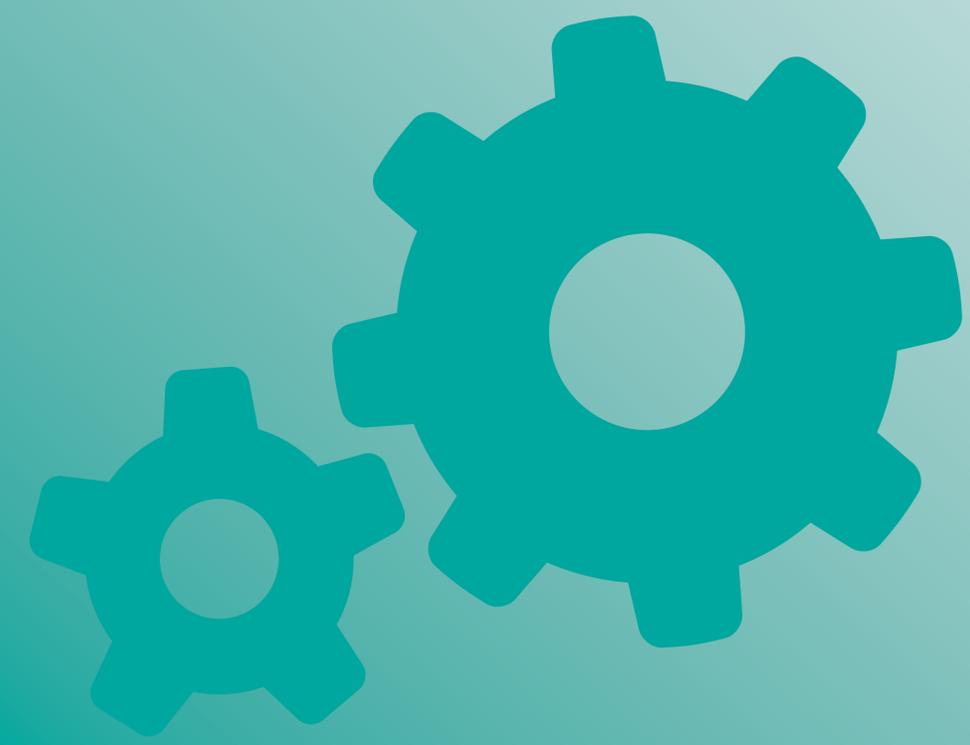


Maths





Important vocabulary	
\neq	Means "not equal to"
\approx	Means "approximately equal to"
Indices	Indices means "powers". In is the plural of index (power).
$\sqrt[3]{8}$	The number where if you multiply it by itself and then by itself again you will get the answer. $2 \times 2 \times 2 = 8$
Factors	Numbers which divide exactly into another number
Multiples	A particular number's times tables
Integers	Whole numbers
Primes	Only divisibly by 1 and itself

Important Information																													
<p>Order of Operations</p> <p><u>B</u>rackets</p> <p><u>I</u>ndices</p> <p><u>D</u>ivision</p> <p><u>M</u>ultiplication</p> <p><u>A</u>ddition</p> <p><u>S</u>ubtraction</p>	<p>Numerical Fluency: Addition Subtraction Multiplication and Division using Negative Numbers.</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px;"> $-5 \times -4 = 20$ $-4 - (-9) = 5$ $35 + (-7) = -5$ </div> <div style="border: 1px solid black; padding: 5px;"> <table style="font-size: 2em; text-align: center;"> <tr><td>+</td><td>x</td><td>-</td><td></td><td>+</td><td>+</td><td>+</td></tr> <tr><td>-</td><td>x</td><td>+</td><td></td><td>-</td><td>x</td><td>-</td></tr> <tr><td>+</td><td>+</td><td>-</td><td></td><td>+</td><td>+</td><td>+</td></tr> <tr><td>-</td><td>+</td><td>+</td><td></td><td>-</td><td>+</td><td>-</td></tr> </table> </div> </div> <p>In index notation, the number that is being multiplied by itself is called the base. The number written above the base is called the index or the power. The index tells you the number of times that the base must be multiplied by itself.</p> <p style="text-align: center; color: red;">Index or power</p> <p>Base $\rightarrow 10^{11} = 10 \times 10$</p>	+	x	-		+	+	+	-	x	+		-	x	-	+	+	-		+	+	+	-	+	+		-	+	-
+	x	-		+	+	+																							
-	x	+		-	x	-																							
+	+	-		+	+	+																							
-	+	+		-	+	-																							

$x^m \times x^n$	x^{m+n}
$x^m \div x^n$	x^{m-n}
$(x^m)^n$	$x^{m \times n}$
x^0	1



How to Use Key Facts							
Terms	<p>A term is a number, a letter, or a number and a letter multiplied together.</p> <p>Like terms contain the same letter to the same power (or do not contain a letter). You can simplify an expression by collecting like terms.</p> <p>$3x$ $7x$ These are 'like terms' as the letters are the same.</p> <p>$3x$ $7y$ $2x^2$ These are not 'like terms' as the letters are different or the powers are different.</p> <p style="text-align: right;">expression $3x + 1$ ↑ ↑ terms</p>						
Simplifying Terms	<p>Terms can be simplified when multiplying or dividing, even when they are not like terms.</p> <p>$a \times b = ab$ $x \div y = \frac{x}{y}$</p> <p>When multiplying:</p> <ul style="list-style-type: none"> • write letters in alphabetical order • write numbers before letters <div style="border: 1px solid orange; padding: 5px; width: fit-content;"> <p>$3x \times 2y = 6xy$ $5a^2 \times 6a^{-4} = 30a^{-2}$ $a^2 + 4a^2 - 2a^2 = 3a^2$</p> <p>Remember the power does not change when you are adding and subtracting</p> </div>						
Writing Expressions	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Nine add a number x</td> <td style="padding: 5px; text-align: right;">$9 + x$</td> </tr> <tr> <td style="padding: 5px;">Fourteen take a number p</td> <td style="padding: 5px; text-align: right;">$14 - p$</td> </tr> <tr> <td style="padding: 5px;">Seven less than a number t</td> <td style="padding: 5px; text-align: right;">$t - 7$</td> </tr> </table> <div style="border: 1px solid orange; padding: 5px; margin-top: 10px;"> <p>The cost of a badger is b pence. A racoon is 5 pence more expensive than a badger and a beaver three times as expensive as a badger.</p> <p>a) cost of a racoon? $b + 5$ b) cost of a beaver? $3(b + 5)$ c) cost of a racoon and 8 badgers? $b + 5 + 8b = 9b + 5$</p> </div>	Nine add a number x	$9 + x$	Fourteen take a number p	$14 - p$	Seven less than a number t	$t - 7$
Nine add a number x	$9 + x$						
Fourteen take a number p	$14 - p$						
Seven less than a number t	$t - 7$						
How to Use Key Facts							
Substitution	<p>When $x = 2$ and $y = 5$ work out the value of</p> <p>a $x + y$ b xy c $\frac{5x}{y}$ d $4x + 3y$</p> <p>a $2 + 5 = 7$ b $2 \times 5 = 10$ c $5 \times 2 \div 5 = 10 \div 5 = 2$ d $4 \times 2 + 3 \times 5 = 8 + 15 = 23$</p> <p style="border: 1px solid red; padding: 2px; display: inline-block;">Replace x and y with the values given.</p> <p style="border: 1px solid red; padding: 2px; display: inline-block;">Use the priority of operations.</p>						
Expand Single Bracket	<div style="border: 1px solid yellow; padding: 5px; text-align: center;"> <p>$3(a + 4) + 4(a + 2)$</p> <p>$3a + 12 + 4a + 8$</p> <p>$= 7a + 20$</p> </div>						
Expand more than 1 bracket and collect like terms	<div style="border: 1px solid blue; padding: 5px;"> <p>$4(x + 3) = 4x + 12$ $4 \times x = 4x$ $4 \times 3 = 12$</p> <p>$5(2x + 4) = 10x + 20$ $5 \times 2x = 10x$ $5 \times 4 = 20$</p> </div>						
Factorising	<p>When factorising you need to Take out as high a factor as Possible.</p> <p>Example : $12t^2 + 6t$</p> <p>Although $3(4t^2 + 2t)$ is factorised it is not the Highest factor</p> <p>$6t(2t + 1)$ is fully factorised.</p>						

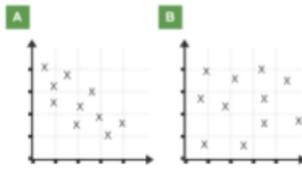
How to use key Facts

Look through
These examples

Factorise	Answer
$7x + 14$	$7(x + 2)$
$45 - 27k$	$9(5 - 3k)$
$12ab + 7b$	$b(12a + 7)$
$y^2 - 9y$	$y(y - 9)$
$8t - 32t^2$	$8t(1 - 4t)$
$16gh + 28gf$	$4g(4h + 7f)$
$21w^2z - 77wx$	$7w(3wz - 11x)$

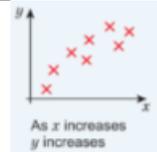


A **scatter graph** shows the relationship between 2 sets of data. Plot the points with crosses do not join them up.

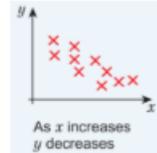


Scatter Graphs

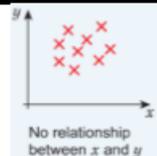
Positive Correlation



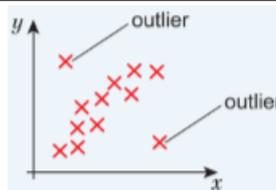
Negative Correlation



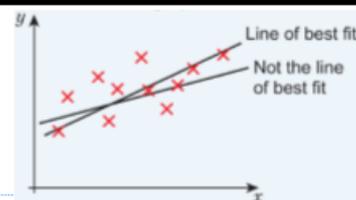
No Correlation



Outlier



Line of Best Fit



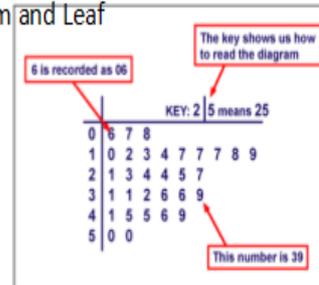
Important Information

Inequality

$>$ greater than \geq greater than or equal
 $<$ less than \leq less than or equal

An inequality is a mathematical sentence. $30 < y \leq 31$ means that a number (y) is greater than 30 but less than or equal to 31.

Stem and Leaf



A stem and leaf diagram shows numerical data split into a 'stem' and 'leaves'. The leaf is usually the last digit and the stem is the other digits.

In a stem and leaf diagram the numbers are placed in order.

Two Way Tables

	English	Maths	Science	Total
Girls	20	13		50
Boys		15		
Total	38		40	

You can use a two way table to show how data falls into 2 different categories, for example gender and favourite subject at school.



F, D, P	
Rules for Simplifying Fractions	<p>Whatever you multiply the numerator by you must do the same to the denominator.</p> <p>Whatever you divide the numerator by you must do the same to the denominator.</p>
Proving Equivalent Fractions	If we simplify the fractions so that they have the same denominator in both fractions we can see if they are equivalent.
Adding and subtracting Fractions	<p>Both fractions must have the same denominator. Therefore you need to find the LCM of both denominators.</p> <p>Once we have changed both fractions so that they have the same denominator we simply add or subtract the numerators. (Not the denominators)</p> <p style="text-align: center;">Work out $\frac{2}{3} + \frac{1}{9}$.</p> $\frac{2}{3} + \frac{1}{9} = \frac{6}{9} + \frac{1}{9} = \frac{7}{9}$ <p style="border: 1px solid red; padding: 2px; display: inline-block;">The LCM of 3 and 9 is 9. Write the fractions with denominator 9 and then add.</p>
Calculating Fractions of an amount	<p>Divide the amount by the denominator and multiply your answer by the numerator.</p> <p style="text-align: right;"> $\frac{4}{5}$ of 40 = 32 $\frac{1}{5}$ of 40 = 8 $8 \times 4 = 32$ </p>
Adding and subtracting Mixed numbers	Convert Mixed Numbers to Improper fractions before adding or subtracting.
Multiplying Fractions	<p><u>Multiply Numerators</u>, $\frac{2}{5} \times \frac{6}{7} = \frac{2 \times 6}{5 \times 7} = \frac{12}{35}$</p> <p><u>Multiply Denominators</u></p> <p>Always simplify your Answer $\frac{1}{4} \times \frac{2}{3} = \frac{1 \times 2}{4 \times 3} = \frac{2}{12} = \text{reduces to } \frac{1}{6}$</p>

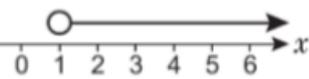
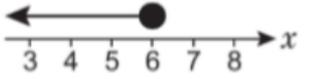
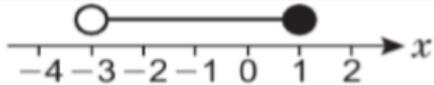


Dividing Fractions	KFC Keep the first fraction as it is Flip the second fraction over Change the sign
Multiplying or Dividing Mixed Numbers.	Change into Improper Fractions then multiply Or divide $1\frac{3}{4} \times 2\frac{1}{2} = ?$ $\frac{7}{4} \times \frac{5}{2} = \frac{35}{8} = 4\frac{3}{8}$ <p><small>1x4 + 3 = 7 2x2 + 1 = 5</small></p>
Fractions to Decimals	3 / 4 means 3 divided by 4. Use standard long division to turn Fractions into decimals. $\begin{array}{r} 3 \\ 4 \overline{) 3.00} \\ \underline{-28} \\ 20 \\ \underline{-20} \\ 00 \end{array}$
Fractions to percentage	Write your fraction as an Equivalent fraction over 100. The numerator is the percentage

Percent-ages	
Calculating Percentage of an amount without calculator	Calculate 10% , 5%, 1% Using these amounts make up the required percentage. 76% of £30.00 10% = 3.00, 5% = 1.50, 1% = 0.30 76% = (7 x 10%) + (1 x 5%) + (1 x 1%)
Calculating Percentage of an amount with calculator	Write the percentage as a decimal and multiply the two numbers. I.e 80% of £60.00 (80% = 0.8) = 0.8 x 60 = £54.00
Increase by percentage	Find the percentage By finding 10%, 5% and 1% and adding. Then add to original value <p>Increase 30 by 10%. 10% of 30 = 3 30 + 3 = 33</p>
Decrease by Percentage	Find the percentage By finding 10%, 5% and 1% and adding. Then add to original value <p>Decrease 60 by 30%. 30% of 60 = 0.3 x 60 = 18 60 - 18 = 42</p>

Denominator	The bottom number in a fraction.
Numerator	The top number in a fraction.
Mixed Number	A whole number and a fraction combined into one "mixed" number. Example: 1½ (one and a half) is a mixed number.
Improper Fraction	A fraction where the numerator (the top number) is greater than or equal to the denominator (the bottom number).
Percentage	Parts per one hundred. Percent means literally for every 100.
Reciprocal	The reciprocal of a number is: 1 divided by the number



Inequality	Numberline
Represent greater than and less than on number line	Draw a circle above the relevant number 
Represent greater than or equal to and less than or equal to number line	Draw a filled circle above the relevant number 
$x > 1$	
$x \leq 6$	
$-3 < x \leq 1$	

Solving Inequalities

Solve: $x + 3 < 7$

If we subtract 3 from both sides, we get:

$$x + 3 - 3 < 7 - 3$$

$$x < 4$$

And that is our solution: $x < 4$

In other words, x can be any value less than 4.



Key facts to memorise—Rules of Indices

Index Laws	
$x^m \times x^n$	x^{m+n}
$x^m \div x^n$	x^{m-n}
$(x^m)^n$	$x^{m \times n}$
x^0	1
x^{-n}	$\frac{1}{x^n}$
$x^{\frac{1}{n}}$	$\sqrt[n]{x}$
$x^{\frac{m}{n}}$	$(\sqrt[n]{x})^m$

Surds	
$\sqrt{a} \times \sqrt{b}$	$\sqrt{(a \times b)}$
$\sqrt{a} \times \sqrt{a}$	a
$\frac{\sqrt{a}}{\sqrt{b}}$	$\sqrt{\frac{a}{b}}$
$\frac{b}{\sqrt{a}}$	$\frac{b}{\sqrt{a}} \times \frac{\sqrt{a}}{\sqrt{a}} = \frac{b\sqrt{a}}{a}$
$a\sqrt{c} \pm b\sqrt{c}$	$(a \pm b)\sqrt{c}$
$\frac{c}{a+b\sqrt{n}}$	multiply top and bottom by $a - b\sqrt{n}$

$$\frac{a^7}{a^3} = a^4$$

$$\begin{aligned} 3a^2 \times 2a^3 &= (3 \times 2) \times (a^2 \times a^3) \\ &= 6a^5 \\ (6a^2)^3 &= 6^3(a^2)^3 = 216a^6 \end{aligned}$$

$$5^{-2} = \frac{1}{5^2} = \frac{1}{25}$$

$$7^{-3} = \frac{1}{7^3} = \frac{1}{343}$$

$$64^{\frac{1}{3}} = \sqrt[3]{64} = 4$$

$$\left(\frac{81}{100}\right)^{-\frac{1}{2}} = \left(\frac{100}{81}\right)^{\frac{1}{2}} = \frac{\sqrt{100}}{\sqrt{81}} = \frac{10}{9}$$

$$36^{\frac{3}{2}} = (36^{\frac{1}{2}})^3 = (\sqrt{36})^3 = 6^3 = 216$$

$$\left(\frac{27}{8}\right)^{-\frac{2}{3}} = \left(\frac{8}{27}\right)^{\frac{2}{3}} = \left(\frac{8^{\frac{1}{3}}}{27^{\frac{1}{3}}}\right)^2 = \left(\frac{\sqrt[3]{8}}{\sqrt[3]{27}}\right)^2 = \left(\frac{2}{3}\right)^2 = \frac{4}{9}$$

Higher - Number

(a) $\sqrt{7} \times \sqrt{3} = \sqrt{21}$

(b) $\sqrt{8} \times \sqrt{2} = \sqrt{16} = 4$

(c) $3\sqrt{5} \times 2\sqrt{2} = 3 \times 2 \times \sqrt{5 \times 2} = 6\sqrt{10}$

(d) $3\sqrt{2} + 5\sqrt{2} = 8\sqrt{2}$

(e) $\sqrt{18} \div \sqrt{3} = \sqrt{\frac{18}{3}} = \sqrt{6}$

(f) Simplify $\sqrt{32} \Rightarrow \sqrt{32} = \sqrt{16 \times 2} = \sqrt{16} \sqrt{2} = 4\sqrt{2}$

Index Form	To write a number to a power or an index. 2^3 is written in index form. 3 is the power or index.
Surd	A number that can't be simplified to remove a square root (or cube root etc). <ul style="list-style-type: none"> • $\sqrt{2}$ (square root of 2) can't be simplified further so it is a surd • $\sqrt{4}$ (square root of 4) CAN be simplified to 2, so it is NOT a surd
Rationalise Denominator	Getting rid of any surds from the bottom (denominator) of fractions. Usually when you are asked to simplify an expression it means you should also rationalise it.

(a) $\frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$ (sometimes written as $\frac{1}{2}\sqrt{2}$)

(b) $\frac{3}{2\sqrt{3}} = \frac{3}{2\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{2 \times 3} = \frac{3\sqrt{3}}{6} = \frac{\sqrt{3}}{2}$

Expanding brackets containing surds

(a) $(\sqrt{5} + \sqrt{2})(\sqrt{3} - \sqrt{2})$
 $= \sqrt{15} - \sqrt{10} + \sqrt{6} - 2$

cannot be simplified any further because no individual surds can be simplified

(b) $(\sqrt{6} - \sqrt{2})(\sqrt{3} + 2)$
 $= \sqrt{18} + 2\sqrt{6} - \sqrt{6} - 2\sqrt{2}$

↓ simplify

$= 3\sqrt{2} + 2\sqrt{6} - \sqrt{6} - 2\sqrt{2}$
 $= \sqrt{2} + \sqrt{6}$

(c) $(3 + \sqrt{5})^2$
 $= (3 + \sqrt{5})(3 + \sqrt{5})$
 $= 9 + 3\sqrt{5} + 3\sqrt{5} + 5$
 $= 14 + 6\sqrt{5}$



Key facts to memorise— Standard Form

Example—Standard Form	
Standard Form	$A \times 10^n$ <p>number between 1 and 10 times sign power of 10</p>
87000	8.7×10^4
0.0000087	8.7×10^{-6}
Ordinary Number	You can convert from standard form to ordinary numbers, and back again.
8.7×10^4	87000
8.7×10^{-3}	0.0087

Extra Information—Number Problems and Reasoning

When there are m ways of doing one task and n ways of doing a second task, the total number of ways of doing the first task then the second task is:

$$m \times n$$

Exam-style question

Jess has a 4-digit password for her mobile phone. Each digit can be between 0 and 9 **inclusive**.

- How many choices are possible for each digit of the code?
- What is the total number of 4-digit passwords that Jess can create? Jess would like to choose an even number. The code can start with a zero.
- How many different ways are possible now?



