23	Economics	Anything that relates to money and income.
24	Taxation	A system through which people pay money to the King or government. The King may use this money as he pleases.
25	Domesday Book	A survey ordered by William I that collected information about all of the people in England. It was used to determine how much wealth people had.
26	Census	A survey which identifies the quantity of people in England, and their overall income.
27	Royal Revenue	The money given to the King through taxation and other methods.

Impact of economic change

28	Increased Royal Revenue	William's personal income increased dramatically, allowing him to spend money on the building of castles and church's, in order to ensure Norman influence in England.
29	Resentment of the population	William's increased taxation did lead some members of the English population resentful, as they were now being taxed unlike ever before. William's sheriffs delved deeper into English life than any previous monarch.

	The 3 claimants
	Stamford Bridge + consequences
	Battle of Hastings
	Social Changes
	Political changes
	Economic changes