How to Use Key Facts	
Terms	<p>A term is a number, a letter, or a number and a letter multiplied together.</p> <p>Like terms contain the same letter to the same power (or do not contain a letter). You can simplify an expression by collecting like terms.</p> <p>$3x$ $7x$ These are 'like terms' as the letters are the same.</p> <p>$3x$ $7y$ $2x^2$ These are not 'like terms' as the letters are different or the powers are different.</p> <p style="text-align: right;">expression $3x + 1$ ↑ ↑ terms</p>
Simplifying Terms	<p>Terms can be simplified when multiplying or dividing, even when they are not like terms.</p> <p>$a \times b = ab$ $x \div y = \frac{x}{y}$</p> <p>When multiplying:</p> <ul style="list-style-type: none"> • write letters in alphabetical order • write numbers before letters <p style="border: 1px solid orange; padding: 5px; display: inline-block;"> $3x \times 2y = 6xy$ $5a^2 \times 6a^{-4} = 30a^{-2}$ $a^2 + 4a^2 - 2a^2 = 3a^2$ Remember the power does not change when you are adding and subtracting </p>
Writing Expressions	<p>Nine add a number x $9 + x$</p> <p>Fourteen take a number p $14 - p$</p> <p>Seven less than a number t $t - 7$</p> <p style="border: 1px solid orange; padding: 5px; display: inline-block;"> The cost of a badger is b pence. A racoon is 5 pence more expensive than a badger and a beaver three times as expensive as a badger. a) cost of a racoon? $b + 5$ b) cost of a beaver? $3(b + 5)$ c) cost of a racoon and 8 badgers? $b + 5 + 8b = 9b + 5$ </p>

How to Use Key Facts	
Substitution	<p>When $x = 2$ and $y = 5$ work out the value of</p> <p>a $x + y$ b xy c $\frac{5x}{y}$ d $4x + 3y$</p> <p>a $2 + 5 = 7$</p> <p>b $2 \times 5 = 10$</p> <p>c $5 \times 2 \div 5 = 10 \div 5 = 2$</p> <p>d $4 \times 2 + 3 \times 5 = 8 + 15 = 23$</p> <p style="border: 1px solid red; padding: 2px; display: inline-block;">Replace x and y with the values given.</p> <p style="border: 1px solid red; padding: 2px; display: inline-block;">Use the priority of operations.</p>
Expand Single Bracket	<p style="border: 1px solid yellow; padding: 5px; display: inline-block;"> $3(a + 4) + 4(a + 2)$ $3a + 12 + 4a + 8$ $= 7a + 20$ </p>
Expand more than 1 bracket and collect like terms	<p>$4(x + 3) = 4x + 12$ $4 \times x = 4x$ $4 \times 3 = 12$</p> <p>$5(2x + 4) = 10x + 20$ $5 \times 2x = 10x$ $5 \times 4 = 20$</p>
Factorising	<p>When factorising you need to Take out as high a factor as Possible.</p> <p>Example : $12t^2 + 6t$</p> <p>Although $3(4t^2 + 2t)$ is factorised it is not the Highest factor</p> <p>$6t(2t + 1)$ is fully factorised.</p>

Factorising Quadratics

Factorising Quadratic Expressions



Example 3: Factorise the following quadratic equation

$x^2 + 9x + 18$

$= (x + \quad)(x + \quad)$

Your answer will always look like this

Your task is to find two numbers so that their product is the last term and their sum is the middle term

factors of 18

1	18
2	9
3	6

For this example you must find two numbers that multiplied together give 18 (write down the factors of 18) and added together gives 9 (circle the two numbers) write these two numbers in the brackets

• Difference of Two Squares

$$a^2 - b^2 = (a + b)(a - b)$$

1. **Must** be subtraction.
2. Both terms **must** be perfect squares.

Determine if the problem is a difference of two squares.

Ex. $9x^2 - 16$
= Yes

Ex. $x^2 - 64$
= Yes

Ex. $4x^2 - 10$
= No

Now you try.

Ex. $x^2 - 100$
= Yes

Ex. $49x^2 - 20$
= No

Ex. $x^2 - 16x$ 12
= No

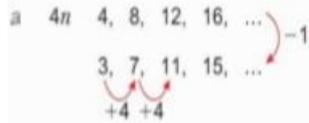


HOW TO USE KEY FACTS

Arithmetic /

Linear Sequence

a Work out the n th term of the sequence 3, 7, 11, 15, ... b Is 45 a term of the sequence?



The n th term is $4n - 1$.

The common difference is 4. Write out the first five terms of the sequence for $4n$, the multiples of 4. Work out how to get from each term in $4n$ to the term in the sequence.

Geometric Sequence

Geometric Sequence

A geometric sequence has a common ratio.

The formula for the n th term is

$$a_n = ar^{n-1}$$

where a_n = n th term of the sequence

a = first term of the sequence

r = common ratio

HOW TO USE KEY FACTS

Quadratic

Sequence

Find a formula for the n th term of the sequence 8, 23, 48, 83, 128, ...



Work out the second differences.

So $a = 10 \div 2 = 5$

The formula has a $5n^2$ term in it.

Halve the second difference to find the coefficient of n^2 .

$5n^2$	5	20	45	80	125
Sequence	8	23	48	83	128

Compare the given sequence with $5n^2$.

The n th term is $5n^2 + 3$

The numbers in the second row are 3 more than those in the first row.

Changing the Subject of an Equation or Formula

a Make a the subject of the formula $v^2 = u^2 + 2as$

b Make x the subject of the formula $y = \frac{ax+b}{c}$

a $v^2 = u^2 + 2as$

b $y = \frac{ax+b}{c}$

$v^2 - u^2 = 2as$ Subtract u^2 from both sides.

$cy = ax + b$ Multiply both sides by c .

$\frac{v^2 - u^2}{2s} = a$ Divide both sides by $2s$.

$cy - b = ax$ Subtract b from both sides.

$a = \frac{v^2 - u^2}{2s}$ Re-write in the form $a = \dots$

$\frac{cy - b}{a} = x$ Divide both sides by a .

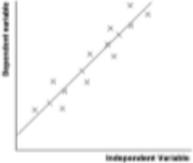
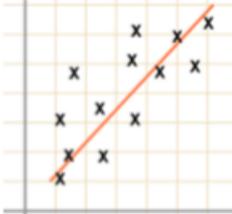
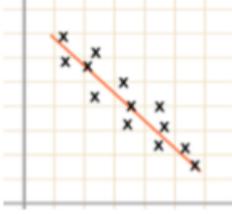
$x = \frac{cy - b}{a}$ Re-write in the form $x = \dots$

HOW TO USE KEY FACTS

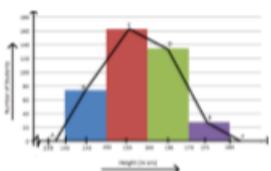
Algebraic Index laws

Rule	Example	Rule	Example
$a^m \times a^n = a^{m+n}$	$2^5 \times 2^3 = 2^8$	$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$	$\left(\frac{5}{6}\right)^2 = \frac{25}{36}$
$a^m \div a^n = a^{m-n}$	$5^7 \div 5^3 = 5^4$	$a^{-m} = \frac{1}{a^m}$	$9^{-2} = \frac{1}{81}$
$(a^m)^n = a^{m \times n}$	$(10^3)^7 = 10^{21}$	$a^{\frac{x}{y}} = \sqrt[y]{a^x}$	$49^{\frac{1}{2}} = \sqrt{49} = 7$

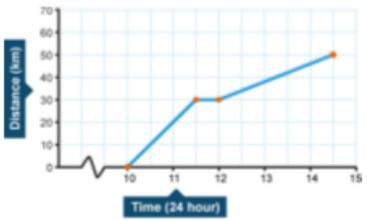


Key Facts to Memo- rise		
Correlation	<p>Correlation may be positive or negative (sometimes there is no correlation)</p> <p>Correlation shows that there may be a link between 2 events . It does not show</p>	
Line of best fit	<p>A line of best fit is a straight line drawn through the middle of the points on a scatter graph. It should pass as near to as many points as possible and represent the trend of the points</p>	
Positive Correlation	<p>Positive Correlation is a relationship between two variables in which both variables increase.</p>	
Negative Correlation	<p>Negative Correlation is a relationship between two variables such that as the value of one variable increases, the other decreases.</p>	
No Correlation	<p>No Correlation means there is no relationship between the variables.</p>	



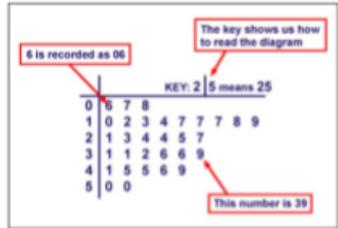
<p>Frequency Polygon</p> 	<p>A frequency polygon is a graph made by joining the midpoints of the tops of the bars in a bar chart with straight lines</p>
<p>Pie Chart</p> 	<p>A pie chart is a circle divided into sectors. Each sector represents a set of data.</p>
<p>Outlier</p>	<p>An outlier is a value in a data set which is much larger/smaller than all the other values in the set</p>
<p>Interpolation</p>	<p>Using a line of best fit to predict data values within the range of the data given is called interpolation and is usually</p>
<p>Extrapolation</p>	<p>Using a line of best fit to predict data values outside the range of the data given is called extrapolation and may not be accurate.</p>
<p>Discrete Data</p>	<p>Can only have particular values. For example shoe sizes are usually whole numbers.</p>
<p>Continuous Data</p>	<p>Continuous data is measured and can have any values, for example length and time. Write inequalities for the groups with no gaps between them.</p>

Time Series graph



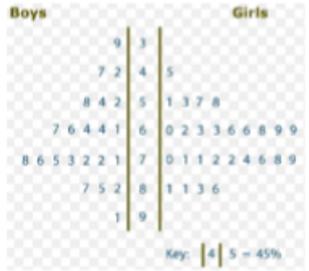
A time series graph is a line graph with time plotted on the horizontal axis.

Stem and Leaf



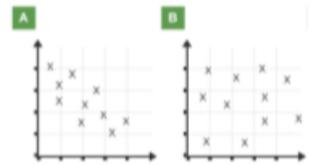
A stem and leaf diagram shows numerical data split into a 'stem' and 'leaves'. The leaf is usually the last digit and the stem is the other digits. In a stem and leaf diagram the numbers are placed in order.

Back to Back Stem and Leaf Diagram



A back to back stem and leaf diagram works the same way as a normal stem and leaf diagram but it compares two sets of data.

Scatter Graph



A scatter graph shows the relationship between 2 sets of data. Plot the points with crosses do not join them up.

Higher – Fractions, Percentages and Ratio



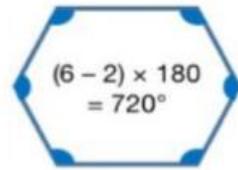
Adding or Subtracting Mixed Numbers	<p>Step 1. Convert both numbers into improper fractions.</p> <p>Step 2. Find common denominator and re write both fractions.</p> <p>Step 3. Add or subtract the numerators.</p> <p>Step 4. Always simplify the fraction.</p>
Multiplying Mixed Numbers	<p>Step 1. Convert the mixed numbers to improper fractions.</p> <p>Step 2. Multiply the numerators, Multiply the denominators.</p> <p>Step 3. Always Simplify the fraction.</p>
Dividing Mixed numbers	<p>Step 1. Convert the mixed numbers to improper fractions.</p> <p>Step 2. KFC Keep the first fraction as it is Flip the second fraction over Change the sign from divide to multiply.</p> <p>Step 3. Multiply the numerators, Multiply the denominators.</p> <p>Step 4. Always Simplify the fraction.</p>
Writing ratios in the form 1 : n	Divide both sides by the lowest number.
Comparing ratios to see which is greater	<p>Convert both ratios to the for 1 : n</p> <p>The value of n will allow you to calculate the greatest ratio.</p>
Recognise Direct proportion	<p>Y is directly proportional to x</p> <p>When as y increases or decreases x increases or decreases in proportion.</p>
Calculate amount after Percentage Increase	<p>Step 1. Calculate the decimal multiplier. If increase by 20% your final amount will be 100% + 20% = 120% Decimal multiplier = 1.2</p> <p>Step 2. Multiply your original amount by the decimal multiplier.</p>
Calculate Amount after Percentage decrease	<p>Step 1. Calculate the decimal multiplier. If decrease by 15% your final amount will be 100% - 15% = 85% Decimal multiplier = 0.8</p> <p>Step 2. Multiply your original amount by the decimal multiplier.</p>
Calculate Percentage Change	<p>Percentage Change</p> <div style="background-color: red; color: white; padding: 5px; text-align: center;"> $\frac{\text{NEW VALUE} - \text{OLD VALUE}}{\text{OLD VALUE}} \times 100$ </div>

Important Information	
Simplifying Fractions	$\frac{6}{48} \xrightarrow{+2} \frac{3}{24} \xrightarrow{+3} \frac{1}{8}$
Fractions of an Amount	$\frac{7}{10} \text{ of } 40$ $40 \div 10 = 4$ $4 \times 7 = 28$
Multiply Fractions	$\frac{3}{4} \times \frac{5}{8} = \frac{(3 \times 5)}{(4 \times 8)} = \frac{15}{32}$
Divide Fraction	<p>KFC Keep the first fraction as it is Flip the second fraction over Change the sign from divide to multiply</p>
Writing and Simplifying Ratios	<p>Divide both sides</p> <p>By the HCF</p> <p>In this case 4</p> $16 : 12 \xrightarrow{+4} 4 : 3$
Using Multiplier to Calculate amounts	<p>To find 20 % of 60</p> <p>Write 20% as decimal (divide by 100) = 0.20.</p> <p>Use Calculator to find 0.2 x 60 = 12</p>
Converting Fractions to Decimals and then to Percentage	<p>Convert into a decimal</p> <p>Multiply by 100</p> <p><small>CONVERT FRACTIONS TO DECIMALS</small></p> $\frac{2}{5} = 0.4$ <p><small>CONVERT DECIMALS TO PERCENTS</small></p> $0.4 = 40\%$
Adding and Subtracting Fractions	<p>Both fractions must have the same denominator. Therefore you Find the LCM of both denominators.</p> <p>Work out $\frac{2}{3} + \frac{1}{9}$.</p> $\frac{2}{3} + \frac{1}{9} = \frac{6}{9} + \frac{1}{9} = \frac{7}{9}$ <p>The LCM of 3 and 9 is 9. Write the fractions with denominator 9 and then add.</p> <p>Once we have changed both fractions so that they have the same denominator we simply add or subtract the numerators. (Not the denominators) Finally always simpli-</p>

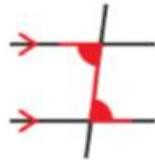


Formulae & Diagrams

Sum of Interior Angles
in a polygon with n
sides



Alternate angles are
equal



Supplementary (co-
interior) angles add up
to 180°



Trigonometric values to memorise

Value of Trigonometric Ratio

	0	30	45	60	90
Sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
Cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
Tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	As- ympto te

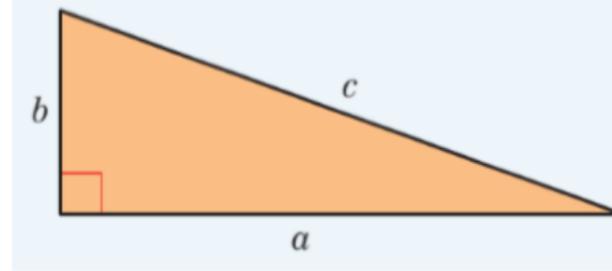
Exterior Angle of a regular Pol-
ygon

$$\frac{360}{\text{number of sides}}$$

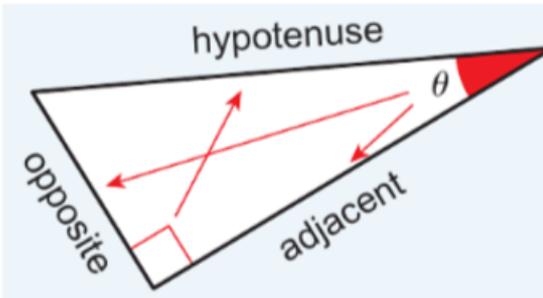


Pythagoras Theorem:

$$c^2 = a^2 + b^2$$



Identifying hypotenuse, opposite and adjacent sides in a Right Angled Triangle



Sine Ratio (sin)

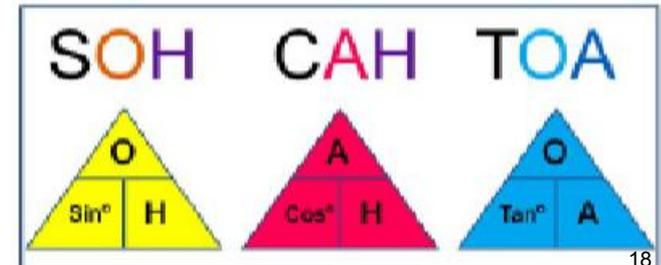
$$\sin \theta = \frac{\textit{opposite}}{\textit{hypotenuse}}$$

Cosine Ratio (cos)

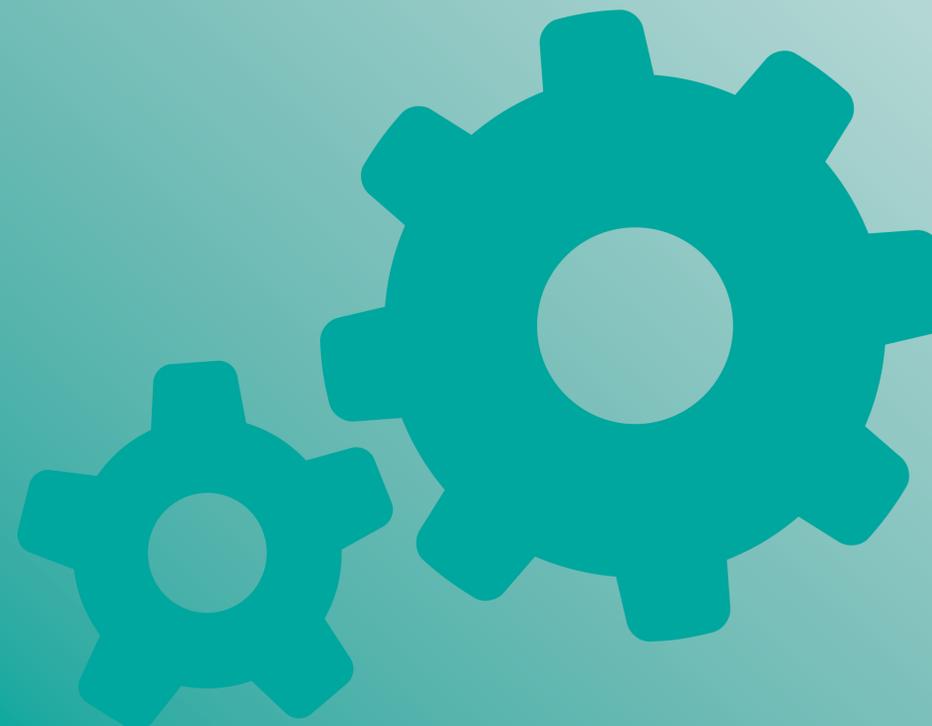
$$\cos \theta = \frac{\textit{adjacent}}{\textit{hypotenuse}}$$

Tangent Ratio (tan)

$$\tan \theta = \frac{\textit{opposite}}{\textit{adjacent}}$$



Art





A03 Record ideas, observations and insights relevant to intentions as work progresses

RECORD INTENTIONS

LINK IDEAS OBSERVATION PLANNING

PRIMARY RESEARCH RELEVANT

You need to record ideas observations and experiences in forms that are appropriate to intentions.

To fulfil this objective you need to show that you can use both primary and secondary sources to gather relevant information. Relevance is the key word here. You must be able to make accurate judgements and decide whether a piece of information is appropriate or not.



Start every project/theme with

- Drawing in different media pen, pencil, paint, pencil crayon, charcoal
- Photography
- Written notes
- Visual/creative mind map

Expectations:

- It is expected that you will complete quite a lot of work for this course through the homework programme, approximately two hours per week
- It is advisable to attend GCSE Art club sessions each week
- You will need to hand in a sketchbook as part of your portfolio component.

- Paintings**
- Pen drawing**
- Pencil tone drawing**
- Manipulated photography**
- Annotations**
- Collected images**

Assessment

At the end of each project your work will be formally assessed by you and your teacher. However as your project progresses your teacher will assess your progress both with written and verbal feedback in lessons. This should give you a good indication of how well you have met the success criteria for each assessment objective and whether you are meeting your targets. Please remember grades are not set in stone and any improvements you make to your work can be re assessed by your teacher.



AOI Develop ideas through investigations, demonstrating critical understanding of sources

DEVELOP

INVESTIGATE

EXPLAIN ARTISTS

IDEAS ANNOTATE

contextual research

EXPLORE

You need to be able to analyse and evaluate images, objects and artefacts showing understanding of context.

To fulfil this objective you need to be able to look at work, by both past and contemporary artists and assess it critically, with reference to the time and culture in which it was produced. To do this you will need to research the background of the piece and gain a good understanding of why and how the artists produced it. You could look at what his/her motives and influences were, whether the piece is exemplary of a particular movement or style, how the piece might have been received at the time etc. The examiner will also be looking to see whether you can understand and use the specialist vocabulary used in Art and Design.



- Introduce**
- Analyse**
- Annotate**
- Evaluate**
- Give opinions**
- Make Links**
- Describe**

For every theme/project you will explore

- More than one relevant artist
- Copy the artist work
- Research why and how the work was made
- Give your own opinions through written annotations

Expectations:

- It is expected that you will complete quite a lot of work for this course through the homework programme, approximately two hours per week
- It is advisable to attend GCSE Art club sessions each week
- You will need to hand in a sketchbook as part of your portfolio component.

Assessment

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Please remember grades are not set in stone and any improvements you make to your work can be reassessed by your teacher.



You need to develop and explore ideas using media, processes and resources, reviewing, modifying and refining work as it progresses.

This assessment objective allows you to demonstrate to the examiner how creative and versatile you are. You need to start with an idea or theme and develop it, exploring lots of possible solutions using different materials and techniques and processes.

A02

Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes

**REFINE
EXPERIMENT**

**EXPLORE
TECHNIQUES
AND SKILLS**

**SELECT
EXPLAIN**

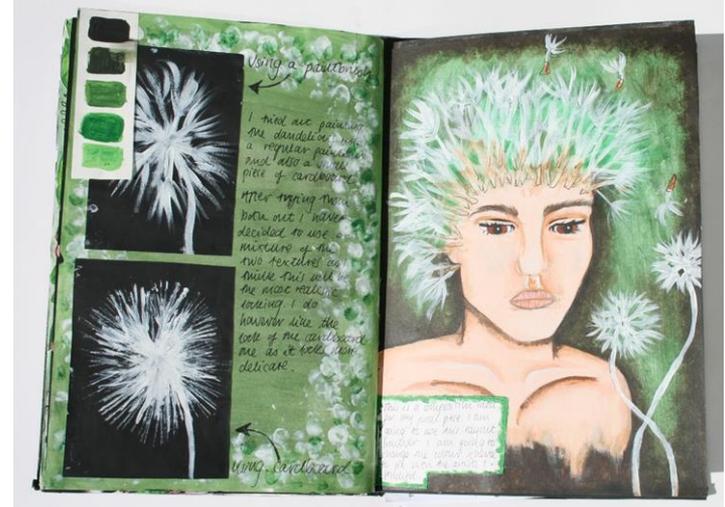
**PHOTOGRAPHS
IDEAS**

For every project/theme

Try out different materials and techniques.

Explore and experiment

Refine ideas and compositions



**Review
Select
Organise
Explore
Experiment
Refine**

Assessment

At the end of each project your work will be formally assessed by you and your teacher. However as your project progresses your teacher will assess your progress both with written and verbal feedback in lessons. This should give you a good indication of how well you have met the success criteria for each assessment objective and whether you are meeting your targets.

Please remember grades are not set in stone and any improvements you make to your work can be reassessed by your teacher.

Expectations:

- It is expected that you will complete quite a lot of work for this course through the homework programme, approximately two hours per week
- It is advisable to attend GCSE Art club sessions each week
- You will need to hand in a sketchbook as part of your portfolio component.



A04

Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language

RESPONSE

MEANINGFUL

VISUAL LANGUAGE DEMONSTRATE

UNDERSTANDING

MAKE CONNECTIONS

CONCLUSION

You need to be able to present a personal response, realising intentions and making informed connections with the work of others.

This final objective looks at all your work as a complete package; the examiner will view all of your preparatory work together with the final piece as an entire unit. They will be looking to see if you have successfully achieved what you set out to do. The examiner should be able to see connections between your own work and the work of the artists you have studied. Whatever you learned through artist research should be put to good practical use and clearly reflected in your own work.



Demonstrate skill
Communicate
Mastery
Respond
Link

Assessment

At the end of each project your work will be formally assessed by you and your teacher. However as your project progresses your teacher will assess your progress both with written and verbal feedback in lessons. This should give you a good indication of how well you have met the success criteria for each assessment objective and whether you are meeting your targets.

Please remember grades are not set in stone and any improvements you make to your work can be re assessed by your teacher.

Final pieces can be in any Fine art media

- Painting and drawing
- Sculpture
- Printmaking
- Textiles/Fashion

Expectations:

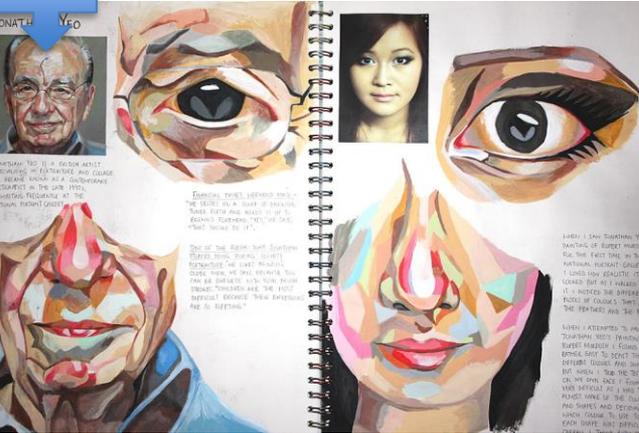
- It is expected that you will complete quite a lot of work for this course through the homework programme, approximately two hours per week
- It is advisable to attend GCSE Art club sessions each week
- You will need to hand in a sketchbook as part of your portfolio component.



You will complete all of your research in sketchbook format and will therefore need to present your ideas creatively. There are lots of ideas online so spend some time looking at examples to help you think about how you want your book to look.

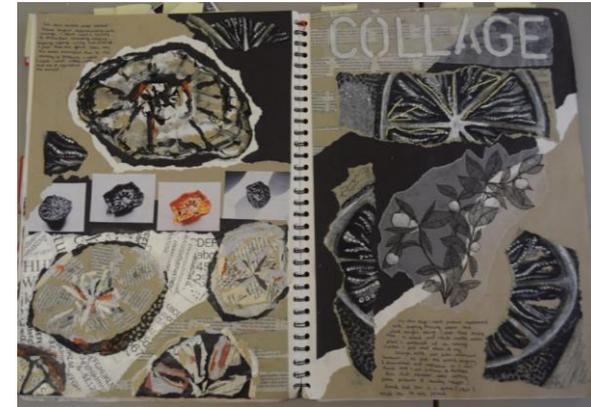


Annotate



Independent study

Produce a creative mind map for your project. Include images, drawings and photographs which tell the viewer your ideas about your theme.



Explore materials and techniques



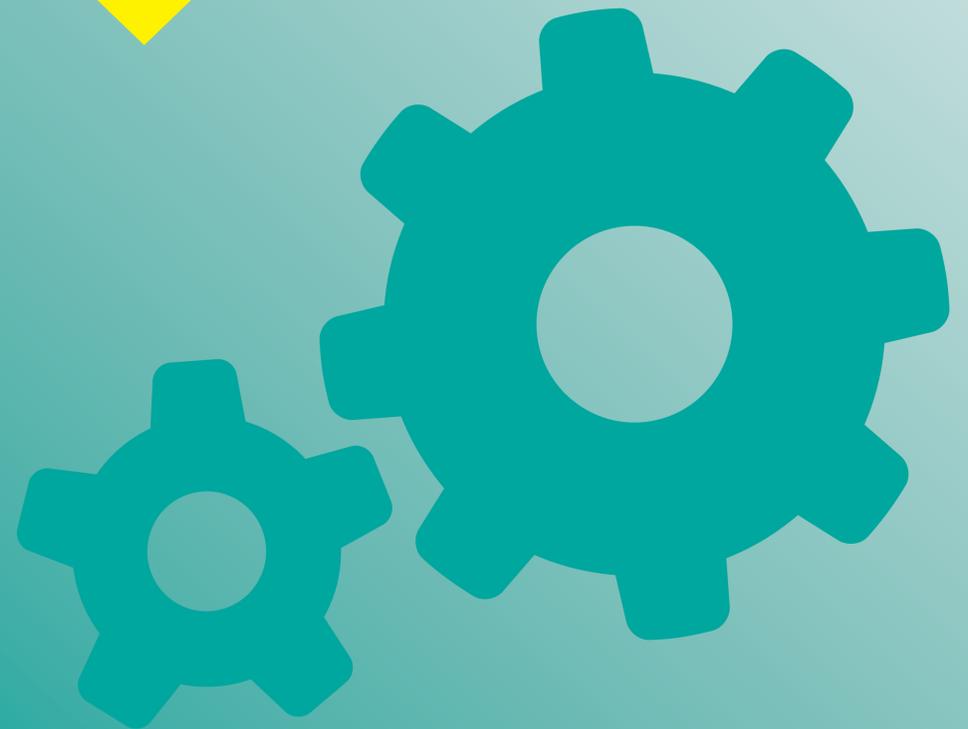
- Drawing
- Painting
- Pen
- Pencil
- Crayon
- Stitch
- Photography

Independent study/Research

Look at the example on Youtube of a creative sketchbook. Also look at the examples on www.studentartguide.com Start to consider how you could present your ideas for your project.

https://youtu.be/61DZqjNP_AM

French





Le statut marital = Relationship statuses

Je suis ... = I am ...
 Ma mère est ... = My mum is ...
 Mon père était ... = My dad was ...
 Je voudrais être ... = I would like to be ...
 célibataire = single
 en couple = in a relationship
 marié(e) = married
 veuf/veuve = widowed
 séparé(e) = separated
 divorcé(e) = divorced
 fiancé(e) = engaged
 pacsé(e) = in a civil partnership



Félicitations! = Congratulations!

le mariage = wedding/marriage
 la fête = party
 Je suis allé(e) au mariage de (ma cousine). = I went to (my cousin's) wedding.
 Mon frère s'est pacsé avec son compagnon. = My brother entered into a civil partnership with his partner.
 Il y avait ... = There was/were ...
 beaucoup d'invités = lots of guests
 un gâteau spécial = a special cake
 C'était ... = It was ...
 génial = great

Tu voudrais te marier? = Would you like to get married?

Je veux/J'espère/Je voudrais ... = I want/I hope/I would like ...
 me marier ou me pacsé = to get married or enter into a civil partnership
 avoir des enfants = to have children
 habiter/m'installer avec mon copain/ma copine = to live/move in with my boyfriend/girlfriend
 c'est mieux pour les enfants. = it's better for the children.
 c'est pratique pour la famille. = it's practical for the family.
 c'est démodé. = it's old-fashioned.
 c'est une perte de temps. = it's a waste of time.
 un mariage est romantique. = a wedding is romantic.
 un mariage coûte trop cher. = a wedding costs too much.

Les mots essentiels = High-frequency words

avec = with
 pour = for
 donc, alors = so, therefore
 car/parce que = for/because
 malheureusement = unfortunately
 sinon = if not, otherwise
 parfois = sometimes
 quelque(s) = some/a few
 beaucoup de = lots of
 en ce moment = at the moment
 en été = in summer
 avant-hier = the day before yesterday
 il y a (trois) jours = (three) days ago
 Je suis désolé(e). = I'm sorry.
 bien sûr = of course
 quel/quelle/quels/quelles ...? = which ...?
 ce/cet/cette/ces = this/these



Félicitations! = Congratulations!

Je viens de fêter ... *I have just celebrated ...*
 Il y a (trois) mois, j'ai fêté ... *(Three) months ago I celebrated ...*
 Je suis allé(e) au mariage (de mon cousin) à la mairie avec toute ma famille. = *I went to (my cousin's) wedding at the town hall with all my family.*
 On a mangé/écouté/dansé/ joué/fait/vu ... = *We ate/listened to/danced/played/did/saw ...*
 C'était une excellente soirée! *It was an excellent evening!*

Les mots essentiels = High-frequency words

à part = *apart from*
 bien sûr = *of course*
 chez (moi) = *at (my) house*
 d'habitude = *usually*
 de temps en temps = *from time to time*
 en revanche = *on the other hand*
 ensuite = *next, then*
 jusqu'à = *until*
 parfois = *sometimes*
 sauf = *except*
 si = *if*
 sinon = *if not*
 tôt = *early*
 vite = *quickly*
 la moitié de = *half of*
 trois quarts de = *three quarters of*
 un quart de = *a quarter of*
 un tiers de = *a third of*
 une personne sur (cinq) = *one person out of (five)*



Tu veux te marier? = Do you want to get married?

J'espère me marier/me pacser. = *I hope to get married/register a civil partnership.*
 Mon but est de fonder une famille. = *My aim is to start a family.*
 Je ne veux pas avoir d'enfants. = *I don't want to have children.*
 Je n'ai aucune intention de m'installer avec mon copain/ma copine. = *I have no intention of moving in with my boyfriend/girlfriend.*
 Je (ne) veux (pas) me marier parce que ... = *I (don't) want to get married because ...*
 le mariage apporte plus de stabilité = *marriage brings stability.*
 mes parents sont heureux en ménage. = *my parents are happily married.*
 mes parents sont divorcés. = *my parents are divorced.*
 l'amour est plus important qu'un bout de papier. = *love is more important than a piece of paper.*
 "pour toujours jusqu'à la mort" n'est pas réaliste. = *"till death us do part" isn't realistic.*
 il n'y a aucune garantie qu'on ne se divorcera. = *there's no guarantee you won't get divorced.*
 je veux voyager. = *I want to travel.*
 je voudrais vivre ensemble avec mon/ma partenaire. = *I would like to live with my partner.*



Using adjectives

Adjectives describe nouns (people, places and things).

In French, most adjectives go after the noun they describe. (e.g. un stylo bleu = a blue pen - but literally 'a pen blue').

The adjective has to agree with the noun it describes.

This means that the ending of the adjective usually changes, depending on whether the noun is masculine or feminine, singular or plural.

Regular adjectives **add -e to describe feminine nouns** and **add -s in the plural**:

English	masc (sing.)	fem (sing.)	masc (pl.)	fem (pl.)
big/tall	grand	grande	grands	grandes
important	important	importante	importants	importantes

A few adjectives never change. They are the same in the masculine and feminine form, both singular and plural.
e.g. marron / orange

If the adjective already ends in -e, we don't add an extra -e in the feminine form:

English	masc (sing.)	fem (sing.)	masc (pl.)	fem (pl.)
shy	timide	timide	timides	timides

Some adjectives describing beauty, age, goodness and size (BAGS) go before the noun they describe. These include: joli(e), beau/belle, vieux/vieille, nouveau/nouvelle, bon(ne), mauvais(e), petit(e), grand(e), énorme. They must still agree.

Some adjectives change a bit more, depending on their ending:

English	masc (sing.)	fem (sing.)	masc (pl.)	fem (pl.)
essential	essentiel	essentielle	essentiels	essentielle
active	actif	active	actifs	actives
generous	généreux	généreuse	généreux	généreuses

Some adjectives are irregular and you just have to learn them!

English	masc (sing.)	fem (sing.)	masc (pl.)	fem (pl.)
attractive	beau	belle	beaux	belles



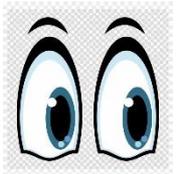
For more information and practice using adjectives:
<https://www.bbc.co.uk/bitesize/guides/z7rwpq8/revision/1>



Using different tenses

It is important to be able to recognise and use different tenses.

verb type	infinitive	present tense	perfect past tense	near future tense	simple future tense	conditional
regular -er verbs	jouer (to play)	je joue (I play)	j'ai joué (I (have) played)	je vais jouer (I am going to play)	je jouerai (I will play)	je jouerais (I would play)
regular -ir verbs	finir (to finish)	je finis (I finish)	j'ai fini (I (have) finished)	je vais finir (I am going to finish)	je finirai (I will finish)	je finirais (I would finish)
regular -re verbs	vendre (to sell)	je vends (I sell)	j'ai vendu (I (have) sold)	je vais vendre (I am going to sell)	je vendrai (I will sell)	je vendrais (I would sell)
key irregular verbs	être (to be) avoir (to have) faire (to do/make) aller (to go)	je suis (I am) j'ai (I have) je fais (I do/make) je vais (I go)	j'ai été (I have been) j'ai eu (I have had) j'ai fait (I did/made) je suis allé(e) (I went)	je vais être (I am going to be) je vais avoir (I am going to have) je vais faire (I am going to do/make) je vais aller (I am going to go)	je serai (I will be) j'aurai (I will have) je ferai (I will do/make) j'irai (I will go)	je serais (I would be) j'aurais (I would have) je ferais (I would do/make) j'irais (I would go)



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Using different tenses

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- The imperfect past tense
- The simple future tense
- The conditional tense

verb type	infinitive	imperfect past tense	simple future tense	conditional
regular -er verbs	jouer (to play)	je jouais (I used to play/ I was playing)	je jouerai (I will play)	je jouerais (I would play)
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Les problèmes environnementaux = *Environmental problems*

Le plus grand problème environnemental, c'est ... = *The biggest environmental problem is ...*
le changement climatique = *climate change*
le manque d'eau potable = *the lack of drinking water*
la disparition des espèces = *the extinction of species*
la destruction des forêts tropicales = *the destruction of the rainforests*
la surpopulation = *overpopulation*
la pollution de l'air = *air pollution*
la sécheresse = *drought*
les inondations = *flooding/floods*
les incendies = *fires*
Les arbres nous donnent de l'oxygène et nous les coupons tous les jours. = *Trees give us oxygen, and every day we cut them down.*
Beaucoup de personnes n'ont pas accès à cette ressource vitale. = *Lots of people don't have access to this vital resource.*
On détruit la planète. = *We are destroying the planet.*
C'est très inquiétant. = *It's very worrying.*
C'est catastrophique. = *It's catastrophic.*



Que doit-on faire pour sauver notre planète? = *What should we do to save our planet?*

On doit/On peut ... = *You/We should/can ...*
recycler = *recycle*
trier les déchets = *separate the rubbish*
faire du compost à la maison = *make compost at home*
consommer moins d'énergie = *consume less energy*
éteindre les appareils électriques = *turn off electrical appliances*
mettre un pull-over au lieu d'allumer le chauffage = *put on a jumper instead of turning on the heating*
faire des achats responsables = *make responsible purchases*
utiliser du papier recyclé = *use recycled paper*
acheter des produits verts et des produits bio = *buy green and organic products*
voyager autrement = *travel differently*
utiliser les transports en commun = *use public transport*
aller au collège à vélo = *go to school by bike*
réutiliser = *reuse*
refuser les sacs en plastique = *turn down plastic bags*
avoir une bouteille d'eau au lieu de prendre un gobelet jetable = *have a bottle of water instead of using disposable cups*
économiser l'eau = *save water*
boire l'eau du robinet = *drink tap water*
prendre une douche au lieu de prendre un bain = *take a shower instead of a bath*
tirer la chasse d'eau moins fréquemment = *flush the toilet less frequently*
fermer le robinet en se lavant les dents = *turn off the tap while brushing your teeth*
installer des panneaux solaires = *install solar panels*



Les grands événements = *Big events*

Cet événement/Ce genre d'événement ... = *This event/This type of event ...*

attire les touristes = *attracts tourists*

encourage la pratique du sport = *encourages participation in sport*

donne des modèles aux jeunes = *gives young people role models*

permet aux gens de s'amuser = *allows people to have a good time*

unit les gens = *unites people*

L'année dernière/L'été dernier, ... = *Last year/Last summer ...*

je suis allé(e) à un festival/à la Coupe du monde = *I went to a festival/to the World Cup*

j'ai vu (le Tour de France) = *I saw (the Tour de France)*

C'est ... = *It's ...*

un événement qui est connu dans le monde entier = *an event that is known throughout the world*

le plus grand festival (de théâtre) au monde = *the biggest (theatre) festival in the world*

Il y a une ambiance magique! = *There is a magical atmosphere!*

Il a lieu/Ça se passe (à Nice/en février). = *It takes place (in Nice/in February).*

L'été prochain/L'année prochaine, ... = *Next summer/Next year ...*

je vais y retourner = *I am going to go back there*

je vais aller à ... = *I am going to go to ...*

je vais encore regarder ... = *I am going to watch ... again*

Les mots essentiels = *High-frequency words*

selon = *according to*

grave = *serious*

actuellement = *currently*

à l'avenir = *in future (from now on)*

ceci dit = *having said that*

cependant = *however*

à part tout cela = *apart from all of that*

en ce qui concerne ... = *as far as ... is concerned*

d'ailleurs = *besides/what's more*

partout = *everywhere, all over*

nombreux/nombreuses = *numerous*

d'un côté = *on the one hand*

d'un autre côté = *on the other hand*

le pour = *the pros*

le contre = *the cons*





Le plus grand problème pour la planète
 = **The greatest problem for the planet**

le déboisement = *deforestation*

la destruction de la couche d'ozone = *the destruction of the ozone layer*

la disparition des espèces = *species dying out*

la guerre = *war*

le manque d'eau douce = *the lack of fresh water*

une fuite de pétrole = *an oil spill*

un tremblement de terre = *an earthquake*

un typhon = *a typhoon*

Protéger l'environnement = Protecting the environment

Que devrait-on faire pour sauver notre planète? = *What should we do to save our planet?*

Actuellement, je ne fais pas grand-chose pour protéger l'environnement. = *Currently, I don't do much to protect the environment.*

Je fais déjà pas mal de choses. = *I already do quite a lot.*

Je pourrais/On devrait ... = *I could/We ought to ...*

éteindre la lumière en quittant une pièce = *turn off the light when leaving a room*

baisser le chauffage et mettre un pull = *turn down the heating and put on a sweater*

utiliser du papier recycle = *use recycled paper*

éviter les produits jetables = *avoid disposable products*

privilégier les produits bio = *where possible, choose organic products*

favoriser le covoiturage = *encourage car-sharing*

recupérer l'eau de pluie pour arroser le jardin = *collect rainwater for watering the garden*

fermer le robinet pendant qu'on se lave les dents = *turn off the tap while you brush your teeth*

faire plus = *do more*





Les grands événements = Big events

Un avantage de cet événement, c'est que ... = *An advantage of this event is that ...*
D'un côté, ça ... = *On the one hand, it ...*
En plus, ça ... = *What's more/Moreover, it ...*
met en avant la culture = *promotes the culture*
met en avant la ville hôte = *promotes the host city*
crée un sentiment de fierté nationale = *creates a sense of national pride*
permet aux gens de passer un bon moment = *allows people to have a good time*
crée du travail = *creates jobs*
attire des touristes = *attracts tourists*
Cependant, ... = *However, ...*
Un inconvénient, c'est que ... = *A disadvantage is that ...*
D'un autre côté, ... = *On the other hand, ...*
Par ailleurs, ... = *What's more, ...*
les ouvriers qui construisent les stades sont souvent exploités = *the workers who build the stadiums are often exploited*
les prix augmentent = *prices rise*
la ville hôte est souvent endettée après l'événement = *the host city is often in debt after the event*
ça laisse une empreinte carbone très importante = *it leaves a significant carbon footprint*
J'estime/Je trouve/Je suis persuadé(e) que/qu' ... = *I reckon/find/am convinced that ...*
il y a du pour et du contre = *there are pros and cons*
les festivals sont une chose positive/négative pour un pays/une région = *festivals are positive/negative for a country/region*
les panneaux solaires = *solar panels*
les toilettes sèches = *dry toilet*
les véhicules électriques = *electric vehicles*
le papier recyclé = *recycled paper*

Les mots essentiels = High-frequency words

à part tout cela = *apart from all that*
bien que (+ subjunctive) = *although*
comme ça ... = *in this way ...*
du coup, ... = *as a result, ...*
en même temps = *at the same time*
en train de = *in the process of (doing)*
il s'agit de = *it's about, it's a matter of*
pas mal de = *quite a lot of*
quotidiennement = *daily*
tel(le)(s) que = *like, such as*
tout le monde = *everyone*





Using different tenses

It is important to be able to recognise and use different tenses.

The main tenses you need to be able to recognise and use are:

- The present tense
- The near future tense
- The perfect past tense

verb type	infinitive	present tense	perfect past tense	near future tense
regular -er verbs	jouer (to play)	je joue (I play)	j'ai joué (I (have) played)	je vais jouer (I am going to play)
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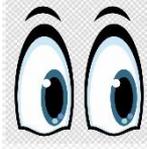


Using different tenses

There are other tenses that it is helpful to be able to recognise and use, particularly at higher tier:

- The imperfect past tense
- The simple future tense
- The conditional tense

verb type	infinitive	imperfect past tense	simple future tense	conditional
regular -er verbs	jouer (to play)	je jouais (I used to play/ I was playing)	je jouerai (I will play)	je jouerais (I would play)
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Using modal verbs and il faut

Pouvoir (to be able to), devoir (to have to) and vouloir (to want to) are the three key modal verbs and are used to talk about what you can, must or want to do. Il faut is a set expression which means 'it is necessary to/you have to'. These verbs are followed by an infinitive verb.

In the past, it is more common to use the imperfect with modal verbs.

Je devais faire mes devoirs. (I had to do my homework)>

Modal verbs are also frequently used in the conditional.

Je voudrais aller en France. (I would like to go to France).

On devrait protéger l'environnement. (We should/ought to protect the environment).

	pouvoir (to be able to)	devoir (to have to)	vouloir (to want to)	il faut (it is necessary to)
present tense	je peux (I can) tu peux il/elle/on peut nous pouvons vous pouvez ils/elles peuvent	je dois (I must) tu dois il/elle/on doit nous devons vous devez ils/elles doivent	je veux (I want) tu veux il/elle/on veut nous voulons vous voulez ils/elles veulent	il faut (it is necessary to)
perfect past tense	j'ai pu	j'ai dû	j'ai voulu	il a fallu
imperfect past tense	je pouvais	je devais	je voulais	il fallait
simple future tense	je pourrai	je devrai	je voudrai	il faudra
conditional	je pourrais	je devrais	je voudrais	il faudrait





Using the comparative and the superlative

We use the **comparative** form of adjectives to compare things.
The adjective must agree with the noun.

- plus ... que ... (more ... than ...)
Le musée est plus intéressant que la gare. (The museum is more interesting than the station).
- moins ... que ... (less ... than ...)
La gare est moins intéressante que le musée. (The station is less interesting than the museum).
- aussi ... que ... (just as ... as ...)
Les glaces sont aussi délicieuses que les fruits. (The ice creams are just as delicious as the fruits).

We use the **superlative** to say something is the most, the best etc.
The *le/la/les* agrees with the noun, as does the adjective.

- *le/la/les* plus ... (the most ...)
le pull *le* plus cher (the most expensive jumper)
- *le/la/les* moins ... (the least ...)
la ville *la* moins intéressante (the least interesting town)

As in English, 'good' and 'bad' are irregular in both the comparative and superlative:

- | | | |
|-----------------|-------------------|--|
| • bon (good) | meilleur (better) | <i>le/la/les</i> meilleur(e)(s) (the best) |
| • mauvais (bad) | pire (worse) | <i>le/la/les</i> pire(s) (the worse) |



For more information and practice using the comparative and superlative:
<https://languagesonline.org.uk/French/Grammar/Comparatives/Index.htm>
<https://languagesonline.org.uk/French/Grammar/Superlatives/Index.htm>



Le bénévolat = *charity work*

un(e) bénévole/volontaire = *a volunteer*

l'engagement bénévole = *unpaid commitment/volunteering*

la charité/le bienfaisance = *charity*

Je travaille (avec) ... = *I work (with) ...*

pour un association caritative = *for a charity*

dans un magasin caritatif/une boutique solidaire = *in a charity shop*.

J'aide un enfant avec ses devoirs. = *I help a child with his homework.*

Je participe à ... = *I participate in ...*

Je suis membre de l'organisation ... = *I am a member of the organisation ...*

Je travaille dans un refuge. = *I work in a refuge/shelter.*

Je parle/discute avec ... = *I talk to ...*

Je promène les chiens. = *I walk the dogs.*

Tu peux/J'aimerais ... = *You can/I would like to ...*

travailler avec les personnes âgées = *work with elderly people*

travailler avec les enfants = *work with children*

travailler avec les sans-abri/des SDF = *work with homeless people*

travailler avec les animaux = *work with animals*

participer à un projet de conservation = *participate in a conservation project*

Porquoi faire du bénévolat? = *Why volunteer?*

Je fais du bénévolat parce que ... = *I do volunteer work because ...*

pour moi, c'est important d'aider les autres = *for me, it's important to help other people*

pour moi, c'est important de participer à la vie en société = *for me, it's important to participate in society*

j'aime développer de nouvelles compétences = *I like developing new skills*

j'aime rencontrer de nouvelles personnes = *I like meeting new people*

c'est une expérience enrichissante pour moi = *it's a rewarding experience for me*

ça me donne plus confiance en moi = *it gives me more confidence in myself*





Le bénévolat = charity work

Je travaille ... *I work ...*
sur un stand d'Oxfam = *on an Oxfam stand*
dans un refuge pour les animaux = *in an animal sanctuary*
Je fais partie de l'organisation X. = *I'm a member of X.*
Je rends visite à une personne âgée. = *I visit an elderly person.*
Je participe à des projets de conservation. = *I take part in conservation projects.*
J'aide des enfants du primaire à faire leurs devoirs. = *I help primary school children to do their homework.*
Je soigne les animaux. = *I look after/treat animals.*
Je soutiens les SDF. = *I support homeless people.*

Porquoi faire du bénévolat? = Why volunteer?

Ça me permet d'élargir mes compétences. = *It allows me to expand my skills.*
Ça me donne le sentiment d'être utile. = *It makes me feel useful.*
On a la responsabilité d'aider les autres et de ne pas se focaliser sur soi-même. = *We have a responsibility to help others and not focus on ourselves.*
Il y a beaucoup de personnes qui ont besoin d'un peu de gentillesse. = *There are lots of people who need a little kindness.*
On s'adresse aux ... = *We appeal to ...*
sensibiliser = *to raise awareness*
prendre conscience de = *to become aware of*
soigner = *to look after, treat*
accueillir = *to welcome*
affronter = *to face, confront*
soutenir = *to support*

En pleine action! = Taking action

J'ai/Nous avons ... = *I/We have ...*
collecté de l'argent = *collected money*
vendu nos vieux jeux et jouets = *sold our old games and toys*
lavé des voitures = *washed cars*
acheté (de la peinture) = *bought (paint)*
planté des arbres = *planted trees*
lancé une pétition en ligne = *launched a petition online*
obtenu presque 2 000 signatures = *obtained nearly 2,000 signatures*
écrit un article dans le journal local = *written an article in the local newspaper*
Le week-end prochain, nous irons là-bas pour ... = *Next weekend, we will go there to ...*
ramasser les déchets = *pick up litter*
nettoyer la salle = *clean the room*
repeindre les murs = *repaint the walls*
La semaine prochaine, on finira d'installer/de construire ... = *Next week, we will finish installing/building ...*
un passage piéton = *a pedestrian crossing*
un panneau = *a sign*
une aire de jeux = *a playground*





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Using different tenses

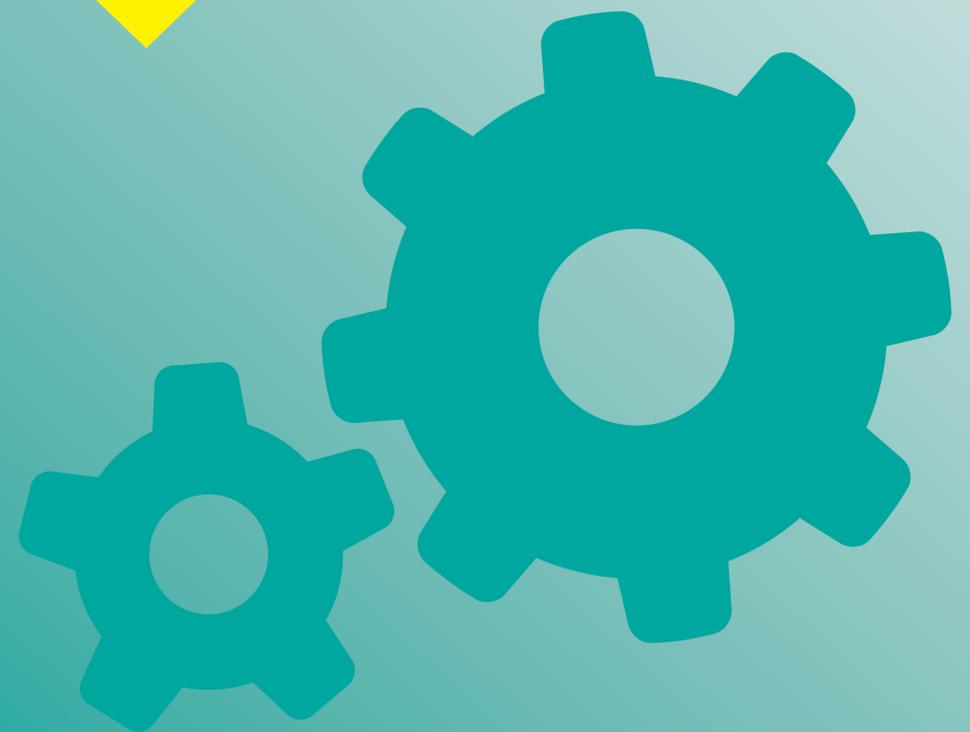
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Spanish





¿En qué trabajas?

Soy... / Es...
Me gustaría ser...

- abogado/a
- albañil
- amo/a de casa
- azafato/a
- bailarín(a)
- bombero/a
- camarero/a
- cantante
- cocinero/a
- contable
- dependiente/a
- diseñador(a)
- electricista
- enfermero/a
- escritor(a)
- fontanero/a

- lawyer
- bricklayer / builder
- housewife / househusband
- flight attendant
- dancer
- firefighter
- waiter / waitress
- singer
- cook
- accountant
- shop assistant
- designer
- electrician
- nurse
- writer
- plumber

What is your job?

I am... / He/She is...
I would like to be...



- fotógrafo/a
- funcionario/a
- guía turístico/a
- ingeniero/a
- jardinero/a
- mecánico/a
- médico/a
- músico/a
- peluquero/a
- periodista
- policía
- profesor(a)
- recepcionista
- socorrista
- soldado
- veterinario/a

- photographer
- civil servant
- tour guide
- engineer
- gardener
- mechanic
- doctor
- musician
- hairdresser
- journalist
- police officer
- teacher
- receptionist
- lifeguard
- soldier
- vet





Es un trabajo...

artístico / emocionante
exigente / importante
fácil / difícil
manual / monótono
variado / repetitivo
con responsabilidad
con buenas perspectivas
con un buen sueldo

It's a ... job

artistic / exciting
demanding / important
easy / difficult
manual / monotonous
varied / repetitive
with responsibility
with good prospects
with a good salary



Tengo que... / Suelo...

cuidar a los clientes / pacientes /
pasajeros
contestar llamadas telefónicas
cuidar las plantas y las flores
enseñar / vigilar a los niños
hacer entrevistas
preparar platos distintos
servir comida y bebida
reparar coches
vender ropa de marca
viajar por todo el mundo
trabajar en un taller / en un hospital /
en una tienda / a bordo de un avión

I have to... / I tend to...

look after the customers / patients /
passengers
answer telephone calls
look after the plants and flowers
teach / supervise the children
do interviews
prepare different dishes
serve food and drink
repair cars
sell designer clothing
travel the world
work in a workshop / in a hospital /
in a shop / aboard a plane





¿Qué tipo de persona eres?

Creo que soy...

ambicioso/a
comprensivo/a
creativo/a
extrovertido/a
fuerte
inteligente
organizado/a
paciente
práctico/a
serio/a
trabajador(a)
valiente

What type of person are you?

I think I'm...

ambitious
understanding
creative
extroverted / outgoing
strong
intelligent
organised
patient
practical
serious
hardworking
brave



¿Qué haces para ganar dinero?

¿Tienes un trabajo a tiempo parcial?

Reparto periódicos.
Hago de canguro.
Trabajo de cajero/a.
Ayudo con las tareas domésticas.
Cocino.
Lavo los platos.
Paso la aspiradora.
Plancho la ropa.
Pongo y quito la mesa.
Paseo al perro.
Corto el césped.
Lo hago...

los sábados
antes / después del insti
cuando necesito dinero
cuando mi madre está trabajando
cuando me necesitan
cada mañana
una vez / dos veces a la semana
Gano ... euros / libras a la hora /
al día / a la semana.
Me llevo bien con mis compañeros.
Mi jefe/a es amable.
El horario es flexible.

What do you do to earn money?

Do you have a part-time job?

I deliver newspapers.
I babysit.
I work as a cashier.
I help with the housework.
I cook.
I wash the dishes.
I do the vacuuming.
I iron the clothes.
I lay and clear the table.
I walk the dog.
I cut the lawn.
I do it...

on Saturdays
before / after school
when I need money
when my mum is working
when they need me
each / every morning
once / twice a week
I earn ... euros / pounds per hour /
day / week.
I get on well with my colleagues.
My boss is nice.
The hours are flexible.



Mis prácticas laborales

Hice mis prácticas laborales en...

Pasé quince días trabajando en...

un polideportivo

una agencia de viajes / una granja

una escuela / una oficina

una fábrica de juguetes

una tienda benéfica / solidaria

la empresa de mi madre

El primer / último día conocí a /
llegué...

Cada día / Todos los días...

archivaba documentos

ayudaba...

cogía el autobús / el metro

empezaba / terminaba a las ...

hacía una variedad de tareas

iba en transporte público

llevaba ropa elegante

ponía folletos en los estantes

sacaba fotocopias

Work experience

I did my work experience in...

I spent a fortnight working in...

a sports centre

a travel agency / a farm

a school / an office

a toy factory

a charity shop

my mum's company

On the first / last day I met / I arrived...

Each / Every day...

I filed documents

I helped...

I caught the bus / underground

I started / finished at...

I did a variety of tasks

I went by public transport

I wore smart clothes

I put brochures on the shelves

I did photocopying



Mi jefe/a era...

Mis compañeros eran...

Los clientes eran...

alegre(s)

(des)agradable(s)

(mal) educado/a(s)

El trabajo era duro.

Aprendí...

muchas nuevas habilidades

a trabajar en equipo

a usar...

No aprendí nada nuevo.

My boss was...

My colleagues were...

The customers were ...

cheerful

(un)pleasant

polite (rude)

The job was hard.

I learned

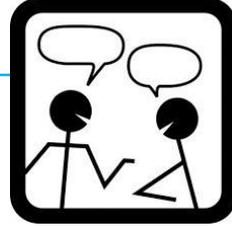
lots of new skills

to work in a team

to use...

I didn't learn anything new.





¿Por qué aprender idiomas?

Aumenta tu confianza.

Estimula el cerebro.

Mejora tus perspectivas laborales.

Te abre la mente.

Te hace parecer más atractivo.

Te ayuda a...

Te permite...

apreciar la vida cultural de otros países

conocer a mucha gente distinta

conocer nuevos sitios

encontrar un trabajo

descubrir nuevas culturas

establecer buenas relaciones

hacer nuevos amigos

mejorar tu lengua materna

solucionar problemas

trabajar o estudiar en el extranjero

Me hace falta saber hablar

idiomas extranjeros.

(No) Domino el inglés.

Hablo un poco de ruso.

Why learn languages?

It increases your confidence.

It stimulates the brain.

It improves your job prospects.

It opens your mind.

It makes you appear more attractive.

It helps you to...

It allows you to...

appreciate the cultural life of other countries

meet lots of different people

get to know new places

find a job

discover new cultures

establish good relationships

make new friends

improve your first language

solve problems

work or study abroad

I need to know how to speak

foreign languages.

I (don't) speak English fluently.

I speak a bit of Russian.



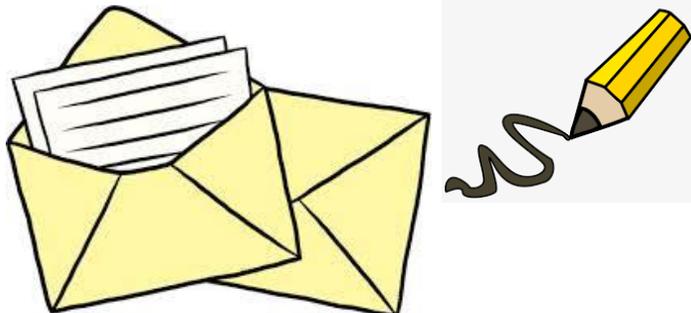


Solicitando un trabajo

Se busca / Se requiere...
 (No) Hace falta experiencia.
 Muy señor mío
 Le escribo para solicitar el puesto de...
 Le adjunto mi currículum vitae.
 Le agradezco su amable atención.
 Atentamente
 Me apetece trabajar en...
 (No) Tengo experiencia previa.
 He estudiado / trabajado...
 He hecho un curso de...
 Tengo...
 buen sentido del humor
 buenas capacidades de comunicación /
 resolución de problemas
 buenas habilidades lingüísticas

Applying for a job

... required.
 Experience (not) needed.
 Dear Sir
 I'm writing to apply for the post of...
 I'm enclosing my CV.
 Thank you for your kind attention.
 Yours sincerely/faithfully
 Working in... appeals to me.
 I (don't) have previous experience.
 I've studied / worked...
 I have...
 a good sense of humour
 good communication /
 problem-solving skills
 good language skills



Un año sabático

Si pudiera tomarme un año sabático...
 Si tuviera bastante dinero...
 apoyaría un proyecto
 medioambiental
 aprendería a esquiar
 ayudaría a construir un colegio
 buscaría un trabajo
 enseñaría inglés
 ganaría mucho dinero
 haría un viaje en Interrail
 iría a España, donde...
 mejoraría mi nivel de español
 nunca olvidaría la experiencia
 pasaría un año en...
 trabajaría en un orfanato
 viajaría con mochila por el mundo

A gap year

If I could take a gap year...
 If I had enough money...
 I would support an environmental
 project
 I would learn to ski
 I would help to build a school
 I would look for a job
 I would teach English
 I would earn a lot of money
 I would go Interrailing
 I would go to Spain, where...
 I would improve my level of Spanish
 I would never forget the experience
 I would spend a year in...
 I would work in an orphanage
 I would go backpacking around the world



¿Cómo viajarías?

Cogería el / Viajaría en autobús /
autocar / avión / tren.

Es más barato / cómodo /
rápido.

Puedes...

ver vídeos mientras viajas

dejar tu maleta en la consigna

Hay muchos / pocos atascos /
retrasos...

en las autopistas / las carreteras

Los billetes son carísimos.

Los conductores están en huelga.

Odio esperar en la parada de autobús.

Tengo miedo a volar.

How would you travel?

I would catch the / travel by bus /
coach / plane / train.

It's cheaper / more comfortable /
quicker.

You can...

watch videos whilst you travel

leave your suitcase in the left-luggage office

There are lots of / few traffic jams /
delays...

on the motorways / roads

The tickets are extremely expensive.

The drivers are on strike.

I hate waiting at the bus stop.

I'm scared of flying.



Viajando en tren

El tren con destino a...

efectuará su salida...

de la vía / del andén dos

el (tren) AVE

la taquilla

Quisiera un billete de ida a...

Quisiera un billete de ida y vuelta a...

¿De qué andén sale?

¿A qué hora sale / llega?

¿Es directo o hay que cambiar?

Travelling by train

The train to...

will leave / depart...

from platform two

high-speed train

the ticket office

I would like a single ticket to...

I would like a return ticket to...

From which platform does it leave?

What time does it leave / arrive?

Is it direct or do I have to change?



El futuro

Me interesa(n)...

Me importa(n)...

Me preocupa(n)...

el desempleo / el paro

el dinero / el éxito

el fracaso / el matrimonio

la responsabilidad

la independendencia / la pobreza

los niños / las notas

Espero...

Me gustaría ...

Pienso...

Quiero...

Tengo la intención de...

Voy a...

aprender a conducir

aprobar mis exámenes

casarme

conseguir un buen empleo/trabajo

estudiar una carrera universitaria

montar mi propio negocio

sacar buenas notas

ser feliz

tener hijos

trabajar como voluntario/a

The future

...interest(s) me.

...matter(s) to me.

...worry/worries me.

unemployment

money / success

failure / marriage

responsibility

independence / poverty

children / marks

I hope to...

I would like to...

I plan to/intend to...

I want to...

I intend to...

I am going to...

learn to drive

pass my exams

get married

get a good job

study a university course

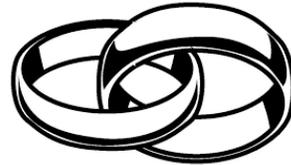
set up my own business

get good marks

be happy

have children

work as a volunteer



Quando...

gane bastante dinero...

me enamore...

sea mayor...

tenga ... años...

vaya a la universidad...

termine este curso /

el bachillerato / la formación

profesional / la licenciatura...

buscaré un trabajo

compartiré piso con...

compraré un coche / una casa

iré a otro insti / a la universidad

me casaré

me iré de casa

seguiré estudiando en mi insti

seré famoso/a

me tomaré un año sabático

trabajaré como...



When...

I earn enough money...

I fall in love...

I'm older...

I'm ... years old...

I go to university...

I finish this course /

my A Levels / my vocational course /

my degree

I will look for a job

I will share a flat with...

I will buy a car / house

I will go to another school / to university

I will get married

I will leave home

I will carry on studying at my school

I will be famous

I will take a gap year

I will work as...





MASCULINE AND FEMININE NOUNS

In Spanish all nouns have a gender: masculine or feminine.

Generally, nouns which end in **-o** are masculine (el bolígrafo) and those ending in **-a** are feminine (la mesa). However there are some exceptions to the rule which you have to learn e.g. el día, la foto etc.

The gender of nouns is usually fixed and we just have to learn which are masculine and which are feminine.

HOWEVER... when discussing job titles / job roles it is important to remember that usually the noun ending has to change to match the gender of the person who you are describing:

e.g. camarero > camarera (waiter / waitress)
diseñador > diseñadora (designer – male/female)

PLEASE NOTE some job titles do not change depending whether the person is male or female and these often end in **-e** or **-ista**

e.g. cantante > cantante (singer)
repcionista > recepcionista (receptionist)

DROPPING THE ARTICLE

When talking about job roles you DO NOT NEED the article 'un/una, el/la (a/the). In Spanish the article is dropped for example:

Soy camarera = I am a waitress
Eres médico = you are a doctor



PHRASES FOLLOWED BY INFINITIVES

To say **I usually do something** you need the phrase **SUELO** followed by an **INFINTIVE**.
This phrase can **express the present tense** and enhance your writing and speaking skills.

SUELO

+

INFINTIVE

Examples:

SUELO + INFINTIVE = I USUALLY.....

E.G. SUELO SALIR CON MIS AMIGOS = I USUALLY GO OUT WITH MY FRIENDS

To say **I used do something** you need the phrase **SOLÍA** followed by an **INFINTIVE**.
This phrase can **express the past tense** and enhance your writing and speaking skills.

SOLÍA

+

INFINTIVE

Examples:

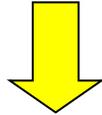
SOLÍA + INFINTIVE = I USED TO.....

E.G. SOLÍA JUGAR AL FÚTBOL = I USED TO PLAY FOOTBALL



THE PRETERITE TENSE - REGULAR VERBS

Identify the **REGULAR** verb you want
(ending in **-ar**, **-er** or **-ir**)



Take off the **-ar**, **-er** or **-ir** ending.



Replace with the correct ending to match the person(s)
doing the action

AR Verbs

• é	= I
• aste	= You
• ó	= He/She/It
• amos	= We
• asteis	= You (pl)
• aron	= They

ER Verbs

• í	= I
• íste	= You
• ió	= He/She/It
• imos	= We
• ísteis	= You (pl)
• ieron	= They

IR Verbs

• í	= I
• íste	= You
• ió	= He/She/It
• imos	= We
• ísteis	= You (pl)
• ieron	= They

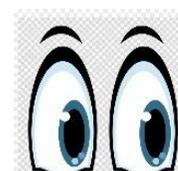
The Preterite Tense

Used to talk about an action that took place in
the past and is **completed/finished**.

In English we would say it like this:

I ate

You played



Look at the following sites
for more information and
practise on the preterite
tense

<https://www.bbc.co.uk/bitesize/topics/zg9mhyc/article/s/zhgfmfr>

<https://www.bbc.co.uk/bitesize/guides/znmwhbk/vid>



Some verbs have a spelling change in the 'í' form: **jugué**, **llegué**, **navegué**



THE IMPERFECT TENSE - STEP BY STEP

Identify the **REGULAR** verb you want (ending in **-ar, -er** or **-ir**)

Take off the **-ar, -er** or **-ir** ending.

Replace with the correct ending to match the person(s) doing the action

AR Verbs

ER Verbs

IR Verbs

- **aba** = I
- **abas** = You
- **aba** = He/She/It
- **ábamos** = We
- **abais** = You(pl)
- **aba** = They

- **ía** = I
- **ías** = You
- **ía** = He/She/It
- **íamos** = We
- **íais** = You (pl)
- **ían** = They

- **ía** = I
- **ías** = You
- **ía** = He/She/It
- **íamos** = We
- **íais** = You (pl)
- **ían** = They

Imperfect Tense

Used as another way of talking about the past. It is used in Spanish for the following:

- when describing what something **was like in the past** e.g. the hotel was very modern
- When referring to a **repeated action** in the past e.g. I had homework club every night
- What a person **used to do** e.g. when I was young I used to play hockey

As a rule of thumb, if you can put **was...ing/were...ing or **used to....** in a sentence, you will probably need to use the Imperfect Tense**



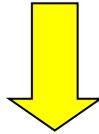
Look at the following sites for more information and practise on the imperfect tense

<https://www.bbc.co.uk/bitesize/guides/zryhgw/revision/1>

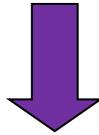


THE PRESENT TENSE - STEP BY STEP

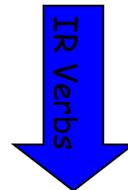
Identify the **REGULAR** verb you want (ending in **-ar**, **-er** or **-ir**)



Take off the **-ar**, **-er** or **-ir** ending.



Replace with the correct ending to match the person(s) doing the action



• a	= I
• as	= You
• a	= He/She/It
• amos	= We
• áis	= You (pl)
• an	= They

• o	= I
• es	= You
• e	= He/She/It
• emos	= We
• éis	= You (pl)
• en	= They

• o	= I
• es	= You
• e	= He/She/It
• imos	= We
• ís	= You (pl)
• en	= They

The Present Tense

Used to talk about an action that is happening **NOW**



Look at the following website for more information and practise on the present tense

<https://www.bbc.co.uk/bitesize/guides/z7kgj hv/revision/1>



INDIRECT OBJECT PRONOUNS

ME	(TO) ME
TE	(TO) YOU
LE	(TO) HIM/HER /YOU
NOS	(TO) US
OS	(TO) YOU
LES	(TO) THEM



Look at the following sites for more information and practise on indirect object pronouns
<https://www.bbc.co.uk/bitesize/guides/zktwhbk/revision/2>

Scroll down!

The indirect object pronoun usually comes before the verb.

Me apetece trabajar en España -----Working in Spain appeals **to me**

With verbs followed by the infinitive it can come before or after

Le voy a aescibir / Voy a escribir**le**----- I am goinmg to write to you

In English we often miss out the word 'to'

Nos da la oportunidad de-----it gives **us** the opportunity to



THE PRESENT CONTINUOUS

The **present continuous** is used to say what is happening **now** in Spanish.

To form it you will need 2 parts:

- The **Present Tense** of the verb **Estar**
- The Present Participle

Step 1	Estar	To be
	Estoy	I am
	Estás	You are
	Está	He/she/it is
	Estamos	We are
	Estáis	You all are
	Están	They are

followed by

Step 2	The Present Participle	Hablar (to talk)	Comer (to eat)	Vivir (to live)
		Take off the AR	Take off the ER	Take off the ER
		habl	com	viv
		Add ANDO	Add IENDO	Add IENDO
		hablando (talking)	comiendo (eating)	viviendo (living)

Examples
Estoy hablando con mis amigos – I am talking to my friends
Estamos comiendo fruta – We are eating fruit



Look at the following website for more information and practise on the present continuous tense
<https://www.bbc.co.uk/bitesize/guides/z7kgjhv/revision/10>

Common Irregular Present Participles

dormir	durmiendo	sleeping	reír	riendo	laughing	servir	sirviendo	serving
decir	diciendo	saying	seguir	siguiendo	following	leer	leyendo	reading
oír	oyendo	hearing	traer	trayendo	bringing	ir	yendo	going



THE PERFECT TENSE

The **Perfect Tense** is used to say what **YOU HAVE DONE**. To form it you will need 2 parts:

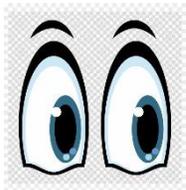
- **HABER**
- **PAST PARTICIPLE**

!!! DO NOT CONFUSE IT WITH THE PRESENT CONTINUOUS!!!

1

HABER	TO HAVE
He	I have
Has	You have
Ha	He/she/it is has
Hemos	We have
Habéis	You all have
Han	They have

followed by



2

The Past	Hablar (to talk)	Comer (to eat)	Vivir (to live)
Participle	Take off the AR	Take off the ER	Take off the ER
	habl	com	viv
	Add ADO	Add IDO	Add IDO
	hablado (talked)	comido (eaten)	vivido (lived)

Examples
He hablado con mis amigos – I have talked with my friends
Hemos comido fruta – We have eaten fruit

Look at the following website for more information and practise on the perfect tense
<https://www.bbc.co.uk/bitesize/guides/znxjpg8/revision/2>

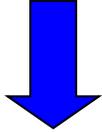
Common Irregular Past Participles

abrir	abierto	opened	ver	visto	seen	hacer	hecho	done
poner	puesto	put	vovlver	vuelto	returned	decir	dicho	said

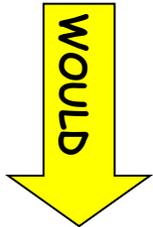


THE CONDITIONAL TENSES - STEP BY STEP

Identify the infinitive of the verb that you want to conjugate (ending in **-ar**, **-er** or **-ir**)



Add the correct ending to the infinitive to match the person(s) who **would** do the action. (Check it's not on the list of irregular verbs).



- **ía** = I
- **ías** = You
- **ía** = He /She /It
- **íamos** = We
- **íais** = You (pl)
- **an** = They

These endings apply to AR, ER and IR verbs



Look at the following website for more information and practise on the conditional tense

<https://www.bbc.co.uk/bitesize/guides/zjkgjhv/revision/1>

The Conditional Tense

Used when you want to say you **would do** something.

The **infinitive** serves as the stem of almost all Spanish verbs in the conditional tense. **YOU DON'T NEED TO TAKE OFF THE AR, ER OR IR ENDING. YOU ADD AN ADDING TO THE INFINITIVE.**

Click on the links below for more information

Common Irregular Verbs in the Conditional Tense

INFINITIVE	TRANSLATION	STEM – then add the ending for the person doing the action
Caber	To fit	Cabr-
Decir	To say	Dir-
Hacer	To do/make	Har-
Poder	To be able	Podr-
Poner	To put	Pondr-
Querer	To want	Querr-
Saber	To know	Sabr-
Salir	To leave/go out	Saldr-
Tener	To have	Tendr-
Valer	To be worth	Valdr-
Venir	To come	Vendr-
Habría	There would be	



TALKING ABOUT FUTURE PLANS

You can express future plans with a variety of verbs followed by an **INFINITIVE** (VERBS WITH THE ENDING AR/ER/IR)

QUIERO – I want to

ESPERO – I hope to

VOY A – I am going to

ME GUSTARÍA = I would like



INFINITIVE

PIENSO – I plan / intend

TENGO LA INTENCIÓN DE = I have the intention of

Examples:

Espero casarme = I hope to get married

Tengo la intención de trabajar al extranjero = I have the intention of working abroad



CUANDO + PRESENT SUBJUNCTIVE

When using the word 'cuando' (when) to talk about future plans you must use a form of the verb called the 'subjunctive tense' as you are speaking hypothetically about something that hasn't happened yet or isn't guaranteed to happen.

To form the present subjunctive tense you take off your infinitive ending and add the following endings

if you look closely you might notice that AR verbs take the regular ER present tense endings and ER and IR verbs take the regular AR present tense endings*

	Ganar (to earn/win)	Vender (to sell)	Vivir (to live)
Yo (I)	Gane	Venda	Viva
Tú (you)	Ganes	Vendas	Vivas
Él/ella/usted (he/she it)	Gane	Venda	Viva
Nosotros/as (we)	Ganemos	Vendamos	Vivamos
Vosotros/as (you all)	Ganéis	Vendáis	Viváis
Ellos/Ellas/Ustedes (they)	Ganen	Vendan	Vivan

Some verbs are irregular in the present tense including:

Ser (to be) > sea
ir (to go) > vaya

Examples

Cuando termine mis estudios = when I finish my studies

Cuando gane la loteria = when I win the lottery

Cuando apruebe mis exámenes = when I pass my exams



Look at the following sites for more information and practise on the preterite tense

<https://www.bbc.co.uk/bitesize/guides/zddc7nb/revision/4>



Design Technology

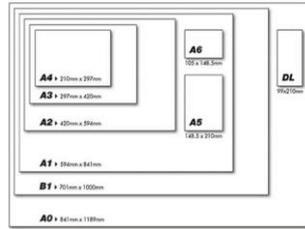


Materials and their properties– Papers & Boards - What you need to know:



- Know the primary sources of materials for producing papers & boards
- Be able to identify a range of papers & boards.
- Understand their properties and the functions they provide and how they are used?

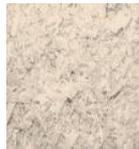
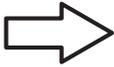
Papers and boards are used for a variety of purposes from writing, drawing, packaging and model making. They are made from cellulose fibres found in wood or grasses which are all renewable.



Paper & boards can be plain, textured and can be laminated with other materials like plastic to make them waterproof. Paper and board is measured in sizes from A0 to A6 and in weight by grams per square metres (gsm). Boards (card or cardboard) are always greater than 200gsm

Processing paper & card:

This involves turning raw materials into usable products. In the case of paper, the raw material is usually **wood**.



In the first stage of paper manufacture, the wood is mashed up to make **wood pulp**.

This is done in one of two ways.

By machine

The wood is physically ground up. Paper made from machined pulp is weaker and turns yellow over time. It is used for newspapers.

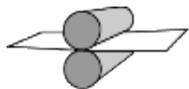
The wood pulp is then bleached to make it white, and fed into a **Fourdrinier** machine. This machine makes the pulp into paper.



1. Firstly, dyes and other chemicals are added to the pulp.



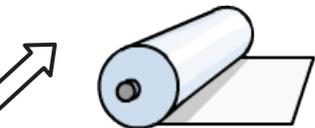
2. The pulp is then spread onto a moving wire mesh conveyor belt.



The first rollers squeeze out the water.



The second rollers are heated to dry the paper.



4. The calendar rollers then smooth the paper and determine the thickness.

Types of papers

Papera	Example	Properties	Uses
Bleed proof		A smooth paper often used with water and marker pens which prevents bleed (e.g. when inkruns through the paper).	Presentation drawings
Cartridge paper		Good quality white paper with a slight texture.	Can be used for paints, markers and drawings
Grid		Paper printed with grids as a guideline for drawing (e.g. isometric).	Quick model 3D drawings
Layout		Strong and lightweight	Initial sketching and tracing
Tracing		Fluted plastic – light, strong, weather resistant material	Tracing copies of drawings

Selecting Papers & Boards

The type of paper & board used to make a product depends on the following factors:

- Aesthetics
- Size of product
- Where and how the product will be used?
- Stability
- Cost
- Size
- Weight
- Finish required
- Lifetime of the product
- Desired properties.

Types of boards

Boards	Example	Properties	Uses
Corrugated card		Strong lightweight material. Made from two or more layers and has a fluted middle.	Packaging such as pizza boxes, large boxes that are used to protect heavy items
Duplex board		Thin board that often has one side printed. This board can also be coated with wax so it can be used with food and drink.	Packaging
Foil lined board		Board covered with one side of aluminum foil making it a good insulator.	Packaging such as takeaway and ready meal packaging.
Foam core board		Two pieces of board with a foam core to increase the thickness but retain its lightweight property.	Model making such as architectural models.
Solid white board		High quality cardboard, smooth on both sides which makes it good for printing.	Book covers, cards and packaging.

Sustainability

The UK uses over 12 million tonnes of paper each year and it takes approximately 25 trees to make one tonne of paper.

Trees take in Carbon Dioxide (CO²) and produce oxygen but it takes a lot of energy to cut them down and make paper.

An alternative is to recycle paper and this is becoming more common as this uses between 40% to 70% less energy to produce.





What you need to know:

- Know the primary sources of materials for producing papers & boards
- Be able to identify a range of natural timbers & manufactured boards.
- Understand their properties and the functions they provide and how they are used?

Natural Timbers		Manufactured Boards
Hardwood	Softwood	
<p>Hardwoods are usually obtained from deciduous trees, which lose their leaves in autumn.</p> <ul style="list-style-type: none"> □ usually grow in warmer more humid climates, mainly in South America and Asia □ grow slowly (80+ years) □ are more difficult to sustain than softwoods □ are more expensive than softwoods □ are strong and hardwearing. 	<p>Softwoods are usually obtained from coniferous trees, which keep their leaves in winter and are also known as evergreens. These grow quickly which makes them sustainable as they are renewable. This also makes them cheaper when compared to hardwoods.</p> <ul style="list-style-type: none"> □ Usually grow in colder climates and are mainly grown in Scandinavia and Northern Europe □ Grow thin, needle-like leaves □ Grow relatively quickly (30 years) □ Are easier to sustain than hardwood trees □ Are easy to cut and shape □ Are usually cheaper than hardwoods 	<p>Manufactured boards are made from the waste sections of felled trees – the parts which are of little use as planks. The wood is reduced to pulp, particles or thin strips and bonded together using special adhesives or resins. Manufactured boards are made as alternative to natural timber.</p> <ul style="list-style-type: none"> □ Come in sheet form (usually 1.2 x 2.4m) □ Are extremely stable and of uniform thickness □ Are less expensive than laminating planks of timber □ Can be covered with veneers □ Are available in a variety of thicknesses (3, 6, 9, 12, 15, 18, 22mm)

Sustainable Timber

Wood is considered to be sustainable material as trees can be grown to replace those used for timber or fuel. A big issue is in many parts of the world timber is being used faster than trees are being replanted. This causes deforestation which is seen as a key factor to global warming.

To regulate this The Forest Stewardship Council (FSC) are dedicated to ensuring that timber supplies are regulated and sustainably harvested.



Types of Hardwoods

	Example	Properties	Uses
Ash		Tough and flexible, wide grained, shock resistant and finishes well	Sports equipment, hand tools and ladders
Beech		Strong, dense close grain but is prone to warping and splitting	Furniture, children's toys, bench tops
Mahogany		Strong and durable, easy to work with finishes well.	High end furniture
Oak		Strong and lightweight	Flooring, furniture and timber framed buildings
Balsa		Strong and durable but very lightweight. If too thin can snap & break.	Model making, floats and rafts

	Example	Properties	Uses
Medium Density Fibreboard (MDF)		This compressed board is rigid and stable and is easy to work with. It has a smooth surface but it is very absorbent.	Flat pack furniture, kitchens and toys
Plywood		This is a laminated board it is stable due to its alternate layering a 90°. It has good water resistance.	Furniture, shelving, skateboards and exterior fencing
Chipboard		This compressed board not as strong as MDF or plywood is prone to chipping	Flooring, low end furniture kitchen units & cupboards

Types of Softwoods

	Example	Properties	Uses
Larch		Tough and durable, good water resistance and finishes well	Fencing, cladding, decking, furniture
Pine		Lightweight easy to work with but can be knotty	Interior joinery and furniture and window frames.
Spruce		Easy to work with and is lightweight	Furniture, musical instruments and construction

Finishing Natural Timbers

Timbers can be treated with a number of surface finishes these include Paint, Stain, Wax & Varnish. Applying these finishes can:

- Seals the wood to protect the surface from heat and water
- Enhance the grain & surface
- To colour the surface
- To give a specific aesthetic appeal.

Finishing Manufactured Boards

Veneer

A sharp blade cuts very thin layers wood called veneer. A layer of veneer can be glued onto less expensive manufactured board to produce a more attractive finish and imitate natural timbers but maintain the properties of a manufactured board.



Lamination

Laminating involves bonding by gluing strips of materials together in layers to create a strong structure. An example of this is wooden beams. If thinner materials are used for lamination the curves can be more complex.





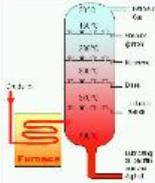
What you need to know:

- Know the primary sources of materials for producing polymers
- Be able to recognise and characterise different types of polymers
- Understand the physical working properties for a range of thermosetting and thermoplastics.

Man made (synthetic) plastics have replaced wood and metal in the manufacture of a wide range of products. The 1st synthetic plastic was celluloid. It was made from cotton and camphor and used for table tennis balls and film.

Commercial production of plastics really started after the 2nd World War. The raw materials used were either coal or oil. They contain a number of different chemicals which can be separated into parts by a process called **Fractional Distillation**.

Some of the fractions contain chemicals that are small molecules (**Monomers**). The monomers are chemically joined together to make longer molecular 'chains' called **Polymers**



Plasticisers are added to make plastic bendy.



Pigments are added to change colour.



Antistatics are used to reduce static charge



Antioxidants to reduce attack by air



Flame retardants to reduce burning



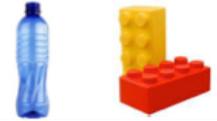
Problems of using plastics

Plastic products have a long shelf life, however it also means that they are difficult to dispose of

- Because they do not rot or corrode they are difficult to dispose of
- If burnt they produce black choking gasses
- When molten they are sticky and can cause severe burns
- Thermoplastics can be recycled by melting them down and reforming their shape, but usefulness can be become limited with frequent heating
- Plastic production itself can be polluting
- PVC contains many nasty pollutants and it is one of the most difficult plastics to recycle.

There are many different types of plastic and can be split into four groups:

THERMOPLASTICS are made from long chain polymers, joined by weak chemical bonds. When the plastic is softened by heat the bonds break making the plastic 'semi fluid' and able to be shaped. As the plastic cools, new weak bonds form and the shape will be fixed. Because no chemical reaction has taken place this process can be repeated many times, making them recyclable, however excessive heat will permanently damage the chemical structure.



THERMOSETS or thermosetting plastics are plastics which are converted into their final form by heat. Once set, they cannot be softened by further heating as they undergo a chemical change. They have strong chemical bonds that hold the long chains together. These make thermosets heat resistant but not recyclable. It is difficult to make products by extrusion or injection moulding as they harden as soon as heated. Manufacturing methods include casting, moulding and laminating.



ELASTOMERS are a type of thermoset. The bonds between the chains are 'springy' giving them a rubbery quality. Natural rubber is an example it can be vulcanised to make a rigid (ebonite). Latex is a stretchy elastomer used to make surgical gloves. Lycra is an elastomer used to make stretchy clothing.



Ebonite is an early form of plastic that was used to simulate ebony and is hard and used for bowling balls

COMPOSITES are when materials are combined to achieve specific advantages. Examples of composites are Kevlar, GRP (Glass reinforced plastic), Graphite and Carbon Fibre. These are used extensively for sporting uses e.g Bike parts, motor racing car bodies and tennis rackets.



Thermoplastics

Acrylonitrile Butadiene Styrene (ABS) is strong, tough, scratch resistant and resists heat and chemicals. It is injection moulded to make Lego bricks and is used extensively for household appliances like Kettles, vacuum cleaners and housings for cameras and telephones.



High Density Polythene (HDPE)

is tough and can be blow moulded (bottles for bleach and shampoo) injection moulded (toys and buckets) and extruded (piping)



Polystyrene (PS) is used to make vending cups and model kits. It is light, transparent but quite brittle. It is vulcanised to make **High Impact Polystyrene (HIPS)** This is used for Vacuum forming in thin sheets, which are cheap and easy to work with. Expanded **Polystyrene (EPS)** is used as thermal insulation for packaging and food cartons. It is 90% air.



Low Density Polythene (LDPE)

is Made into thin film (Carrier bags, wiring insulation and squeeze bottles)



Thermosetting plastics

Polyester Resins which are combined with fibreglass to produce GRP



Phenol Formaldehyde is tough and heat resistant often black in colour. (Used for saucepan handles)



Epoxy Resins which are mixed with a hardener and left to set. They can be used to make adhesives and flooring.





What you need to know:

- Know the primary sources of materials for producing metals and alloys
- Be able to recognise and characterise different types of metals and alloys
- Understand how the physical working properties of a range of metals and alloys affect their performance

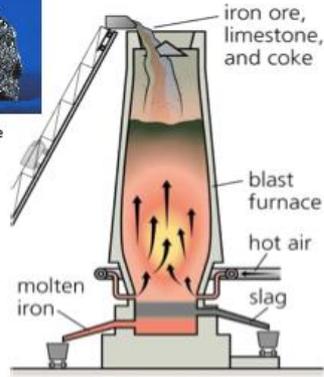
Metal bearing rocks are called ORES, these are mined or quarried from the earth's surface. Metals are obtained from raw ores by a process called smelting. Raw ore is mixed with charcoal and other chemicals, and air is blown into a furnace. The molten metal trickles from the bottom of the furnace and this can be cast or extruded into shapes.



Iron Ore

The more the reactive the metal the higher the temperature needed to extract it from its ore. Copper needs 1100°C but iron requires 1500°C. A metal like aluminium cannot be extracted by smelting. It is dissolved in a 'cryolite solution' and electrolysed (electricity is passed through) at a temperature of around 650°C.

A few metals can be mined from the earth as pure metals. These include gold and some small amounts of copper and silver



Recycling Metals

Metal ores are either mined or quarried which has an environmental impact. Metal extraction from ore demands a lot of energy, a great deal of which is lost as heat to the surroundings. The high cost has meant that recycling is becoming more and more important. Today the scrap metal industry has a vital role in the provision of metals for the future. Automated disassembly lines for recycling of metal parts for cars are coming ever closer. At present vehicles are collected sorted and shredded, and then materials are collected from them.

It takes 95% less energy to recycle aluminium cans than it does to produce new cans from aluminium ore. It is possible that future cans will be made from recycled material. Stainless steel can be made from as much as 70% of recycled material. Recycled copper can be refined to be as pure as new. Copper and its alloys have a high scrap value as they are relatively easy to recycle.



SECTIONS – Solids and tubes available

ROUND TUBE



HEXAGONAL TUBE



SQUARE TUBE



L-SECTION TUBE



Ferrous Metals:

FERROUS METALS are those which are iron based. They contain iron and carbon in varying amounts. As iron is extracted from its ore in a furnace it contains a relatively high amount of carbon. This makes the iron hard but brittle this is known as cast iron. It resists compression but may break if dropped, hit or stretched. It is used to make car brake drums, railings and manhole covers. Cast iron has 4% carbon content.



High Carbon Steel is often referred to as **Tool steel** contains 0.6 - 1.5% Carbon. It is very hard and is used to make tools such as metalwork files and saw blades.



Mild Steel is very tough, can be bent or twisted and can resist strong impacts without breaking. It is easy to weld. Mild steel is used to make washing machines, construction girders, nuts and bolts and nails. It contains between 0.15 - 0.35% carbon.



Stainless Steel Contains about 1% carbon. It also contains other metals, mainly **chromium**. There are over 200 different types of Stainless Steel. They contain a minimum of 11% chromium and also contain **nickel**. Manganese is another metal often included. Stainless steel is often used for medical instruments, kitchen surfaces and pots and pans as it resists scratching and biofouling.



Wrought Iron is the most pure iron, containing few imperfections. It is difficult to cast although it makes excellent material for forge work because it is tough. It has less than 0.1% carbon. It is used for gates and railings



Non-Ferrous Metals:

NON-FERROUS METALS do not contain iron. There are many different metals that fall into this group.

Aluminium Pure aluminium is malleable and ductile but has a low tensile strength (aluminium foil). To improve strength it is usually alloyed with copper or magnesium. Because it resists corrosion it is used extensively outdoors in satellite dishes and window frames. Aluminium is very light metal and has a density a 1/3 that of copper and steel. It is a good conductor of heat and electricity. Aluminium alloys are used extensively in the aircraft industry and in motor cars. Approx 150,000 million aluminium cans are produced every year.



Lead is a metal that was once in common use for plumbing, roof flashing and car batteries. It has been replaced by copper, plastics and alloys in many cases but is still used in car batteries. Lead is a soft malleable metal. It is also an accumulative poison.

Alloys:

An **ALLOY** is a material of a mixture of metals or a metal and a non metal intermixed. Metal alloys have advantages. The alloy may contain the properties of two or more metals or other elements.

Brass is an alloy of copper and Zinc. Copper is malleable, resists corrosion and is a good conductor of electricity. Zinc is hard but brittle. Brass is used in musical instruments, Valves and in electrical plugs and sockets.



Different combinations of tin, lead and other metals are used to create **solder**. The combinations used depend on the desired properties. The most popular combination is 60% tin, 39% lead, and 1% alloys. This combination is strong, has a low melting range, and melts and sets quickly.





What you need to know:

- Know the primary sources of materials for textile fibres & fabrics.
- To be able to identify a range of textile fibres & fabrics.
- Understand their properties and the functions they provide and how they are used?

Natural fibres can come from plant or animal sources

	Origins	Example	Properties	Uses
Cotton	Cotton comes from the fine hairs on the seed pod of a cotton plant.		Soft and strong, absorbent, cool to wear and easily washable. Cotton fabrics can be given a brushed finish to increase their thermal properties.	Most clothing, especially shirts, underwear and denim can be made from cotton. Also used for towels and bedsheets.
Wool	Wool comes from a sheep the coat is known as fleece.		Warm and absorbent, does not crease easily and has low flammability. Has natural resilience to water, but when wet does take a long time to dry. Is difficult to launder as it can shrink (felt).	Jumpers, coats, suits and accessories worn for warmth. Specialist wools are very soft and expensive. Felt products and carpets.
Silk	Silk comes from a cocoon of the silkworm.		Very soft and fine finish, gentle on skin, can feel cool in summer yet warm in winter, drapes well, absorbent, strong when dry (weaker when wet), tricky to wash, can crease easily and is usually expensive.	Luxury clothing including nightwear and underwear, soft furnishings, bed sheets, silk paintings and wall hangings.

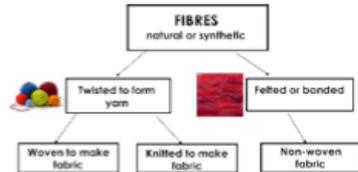
Synthetic fibres are manufactured from oil based chemicals.

	Example	Properties	Uses
Polyester		Tough, strong, hard wearing, very versatile, holds colour well, non-absorbent so quick drying, machine washes well. Often blended with other fibres. Easily coloured.	Clothing, fleece garments, bedsheets, carpets, wadding, rope, threads, backpacks, umbrellas and sportswear.
Polyamide (Nylon)		Good strength, hard wearing, non-absorbent, machine washes well, easily and frequently blended.	Clothing, ropes and webbings, parachutes and sports material. Used as a tough thread on garments.
Elastane (Lydra)		Added to fabric to enhance working properties, particularly to add stretch. Allows freedom of movement, quick drying, holds colour well, machine washable.	Sportswear, exercise clothing, swimsuits, hosiery, general clothing, surgical and muscular supports.

Types of Fabrics

Fabric	Example	Properties	Uses
Woven fabric (Plain Weave)	<p>Woven fabric is manufactured on a loom. Weaving is a process where two yarns the warp and the weft are woven together at right angles to each other. The warp threads run the length of the loom with the weft threads being woven across. The edge that is wrapped around is called the selvage.</p>	Simple and cheaper to produce than more complicated weaves, stronger than other weave patterns.	Used on textiles such as cotton calicos, cheesecloth and gingham, found on table cloths, upholstery and clothing.
Knitted (Weft knitted)	<p>Knitted fabrics are produced by hand or by knitting machines. Knitting is produced horizontally. The loops above and below interlock holding the fabric together.</p>	Warm to wear, different knits have different properties such as stretch and shape retention. Weft knits ladder and unravel more easily than warp.	Jumpers, cardigans, sportswear and underwear fabrics, socks, tights and leggings, craft items such as soft toys.
Warp Knitted	<p>Warp knitted fabric is produced on industrial knitting machines. Warp knitting has yarns that interlock vertically along the length of the fabric. Warp knitting is an industrial process only.</p>	Fast production system (industrial process only). The fabric has stretch but can keep its shape and is hard to unravel, less likely to ladder. Complicated manufacturing so it is more expensive than weft knitting.	Sportswear, exercise clothing, swimsuits, hosiery, general clothing, surgical and muscular supports.
Non Woven	<p>Non-woven fabrics are made directly from fibres without the production of yarn. There are two types of non-woven fabrics:</p> <p>Bonded – Fibre bonded fabric are produced by either adhesives gluing the fibres together. Or heat bonded which melts the fibres so they bond together.</p> <p>Felted – Felted fabric is produced by needles repeatedly pushing and bonding the fibres together.</p>	<p>Bonded fabrics lack strength, they have no grain so can be cut in any direction and do not fray.</p> <p>Felted fabrics can be formed with moisture and heat; once dry it has no elasticity or drape, and can pull apart easily. Woolen varieties can be expensive.</p>	<p>Disposable products such as protective clothing worn for hygiene purposes, tea bags, dish cloths and dusters.</p> <p>Hats, handicraft, pads under furniture to prevent scratching, soundproofing and insulation.</p>

Fibres are the starting point from which all fabrics are made.



Blended Fibres This is a combination of two or more fibres spun together into a yarn.	Mixed Fibres: This is where two or more types of yarn are used when the fabric is woven.
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Reasons for blending and mixing fibres:

1. Improve the appearance of a fabric in terms of colour or texture.
2. Improve the quality of the fabric e.g. more durable, stronger and longer lasting.
3. Easier to wash and care for the fabric e.g. crease resistance.
4. Improve the feel (handle) of a fabric.
5. Improve the profitability of a fabric so that it is cheaper to produce and is more desirable to consumers.

Fabric Finishes

Once a fabric has been produced it often goes through a process to improve its appearance and/or properties. The main fabric finishes are:

- Physical** – machines are used to change the fabric
- Chemical** – chemicals used to change the fabric
- Biological** – bacteria & enzymes used on regenerated fibres
- Coating** – where fabrics are coated on one side

Why are fabrics finished?

To enhance: colour, pattern, lustre, texture, softer, firmer, drape, care properties, stain resistance, waterproof, flammability, colour fastness.



The type of fabric used to make a product depends on the following factors:

- | | | |
|--|---|--|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Cost | <input type="checkbox"/> Lifetime of the product |
| <input type="checkbox"/> Size of product | <input type="checkbox"/> Size of material | <input type="checkbox"/> Desired properties. |
| <input type="checkbox"/> Where and how the product will be used? | <input type="checkbox"/> Weight | <input type="checkbox"/> Workability |
| <input type="checkbox"/> Stability | <input type="checkbox"/> Finish required | <input type="checkbox"/> Fabric availability |



What you need to know:

- To be able to identify a range of smart & modern materials.
- Understand what they do, their properties and the functions they provide.

What is a SMART material?

- A 'smart material' can be defined as a material whose physical properties change in response to an input e.g. making them simpler or safer to use.
- A smart material reacts to external stimulus / changes in the environment without human intervention.

Designers and manufacturers are utilising SMART materials in a whole range of mass consumer products which often makes them simpler or safer to use.

SMART Material	Property
Hydrochromic Ink	Changes colour with water
Thermochromic Pigment/ Paint	Changes colour with heat
Photochromic Material/ Dye	Changes colour with light
SMA - Shape Memory Alloy	Changes shape with heat
Phosphorescent Material	Glow in the dark
QTC – Quantum Tunnelling Composite	Soft Electrical Switch
Polymorph	A thermoplastic use for prototyping which can reheated and reused

What is a MODERN material?

- Modern materials are technical materials which have been manufactured for function.

A good designer will utilise and exploit these materials where appropriate and keep up-to-date with the latest technological developments.

Modern Material	Property
Graphene	Is stronger than steel, flexible, conducts heat and electricity
Titanium	Is strong compared to its weight and is anti-corrosive
Metal foams	Are strong, lightweight, electrically & thermally conductive
Nanomaterials	Nanomaterials are between 1and 100 nanometres.
Fibre Optics	A hair like strands of pure glass designed to transmit signals
Corn Starch Polymers	Compostable plastics which are biodegradable



If it was not for the innovative technology of the fibre optical cabling the internet would not be possible. If your parents subscribe to Virgin this is what connects your broadband router or TiVo box to virgin. Without this cable we would not be able to download our music from iTunes or have a Skype conversation with family in Australia.



Shape Memory Alloys change shape easily but always return to their original shape when they are heated. There are many applications such as dental braces and unbreakable spectacles.

Titanium is a very versatile metal. It is usually alloyed with other metals to enhance the properties. Pure titanium does not react to the human body and is used extensively in medical procedures such as artificial joints and dental implants. It is strong compared to its weight and is anti-corrosive.



Hydrochromic paint is added to the charger socket of the Apple iPhone so apple knows when there has been water damage which voids the warranty.

Phosphorescent Materials absorb day light, store it and release it during periods of darkness. This has been extensively used for safety lighting, signage, watch faces and those glow in the dark stars kids have on their bedroom ceilings.

Polymorph is a clever thermoplastic which we can use for prototyping and is especially useful when it comes to modelling ergonomic grips. As it is thermoplastic you can reheat and reuse this material as many times as you wish.

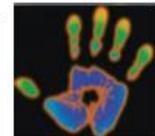
Thermochromic pigments are added to plastics and react to specific temperatures. One use is enhancing the safety of a babies bowl.

Compostable plastics are biodegradable which are compostable & come from renewable raw materials like starch (e.g. corn, potato or tapioca). Polylactic acid (PLA), is made from fermented sugars, found in starch.

Nanomaterials are between 1and 100 nanometres (A nanometre one thousand-millionth of a metre). Nanomaterials include carbon nanotubes, fullerene and quantum dots. Nanomaterials are used in car manufacturing to create cars that are faster, safer and more fuel efficient. They can also be used to produce more efficient insulation and lighting systems. They are also used as thin films or surface coatings, on computer chips.

Graphene is a 2D material a honeycomb lattice carbon structure only one atom thick (a million times finer than a human hair) It is 200 times stronger than steel, very flexible, conducts heat and electricity, and is almost transparent. It is impermeable to all known substances. Electronics and energy storage could be revolutionised

Thermochromic paints can be added to any surface like these mugs or a textiles or card based product to react to heat.



QTC (Quantum Tunnelling Composite) is a simple soft switch material that allows an electrical current to flow when compressed. We can use it in children's toys or in many textiles products such as the jacket right >

Photochromic pigments react to changes in light. One example is reaction lenses where they darken with sunlight.

Metal foams are porous metal structures made from aluminium and titanium. They are strong, lightweight, electrically & thermally conductive and absorb sound well. They are made by injecting gas into the liquid metal but still retain many properties of the original metal including being recyclable.



What you need to know:

- To be able to identify a range of composite materials and technical textiles..
- Understand what they do, their properties and the functions they provide.

What is a Composite material?

- Composite materials are formed when two or more distinctly different materials are combined together to create a new material with improved properties.

Composite Material	Property
Carbon Fibre	Aa very high strength-to-weight ratio, and is extremely rigid, waterproof but very expensive.
Glass reinforced plastic	A very high strength-to-weight ratio, resists corrosion, water resistant and is light weight.



Carbon fibre components are manufactured by laying up sheets of carbon fibre (fabric) and joining them together with a thermosetting resin (which makes them solid). We use them extensively in the automotive and aviation industries. It has a very high strength-to-weight ratio, and is extremely rigid, waterproof but very expensive.



Glass reinforced plastic (fibreglass) is made from fine glass fibres which are combined with a thermoset plastic resin and is moulded. It has a very high strength-to-weight ratio, resists corrosion, water resistant and is light weight. The fibre glass fibres are soaked in liquid plastic, and then pressed or heated until the material fuses together.

What are Technical Textiles?

- Technical textiles are manufactured for a specific use e.g. the function. As this is more important than the aesthetic quality.

Modern Material	Property
Kevlar®	Is five times stronger than steel, flexible and lightweight.
Nomex®	Can withstand high temperatures (thermal stability) strong & flexible.
Gore-Tex®	Waterproof & breathable as it prevents sweating.
Microencapsulation	Substances are trapped into fibres and are released through friction.
Conductive fabrics	Electrical signals can pass through them to power devices.

Types of Technical Textiles



Kevlar® can be a woven or knitted structure and has many applications, ranging from bicycle tyres, racing sails to body armour because of its lightweight, has high tensile strength-to-weight ratio; by this measure it is 5 times stronger than steel. It is also used to make components that need to withstand high impact.



Nomex® was developed to withstand high temperatures and reduce combustion when exposed to a naked flame. Nomex has many applications, ranging from protective clothing (fire service & military), racing suits and aerospace applications this is because of its strength, thermal stability, flexibility and resilience.



Gore-Tex® is a waterproof fabric that is 'breathable' it lets water vapour from perspiration (sweat) pass to the outside, but it stops rain drops from passing to the inside. Clothing or footwear made of Gore-Tex® is very useful to people who work or like outdoor pursuits and sports.



Microencapsulation traps liquid or solid substances within the fibres which embedded in to the fabric. When the fabric is rubbed or heated the substances can be released. Micro capsules can hold a variety of substances depending on the fabrics intended purpose such as:

- Scents and smells are children's toys fused with a scent of chocolate or scratch and sniff T-shirts.
- Antibacterial solutions are added to fabrics to cuts down on bugs (used in anti-bacterial dressings).
- Insect repellent clothing, chemicals are added to fabrics to prevent mosquito bites.



Conductive textiles are also known as **e-textiles** these are highly conductive threads and fabrics which allow an electrical signal to pass through them to power LED's headphones and microphones.



What you need to know:

- To understand how power is generated from renewable and non-renewable sources and be aware of the arguments for and against.

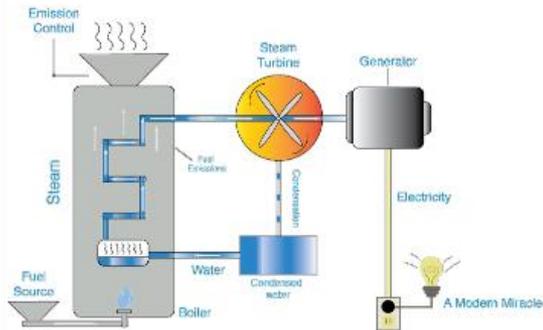
Energy generation

There are many ways to convert energy the two main categories are:

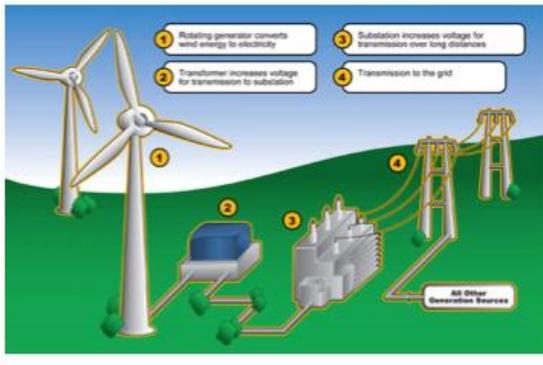
- Fossil fuels (finite)**
- Renewables (non-finite)**

Turbines & generators

Most forms of electricity production involve a rotating turbine which turns a generator. Fossil fuels are burned, this heats the water resulting in steam which turns the turbine which is linked to a generator to create electricity.



Renewable energy the energy is harnessed from the wind (wind turbines), wave (tidal) or falling water (hydroelectric) is converted into mechanical energy which rotates the turbine. A generator converts the mechanical energy into electricity.



Non-Renewable Resources

Traditionally designers have made products from raw materials that come from non-renewable (finite) resources that are in limited supply. Examples of these include oil, ores and minerals. They are natural materials but they will eventually run out.



WE CAN'T MAKE MORE

Renewable Resources

Renewable means we can create more as long as they are regrown or replaced this includes materials like paper & wood. Energy that comes from the non-finite resources are considered renewable. This includes wind, wave, solar, geothermal, tidal and biomass.



WE CAN MAKE MORE

Fossil Fuels

Fossil fuels (coal, oil & gas) are considered finite as they can not be replaced. 55% of Britain's electricity is generated from coal and gas.



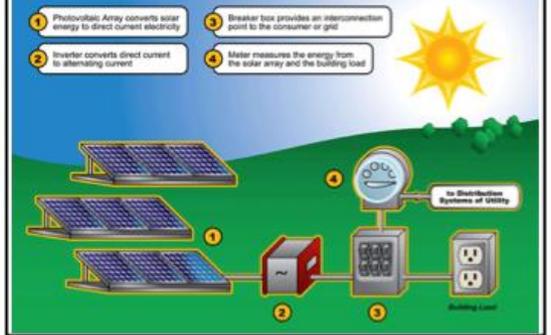
Biofuel

Biofuel is a way of producing energy for transportation & heating. Oil and starch producing crops are grown, harvested and refined into a number of products such as biodiesel. This process is known as biomass energy production.



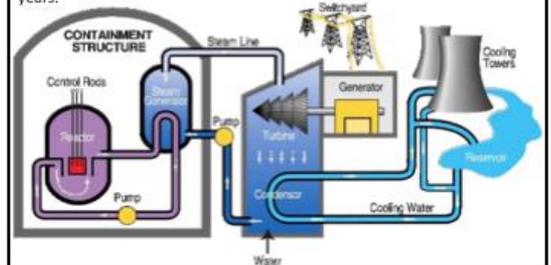
Solar Energy

The photovoltaic effect involves the conversion of solar energy into electrical energy. The solar panel capture the sun's rays and converts them into electrical energy.



Nuclear power

The controversial method of energy, it is considered clean & efficient. The process takes place in the reactor vessel, control rods in and out of the reactors core to regulate the power generated. The reaction generates vast amounts of heat like other methods and generates power to the and generator. The downside to nuclear power is that the waste product produced from the reaction is radioactive and very dangerous to all forms of life. It must be contained and stored correctly so the radiation doesn't leak. This is usually underground and this waste will be radioactive for years.



English





Section A

Question 1:

Timing: 5 mins

Marks: 4

Skill assessed: Information retrieval

Q: List four things about...

Write in full sentences which make sense
Only take information from the lines specified.

Question 2:

Timing: 10 mins

Marks: 8

Paragraphs: 3

Skill assessed: Language analysis

Q: How does the writer use language to...

Language techniques:

- Metaphor
- Simile
- Oxymoron
- Personification
- Alliteration
- Sentence forms
- Imagery
- Repetition
- Pathetic fallacy
- Semantic field of...

Question 3:

Timing: 10 mins

Marks: 8

Skill assessed: Structural analysis

Q: How has the writer structured the text to interest you as a reader?

Key words:

SHIFT/ZOOM/FOCUS/CONTRAST

Structural features:

- Dialogue
- Drop paragraph
- Shift in time (flashback)
- Repetition
- Sentence structures
- Tone
- Narrative voice

Mark Scheme

Band 4: Perceptive, detailed analysis

Band 3: Clear, relevant explanation.

Band 2: Some understanding and comment.

Band 1: Simple, limited comment.

Question 4:

Timing: 15 mins

Marks: 20

Skill assessed: Evaluation

Q: To what extent do you agree?

- Do you agree or disagree with the statement?
- Use quotations
- Comment on language and structural techniques (See Q2 and 3)
- Talk about effect on the reader (WHY has the writer chosen to present the character/environment this way?)

I dis/agree with the statement because...

The writer focuses our attention on...

" _____ "

The writer uses the verb/phrase/metaphor

" _____ "

This suggests/this implies/this creates a sense of...

Section B

Question 5:

Timing: 45 mins

Marks: 40

Skills assessed: AO5 & AO6

You will be given an image and asked to either write a description or a narrative. You should only choose one.

You must spend five minutes planning your writing.

Use structural and language techniques in your writing.

You must spend five minutes reading through your work to check for errors when you have finished.

If you choose to write a narrative, keep your time period short and when it comes to characters, less is more.

Keep your narrative realistic. You only have a short period of time to impress the examiner with the quality of your writing.



Section A

Question 1:

Timing: 5 mins

Marks: 4

Skill assessed: Information retrieval

Q: Shade four statements which are true.

- Read the source focusing on the lines given.
- Choose four statements which are true.

Question 2:

Timing: 10 mins

Marks: 8

Skill assessed: Inference and synthesis

Q: Use details from both sources to write a summary.

- Ensure you understand both sources.
- Identify the specific focus in the question.
- Use relevant quotations in your answer, along with inference.

Language to compare:

Whereas

Although

Even though

Similarly

On the other hand

Despite

However

In the same way

Equally

Question 3:

Timing: 15 mins

Marks: 12

Skill assessed: Language analysis

Q: How does the writer use language to? Identify relevant quotations in the text. Annotate your evidence to show which technique has been used and why before you write your paragraphs.

Language techniques:

Metaphor

Simile

Oxymoron

Personification

Alliteration

Sentence forms

Imagery

Repetition

Pathetic fallacy

Semantic field of...

Mark Scheme

Band 4: Perceptive, detailed analysis

Band 3: Clear, relevant explanation.

Band 2: Some understanding and comment.

Band 1: Simple, limited comment.

AO5: Communication and organisation

AO6: Technical accuracy

Question 4:

Timing: 15 mins

Marks: 20

Skill assessed: Comparison and analysis

Q: Compare methods in both texts

- Compare sources A and B
- Comment on language techniques and effect
- Comment on type of text
- Comment on purpose of text
- Consider how each writer conveys the attitude/perspective that the question asks you to focus on.
- Pick out methods (language and structure) and analyse the effects on the reader. Use this to support your opinion.
- Analyse the effect on the reader in as much detail as possible.
- Talk about a RANGE of devices (3 or more)
- Use well chosen evidence (precise key-word quotations) to support each idea.
- Use connectives to compare throughout.

Section B

Question 5:

Timing: 45 min

Marks: 40

Skills assessed: AO5 & AO6

You must spend five minutes planning your writing.

Use structural and language techniques in your writing.

You will be asked to write a speech/article/letter.



Context:



Fate determined by the stars
Superstition the core of Elizabethan values
Patriarchal society, therefore patriarchal structures within families and households

Marriage not for love, but to form alliances
Religion a contributing factor to all things moral

Plot:



Shakespeare's Romeo and Juliet tells the tale of a young man and woman, who fall in love but are destined for tragedy due to their warring families - the Montagues and the Capulets.

Characters:

- Romeo
- Juliet
- Lord & Lady Capulet
- Lord & Lady Montague

- Benvolio
- Prince Escalus
- Paris
- Nurse
- Friar Laurence
- Mercutio
- Tybalt



Authors intentions:



- Shakespeare wanted his audience to understand and explore love and conflict.
- He set some plays in Renaissance Italy to question societal structures and religion without upsetting leaders in England.

Key quotes:

'Civil blood makes civil hands unclean'
'It is the east and Juliet is the sun'
'These violent delights have violent ends'
'A plague o' both your houses!'
'Let two more summers wither in their pride, ere we may think here ripe to be a bride.'
'O Romeo Romeo, wherefore art thou Romeo?'



Themes:

- Love
- Violence
- Family & honour
- Religion
- Fate
- Gender
- Light & dark



Key vocabulary:

- Patriarchy
- Agency
- Renaissance
- Conflict
- Masculinity
- Sonnet
- Rhyming couplet
- Power



Structural information:

- The form of the text is a tragic play.
- The play opens with a prologue to reveal the content.
- Five acts split into scenes.
- When analysing the structure of Romeo and Juliet, think about how Shakespeare develops a key theme or character throughout the narrative and plot of the play.



Analytical verbs:

- Illustrates
- Reveals
- Implies
- Emphasises
- Highlights
- Presents
- Represents
- Symbolises
- Suggests





Geography





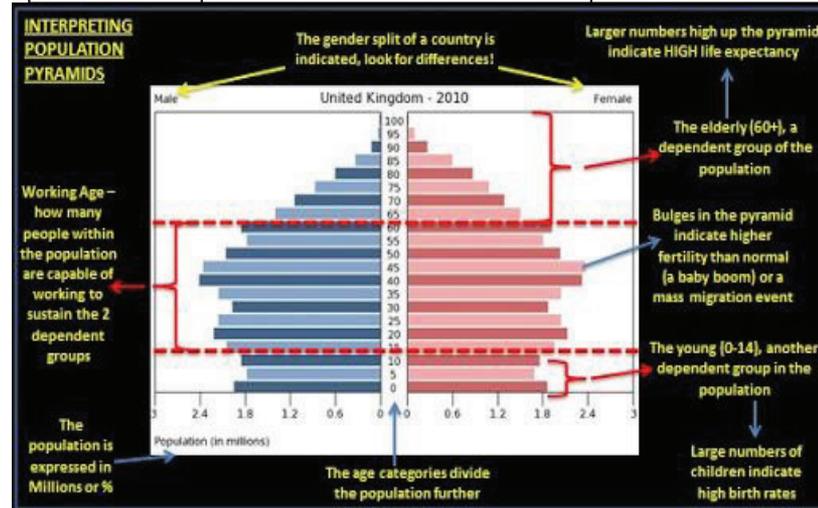
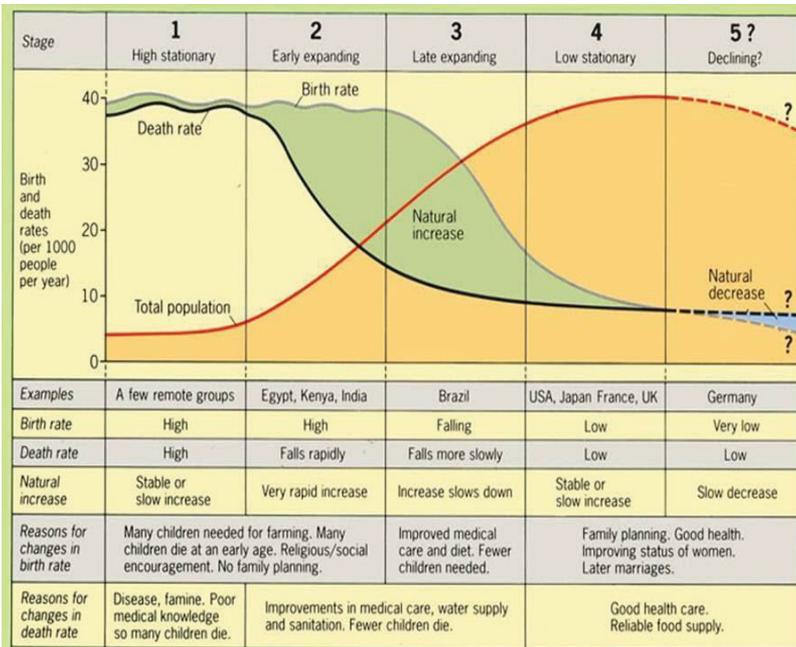
The human development index (HDI)

is a better measure as it includes 3 development indicators:

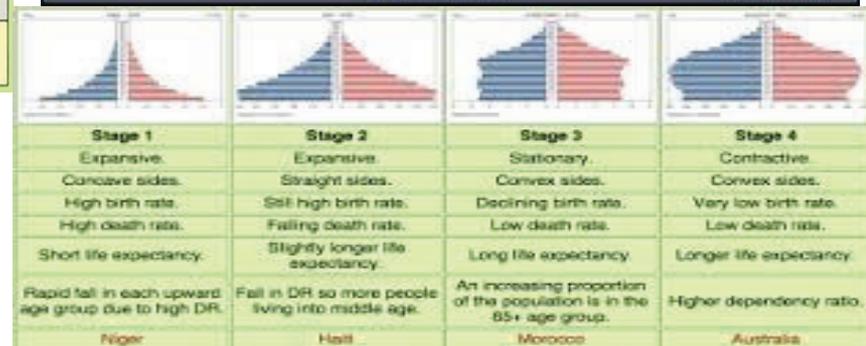
Life expectancy, GDP and adult literacy

A single measure of development can give a false picture as it gives an average for the whole country. Data could be out of date and the informal economy is not often included

Indicator	Description	High or low
GDP/GNI	Economic indicator. A measure of a countries wealth	High in a developed country
Birth rate	Number of births per 1000 per year	Low in a developed country
Death rate	Number of deaths per 1000 per year	Low in a developed country
Adult literacy	% adults who can read and write	High in a developed country
Infant mortality	% babies that die before the age of one	Low in a developed country



The demographic transition model is a guide as to how countries population can change over time. Their populations will go through a series of stages as their birth rates and death rates change. Developments in sanitation and medicine will begin to have an impact on these two indicators.





Causes of uneven development

Physical: The nature of the landscape (deserts/mountains/tropical rainforests) can make development challenging. Extreme natural events (tropical storms/earthquakes) can lead to money spent on recovery not development. Some countries are landlocked making trade expensive and politically challenging.

Historical: Many European nations had African countries all colonies. They took their resources and when these countries got Independence it resulted in civil wars hampering development

Economic: Many poorer nations trade primary goods(raw materials) these have a low value and the price fluctuates world trade is dominated by the wealthy countries. Processing which adds value takes place in richer countries.

Reducing the development gap: Aid

Aid is when a government or non government organisation **NGO** gives help to another country in the form of money, emergency supplies, food or specialist skills. It can help by enabling countries to invest in roads, health care and education. **Only Aid that is long term and freely given can really help to close the development gap.**

Jamaica is a small Caribbean Island chosen **tourism** as a way to close the development gap. There are positives and negatives to this. It has



Disparities in wealth can affect health

In rich countries there is money to pay for hospital and vaccines. In poorer countries there is less money for health care. In **LIC's** death is usually from infections diseases and in childbirth. In **HIC's** death is related to old age or lifestyle choices leading to cancers and heart problems.

Reducing the development gap: Investment

Countries and TNC's invest money and expertise in LIC's China have invested in a railway in Nigeria and a power station in Zimbabwe. There are some benefits but many think it's a type of exploitation benefitting China

Reducing the development gap: Intermediate technology.

Intermediate technology is sustainable and appropriate to the needs, knowledge and wealth of the local people. EG: Adis Nifra In Ethiopia where as small dam was created to help with irrigation

Economy

Tourism is 24% of GDP in Jamaica ✓
Some money earned from tourism goes to the HIC travel companies ✗

Infrastructure

Investment in roads and airports ✓
Some parts of the island remain isolated ✗
Quality of life. In the popular resorts locals benefit. ✓

In the rural areas life remains very hard
The environment ✗

Conservation has created jobs ✓
Mass tourism creates a lot of waste ✗

Disparities in wealth can affect migration..

Migration = people move from place to place.
Internal migration = within a country
International migration = across country borders
Economic migration = moving to earn more money
Refugee = fleeing from a place of danger

Middle East crisis of 2015. Civil war in Syria lead to the migration of millions of people into Europe to seek safety. An estimated 1.1 million migrants entered Germany in 2015

Reducing the development gap: Industrial Development

Countries invest in manufacturing housing is built and hospitals roads and railways. Population becomes better educated and healthier and industry can expand. This is called the **POSITIVE MULTIPLIER EFFECT**

Closing the development gap: Fair Trade

Fair trade is an international movement that sets standards for trade to ensure that producers in LICs get a fair deal. Fair trade also helps to fund local community projects and all farming is done in environmentally friendly way

Reducing the development gap :
Micro finance.

This involves small scale financial support. It helps people especially women to start up small businesses. The Garmeen bank is an example

Up to 2016 any one from the European Union was free to move to the UK. Most migrants work and pay tax. Migrants can put pressure on services like schools

Reducing the development gap: Tourism

Countries with Tropical beaches etc. can attract tourists. Investment in the local area can benefit the local economy and people get jobs. However there can be damage to the natural environment and it is vulnerable to recession

What is Free trade?. Free

trade is when countries can trade with each other without tariffs (taxes). This has the potential to benefit the worlds poorest. However subsidies are a barrier to free trade. This is when rich countries give money to their farmers to help them produce goods cheaply. This can steal trade from Lic's.

What is a trading group?

Countries can join together to get higher prices for their goods. EG the EU



Nigeria's Importance
 2014 Nigeria was the 21st largest economy in the world.
 It had a population of 195.9 million in 2018
 Nigeria contribute the UN peace keeping force.
 It has the largest population in Africa.
 It has the fastest growing economy in Africa



Semi desert

Tropical grassland and Savannah

High temperatures and high rainfall

Political Links:
 OPEC and the United Nations. Also the African Union

Manufacturing in Nigeria.
 Today manufacturing accounts for 10% of Nigeria's economy. EG Volkswagen. Regular paid work gives people an income. Industry stimulates growth in other areas of the supply chain. People pay taxes to the Government. **This is an example of the multiplier effect**

Problems with AID
 Corruption is a major problem in the loss of AID donations
 Donors may have political influence on where the Aid is sent
 Nigeria could become dependant on the AID

60% of Nigerians still live in Poverty and there remain real threats to the environment



Background: Nigeria is a multi ethnic country. There was a civil war between 1967 and 1970. Christians to the South Muslims to the North where there is a terrorist group called Boko Haram

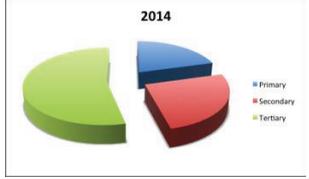
Trade: Nigeria **exports:** crude and refined petroleum, natural gas, rubber, cocoa and cotton.
Imports: refined petroleum from the EU and the USA cars from Brazil and the USA telephones from China
 Today oil accounts for 95% of Nigerias export earnings

Advantages of TNC's
 Employment and learning new skills ✓
 Investment in local infrastructure ✓
Disadvantages of TNC's
 Poorly paid ✗
 Poor working conditions ✗
 Profit goes abroad ✗

Aid in Nigeria Aid from the USA has helped to prevent the spread of AIDS. The world bank approved AID for loans for business

Political Context:
 During colonial times Nigeria was ruled by the UK. It got its independence in 1960. Up to 1990 there was Political instability. Since then the Government has been more stable. Today China invest heavily in Nigeria

Nollywood is the second largest film industry in the world



TNC's in Nigeria : Two main Trans National companies in Nigeria are: Unilver and Shell oil

Unilver. Anglo-Dutch TNC. Employs 1500 people. Helped to promote health care and education

Shell One of the worlds largest oil companies.
 Major contributions in taxes ✓ ✓
 Employs 65000people ✓
 Many oils pills have caused environmental damage ✗

The effect of development on the Environment:
Industrial Growth: Pollution from factories gets in to the water supply. Gases get into the atmosphere. Many forests have been cleared for Industrial development
Urban Growth: Waste from homes is a major issue. Traffic congestion pollutes the air. More deforestation when the new capital ABUJA was built.
Mining and oil extraction: Tin mining leads to soil erosion. Oil spills can harm the coast and cause fires. Very bad spill BODO 2008-9
Commercial farming: Water pollution due to the use of chemicals, Soils erosion due to forest clearnce leads also to the loss of species

Quality of life There have been many benefits to development: Higher disposable incomes. Improvements to infrastructure. Better access to safe water. Better quality health care.
HOWEVER:
 Many people are still very poor. The gap between the rich and poor is wider. Over dependant on oil which could be a problem in the future.
 Nigeria's HDI has increased from 0.46 in 2005 to 0.50 in 2013



Science



B6: Plants

- Lesson sequence**
1. Photosynthesis
 2. Leaves
 3. Factors affecting photosynthesis
 4. Core practical – effect of light intensity on photosynthesis
 5. Roots
 6. Transpiration and translocation

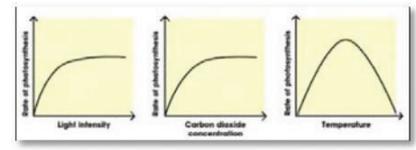
1. Photosynthesis	
Photosynthesis	How plants produce glucose using the energy from light.
Photosynthesis equation	Carbon dioxide + water → glucose + oxygen
Chloroplast	Part of a plant cell where photosynthesis happens.
Chlorophyll	A green pigment that enables photosynthesis by trapping the energy in light.
Forming starch	As soon as they are made, glucose molecules are joined together into long chains to form starch.
At night	Starch is converted into a sugar called sucrose which is easy to move around the plant.
Uses of sucrose	Sucrose is converted into: - Glucose for respiration - Starch for storage - Other molecules for growth
Biomass	The total mass of materials in an organism (except water). Photosynthesis is the main source of biomass.

2. Leaves	
Job of leaves	To conduct as much photosynthesis as possible as quickly as possible.
Leaf adaptations	To do more photosynthesis, leaves have: a large surface area, a waxy cuticle, palisade cells, a spongy layer, stomata.

Large surface area	Allows the leaf to absorb more light.
Waxy cuticle	A waxy coating that stops water evaporating from the leaf.
Palisade cells	Tall cells in a leaf with many chloroplasts for lots of photosynthesis.
Spongy layer	A layer of cells with lots of gaps that allows gases to move around inside the leaf.
Stomata (singular = stoma)	Holes in the bottom of the leaf that allow carbon dioxide in and oxygen and water vapour out.
Stomata structure	Each stoma is surrounded by two cells called guard cells that can swell to open it or shrink to close it.
How stomata work	During the day, the stomata open to allow gas exchange. At night the stomata close. Stomata also close during dry spells to stop water loss.

3. Factors affecting photosynthesis	
Limiting factor	A factor that holds back the rate of photosynthesis when in short supply.
The limiting factors	Carbon dioxide concentration, light intensity, temperature.
Limiting factor graphs	The line slopes up when the factor is limiting, the line levels out when the factor is not limiting.
Carbon dioxide and light intensity	To start with, increasing them will increase the rate of photosynthesis because they are limiting. Eventually increasing them further has no effect as they are no longer limiting.
Temperature and photosynthesis	Increasing temperature towards the optimum increases the rate as particles move faster and collide more. Increasing past the optimum decreases rate as enzymes denature.
Inverse square	_____

4. Core practical – effect of light intensity on photosynthesis (CP4)

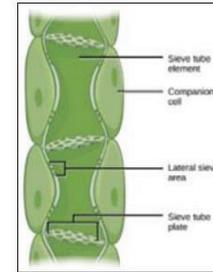


CP4 – Key question	How does light intensity affect the rate of photosynthesis?
CP4 - Set up	Place some pondweed in a beaker of water with a glass funnel over it and place it 10 cm away from a lamp and wait three minutes for it to settle.
CP4 - Counting	Count the number of bubbles produced in a minute. results
CP4 - Varying	Repeat the experiment lowering the light intensity by moving the lamp 10 cm further away each time until it is 50 cm away.
CP4 - As the light intensity decreases, the Results	number of bubbles per minute decreases because the rate of photosynthesis decreases.

5. Roots	
Role of roots	To absorb water and nutrients from the soil.
Root hair cells	Role: To quickly absorb water and minerals from soil Adaptations: A long hair which increases their surface area, thins cell walls to ease water absorption.
Movement of water	Water enters roots by diffusion and osmosis and travels to the xylem in the centre.
Diffusion in roots	Water diffuses along the cell walls around the outside of each cell until it reaches the xylem.
Osmosis in roots	Water travels from cell to cell across cell membranes by osmosis until it reaches the xylem.

Minerals in the soil	Plants absorb minerals from soil such as nitrates, phosphates and potassium.
Absorbing minerals	Plants absorb minerals by active transport because their concentration is low.

6. Transpiration and translocation	
Transpiration	The movement of water into a plant's roots, up its stem and evaporating out of the leaves.
Xylem	Hollow tubes that carry water from the roots, up the stem to the leaves.
Xylem cells	Role: To carry water from the roots to the leaves. Adaptations: Hollow to let water pass, no walls between neighbours to allow water through, rings of lignin to make them strong.
Factors increasing transpiration	Air movement (wind), dryer air (low humidity), higher temperatures
Translocation	The movement of sucrose (sugar) around a plant through the phloem.
Phloem	Tissue that transports sucrose around plants, made of sieve tubes and companion cells.
Sieve tubes	Cells in phloem with a large channel running through them to carry sucrose solution.
Companion cells	Cells in phloem that sit next to the sieve tubes and pump sucrose into the sieve tubes.





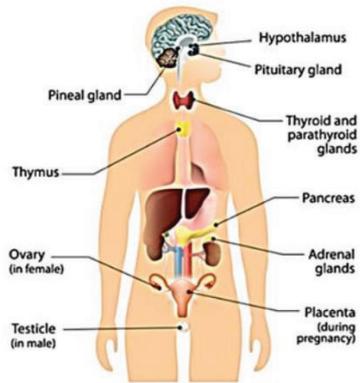
B7: Hormones

Lesson sequence

1. Hormones
2. Thyroxine and adrenalin
3. The menstrual cycle
4. Hormones and the menstrual cycle
5. Contraception and fertility treatment
6. Controlling blood glucose
7. Diabetes

1. Hormones

Hormone	A chemical messenger that changes the way a part of the body works.
Important hormones	Insulin, glucagon, adrenalin, oestrogen, progesterone, testosterone, thyroxine, LH, FSH, ACTH, growth hormone.
Endocrine gland	Parts of the body that produce hormones
Important endocrine glands	Pituitary gland, thyroid gland, pancreas, adrenal glands, ovaries and testes.
Target organ	The part of the body affected by a hormone.
Important hormones	Insulin, glucagon, adrenalin, oestrogen, progesterone, testosterone, thyroxine, LH, FSH, ACTH, growth hormone.
Sex hormones	Women: oestrogen and progesterone Men: testosterone



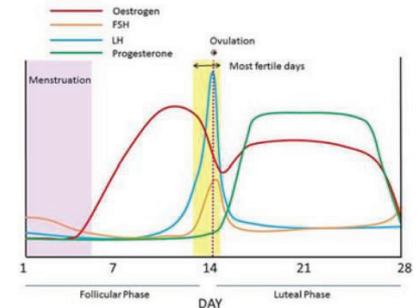
2. Thyroxine and adrenaline (HT)

Metabolic rate	The rate at which the body uses the energy stored in food.
Thyroxine	Role: To control your metabolic rate. Endocrine gland: Thyroid gland Target organ: Most of the body
Negative feedback	The way the body responds to high levels of something by bringing them down, and low levels by bringing them up.
Negative feedback and the metabolic rate	1) Low levels of thyroxine stimulates production of TRH in hypothalamus 2) This causes the release of TSH from the pituitary gland 3) TSH causes the thyroid to produce thyroxine 4) Normal levels of thyroxine inhibits the release of TRH and the production of TSH

Adrenaline	Role: To prepare the body for fight or flight Endocrine gland: Adrenal glands Target organ: Heart (beats faster and stronger), blood vessels going to muscles (get wider), blood vessels going to organs (get narrower), liver (releases glucose)
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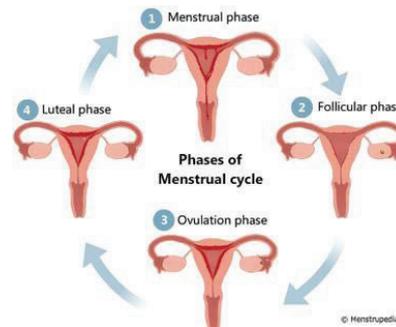
3. The menstrual cycle

Menstrual cycle	A (roughly) 28 day cycle that prepares a woman's body for pregnancy.
Ovulation	The release of an egg cell by an ovary
Fertilisation	When a sperm cell fuses with an egg cell to form a zygote.
Days 1-5	Menstruation (a period): the lining of the uterus breaks down and leaves the body through the vagina.
Days 6-12	The uterus lining begins to thicken again.
Days 13-15	Ovulation happens
Days 16-28	The uterus lining continues to thicken and would be able to accept an embryo if fertilisation happens.
Control of the cycle	The menstrual cycle is controlled by the sex hormones: oestrogen and progesterone.



4. Hormones and the menstrual cycle (HT)

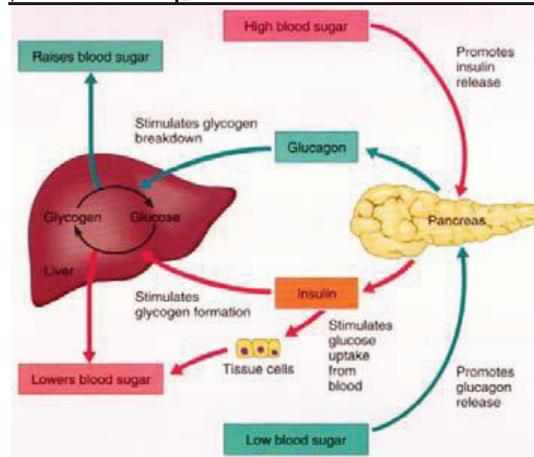
Egg follicle	A layer of tissue surrounding each of the immature eggs in the ovaries.
Oestrogen	Causes the release of FSH and the thickening of the uterus lining. High oestrogen levels cause LH release.
FSH	Causes one follicle to develop and mature the egg cell within it.
LH	Causes ovulation when the egg is released from the follicle.
Corpus luteum	The follicle becomes a corpus luteum after ovulation, and releases progesterone. It breaks down over two weeks.
Progesterone	Maintains the thickness of the uterus lining, inhibits FSH release. Falling progesterone levels trigger ovulation.





5. Contraception and fertility treatment	
Contraception	Preventing sexual intercourse from leading to fertilisation and pregnancy.
Condom	Worn on the penis, they prevent sperm from entering the vagina. Also prevent STDs.
Diaphragm or cap	Placed over the cervix at the top of the vagina. Prevent sperm entering uterus, do not prevent STDs.
Contraceptive pill / implant	Uses hormones to prevent ovulation. Does not prevent STDs.
Assisted reproductive technology (ART)	Using hormones and other methods to increase the chance of pregnancy.
Clomifene therapy	Clomifene increases the levels of FSH and LH to make egg successful ovulation more likely.
In vitro fertilisation (IVF)	Sperm is extracted from a man, and eggs from a woman. The eggs are fertilised in a laboratory and one or more is placed into the uterus.

6. Controlling blood glucose	
Homeostasis	Maintaining constant conditions in the body, such as temperature or blood glucose concentration.
Blood glucose concentration	The concentration (amount) of glucose in the blood. Both too high and too low are dangerous.
Glycogen	A stored form of glucose made by joining glucose molecules together in long chains.
Insulin	Role: To reduce blood glucose concentration Endocrine gland: Pancreas Target organ: Liver and muscles which convert glucose into glycogen.
Glucagon	Role: To increase blood glucose concentration Endocrine gland: Pancreas Target organ: Liver and muscles which convert glycogen back into glucose.



7. Diabetes	
Diabetes	A disease in which the body cannot quickly reduce blood glucose concentrations after eating.
Type 1 diabetes	Diabetes caused when a person's pancreas can't produce insulin.
Treating type 1 diabetes	Insulin injections.
Type 2 diabetes	Diabetes caused when a person does not produce enough insulin (because of very high glucose levels) or stops responding to insulin.
Risk factors for type 2 diabetes	Obesity and inactivity (lack of exercise).
Treating type 2 diabetes	Low-sugar diet, increased exercise, medication to make the body more sensitive to insulin.
Measuring obesity	Body mass index above 30: $BMI = \text{mass in kg} / \text{height in metres}^2$ High waist:hip ratio $\text{Waist:hip ratio} = \text{waist} / \text{hip}$



B8: Exchange and transport

Lesson sequence
<ol style="list-style-type: none"> Efficient exchange and transport The circulatory system The heart Respiration Core practical – respiration rates

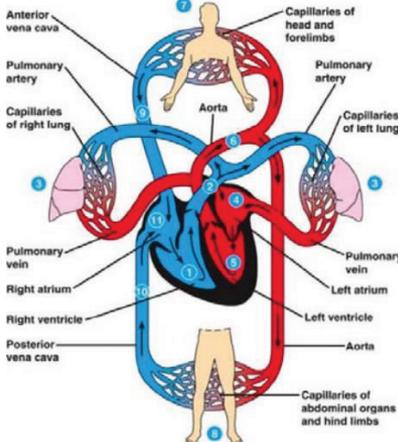
1. Efficient exchange and transport	
Substances needed by body	Oxygen, glucose, nutrients.
Waste products	Carbon dioxide, urea.
Transport	Moving substances around the body.
Exchange	Moving substances in and out of our cells.
Diffusion	The way substances move in and out of cells – they diffuse from high to low concentration.
Increasing diffusion	High surface area, thin surfaces
Surface area: volume ratio	Surface area / volume
Importance of SA: volume ratio	A higher ratio means there is more surface area, so substances can diffuse in and out of cells more quickly.
Alveoli	<p>Role: Air sacs in lungs where CO₂ and O₂ are exchanged</p> <p>Adaptations: millions of them gives a high surface area, good blood supply maintains a high concentration gradient, thin walls increases diffusion</p>

2. Circulatory system	
Circulatory system	Your heart, arteries, capillaries and veins which work together to pump blood around the body.
The role of blood	To carry oxygen and nutrients to our cells and take waste products away.

Arteries	<p>Role: Carry blood away from the heart</p> <p>Adaptations: Thick muscle walls to withstand the high pressure, elastic fibres to stretch as pressure increases during a pulse.</p>
Capillaries	<p>Role: To exchange nutrients and waste between the blood and cells.</p> <p>Adaptations: Thin walls to increase diffusion, many many of them to give a high surface area.</p>
Veins	<p>Role: To carry blood towards the heart</p> <p>Adaptations: Thin walls because pressure is low, wide because blood is moving slowly, valves so blood flows right way.</p>
Components of blood	Plasma, red blood cells, white blood cells, platelets.
Plasma	A straw-coloured liquid that carries the blood cells and dissolved substances such as urea, carbon dioxide and glucose.
Red blood cells (erythrocytes)	Contain haemoglobin to carry oxygen around the body.
White blood cells	<p>Fight pathogens (infections). Many types including:</p> <p>Phagocytes – engulf ('eat') pathogens.</p> <p>Lymphocytes – produce antibodies to attack pathogens.</p>
Platelets	Small fragments of cells that help the blood to clot when you are cut.

3. The heart	
Heart	A double pump that pumps blood: <ul style="list-style-type: none"> Right side: to lungs Left side: around the whole body
Atria (atria)	The two chambers at the top of the heart. <ul style="list-style-type: none"> Right: receives blood from body Left: receives blood from lungs

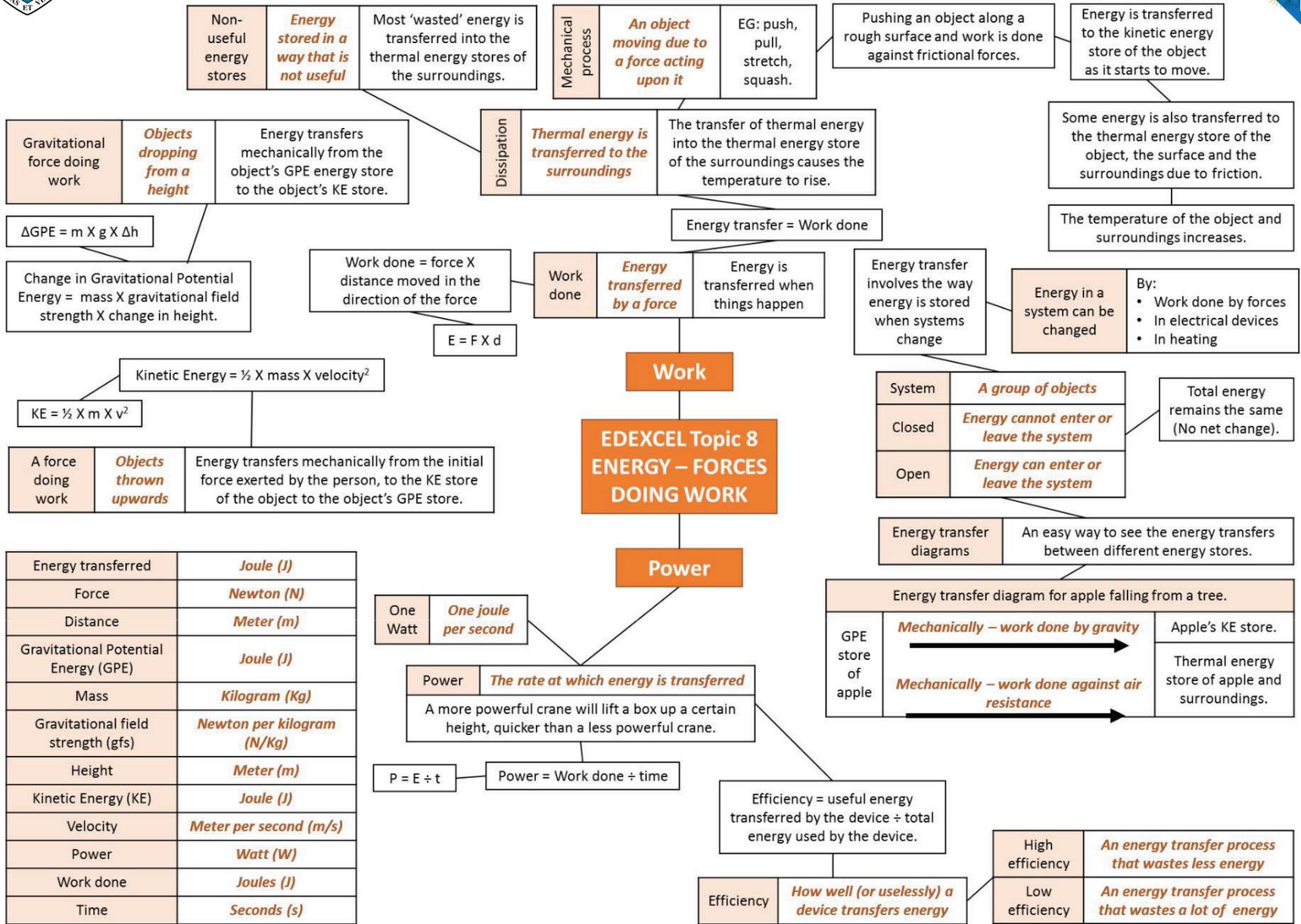
Ventricles	The two chambers at the bottom of the heart <ul style="list-style-type: none"> Right: pumps blood to lungs Left: pumps blood to body
Valves	Prevent blood from flowing from the ventricles back to the atria
Vena cava	Carries blood from the body into the right atrium.
Pulmonary artery	Carries blood from the right ventricle to the lungs.
Pulmonary vein	Carries blood from the lungs to the left atrium.
Aorta	Carries blood from the left ventricle to the body.
Cardiac output	Cardiac output = stroke volume x heart rate
Increasing cardiac output	Stronger heart beats (higher stroke volume), higher heart rate.



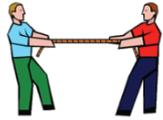
4. Respiration	
Respiration	An exothermic reaction carried out in all living cells to release energy from food molecules such as glucose.
Aerobic respiration	The main type of respiration, which takes place in mitochondria and uses oxygen.

Aerobic equation	glucose + oxygen → carbon dioxide + water
Anaerobic respiration	A form of respiration that releases less energy but extremely quickly. Takes place in the cytoplasm.
Anaerobic equation	Glucose → lactic acid
Role of aerobic respiration	To provide an energy boost during intense exercise when aerobic respiration alone isn't enough.
Lactic acid	A poison that builds up in muscles during anaerobic respiration leading to muscle tiredness and cramp.
Excess post-exercise oxygen consumption	We continue to breath heavily and have a high heart rate after exercise to get lots of oxygen to the muscles to oxidise harmful lactic acid to CO ₂ and H ₂ O.

5. Core practical – rate of respiration (CP5)	
CP5 – Key question	How does temperature affect the rate of respiration in small animals.
CP5 - Set up the respirometer	Place some soda lime (absorbs CO ₂) into the test tube put a protective layer of cotton wool over it, add ten maggots, insert in bung with capillary tube and put in water bath to adjust for 5 mins.
CP5 - Run the respiration experiment	Dab the open end of the capillary tube with red food colouring and start the stopwatch.
CP5 - Record results	Every five minutes for fifteen minutes, measure the distance travelled by the food colouring.
CP5 - Vary the temperature	Repeat the experiment in water baths set to different temperatures.
CP5 - Results	The higher the temperature, the faster the animals respire.



Forces and Their Effects

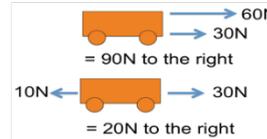


Scalar	<i>Has a magnitude (size)</i>	Temperature, speed, mass, time.
Vector	<i>Has a magnitude (size) and a direction</i>	Velocity, gravity, momentum.

Vectors	<i>Pairs of arrows are used</i>	Length or arrow shows magnitude, direction of arrow shows the direction of the force
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Force	<i>A vector quantity</i>	. A push or a pull on an object.
Contact forces	<i>Two objects have to touch for the force to act. Interact at zero distance.</i>	Caused by objects interacting. E.G. Friction, man pushing a wall, a book on a table, Upthrust of water on a boat.
Non-contact forces	<i>Two objects do not have to touch for the force to act. Can interact at a distance.</i>	Caused by interacting fields. E.G. Magnetic forces, electrostatic forces, gravitational forces.



Free body force diagrams	<i>A diagram showing all the forces acting on an isolated object or a system</i>	The size and direction of the pairs of forces acting upon an object or system.
Resultant force	<i>Forces acting along the same line</i>	Add together the forces acting in the same direction. Subtract the forces acting in opposite directions.
Vector diagrams	<i>A diagram where forces do not act in the same line. Use scale diagrams to find the resultant force</i>	Draw all the forces acting upon an object. Make sure they are to scale and in the right directions. Draw a joining line from the start of the first force and the end of the last force.

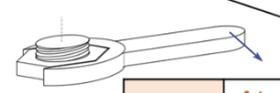
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Vector diagrams

EDEXCEL TOPIC 9 - FORCES AND THEIR EFFECTS

Objects affecting each other

The sum of clockwise moments = The sum of anti-clockwise moments .



Principle of moments *Rotational forces are in equilibrium*

Moment *A turning effect of a force* When a force causes an object to rotate. EG: Spanner on a nut.

Moment of a force = force X distance normal to the direction of the force.

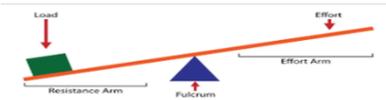
Moment of a force	<i>Newton metre (Nm)</i>
Force	<i>Newton (N)</i>
Distance normal to direction of force	<i>Metre (m)</i>

PHYSICS HIGHER ONLY

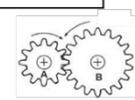
Rotational forces

Lubrication *Using a liquid to reduce friction between moving parts* Reduces unwanted thermal energy transfer.

Lever *A bar pivots about a point and transfer a force.* Using a long lever the force applied by a man at one end can be multiplied at the load end to lift a large force.



Gears *Two interlocking round circles with 'teeth'* Gear A moves and affects gear B by interlocking the teeth and passing on the rotation motion.

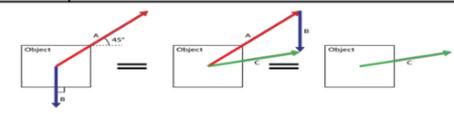


Gear A has 12 teeth and gear B has 18 teeth.

The wheel with more teeth turns slower but the moment of the turning force will be bigger.

Ratio of moments = ratio of teeth = ratio of radii.

Equilibrium	<i>Pairs of forces are balanced, the resultant force is zero</i>	On a scale diagram, the tip of the last force drawn should end where the tail of the first force was drawn
Resolving forces	<i>Not all forces act horizontally or vertically</i>	If make the 'awkward' angle easier to work with, split it into two components - drawn at right angles the two forces act together to have the same effect as the single force.





Cell	Battery	Switch	Lamp	Ammeter	Volt meter	Diode	LED	LDR	Fuse	Resistor	Variable resistor	Thermistor
Store of chemical energy	Two or more cells in series	Breaks circuit, turning current off	Lights when current flows	Measures current	Measures potential difference	Current flows one way	Emits light when current flows	Resistance low in bright light	Melts when current is too high	Affects the size of current flowing	Allows current to be varied	Resistance low at high temp

Electrons carry current. Electrons are free to move in metal.

Current	Flow of electrical charge	Ampere (A)
Potential difference (p.d.)	How much electrical work is done by a cell	Volts (V)
Charge	Amount of electricity travelling in a circuit	Coulombs (C)

Circuit symbols

Current and Charge
Current, potential difference and resistance

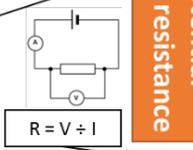
Series and parallel circuits

Series circuit	Current is the same in all components.	Total p.d. from battery is shared between all the components.	Total resistance is the sum of each component's resistance.
Parallel circuit	Total current is the sum of each component's current.	p.d. across all components is the same.	Total resistance is less than the resistance value of the smallest individual resistor.

Series	Parallel
A circuit with one loop	A circuit with two or more loops
Total p.d. If cells are joined in series, add up individual cell values	

Charge = Current X time $Q = I \times t$

Controlling current
 Changing current: Change the p.d. of the cells, Add more components



Ammeter	Set up in series with components
Voltmeter	Set up parallel to components

Resistance = Potential difference ÷ Current
 $R = V \div I$

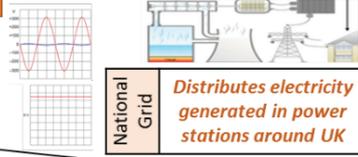
Resistance (Ω)	A measurement of how much current flow is reduced
The higher the resistance, the more difficult it is for current to flow.	
Increasing resistance, reduces current.	
Increasing voltage, increases current.	

Electrical Circuits

Energy transfers

Power (W) = potential difference X current $P = V \times I$
 Power = (current)² X resistance $P = I^2 \times R$
 Energy transferred = Power X time $E = P \times t$

Domestic uses and safety



Step-up transformers	Step-down transformers
Increase voltage, decrease current	Decrease voltage, increase current
Increases efficiency, reduces heat loss.	Makes safer for houses.

Ohmic conduct or	At a constant temperature, current is directly proportional to the p.d. across the resistor.
Filament lamp	As current increases, the resistance increases. The temperature increases as current flows.
Diode	Current flows when p.d. flows forward. Very high resistance in reverse.

Current - Potential difference graphs

'Earthing' a safety device; Earth wire joins the metal case.

Mains supply	Frequency 50Hz, 230V	
Live - Brown	Carries p.d. from mains supply.	p.d. between live and earth = 230V
Neutral - Blue	Completes the circuit.	p.d. = 0V
Earth - Green and Yellow stripes	Only carries current if there is a fault.	p.d. = 0V



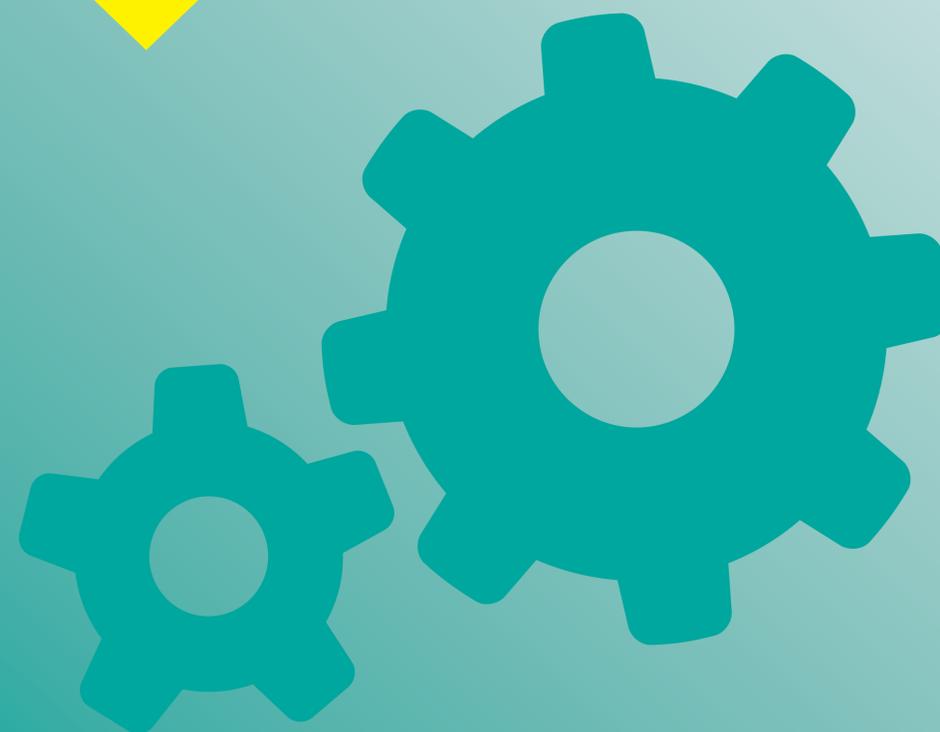
Static electricity

PHYSICS only
 Static electricity: Electrical charge is stationary. When two insulating material are rubbed together, electrons move from one material to the other.

Shocks: Walking on carpet causes friction. Electrons move to the person and charge builds up. When the person touches a metal object, the electrons conduct away, making a spark.

Electric fields: Charged objects create electric fields around them. Strongest closest to the object. The field direction is the direction of force on a positive charge. Add more charge increases field strength.

History





Unit One: The causes of the First World War

Timeline Of Key Events	
1882	Signing of the Triple Alliance between Austria-Hungary, Germany and Italy.
1904	Signing of the Entente Cordiale between France and Great Britain.
1905-06	First Moroccan Crisis (also known as the Tangiers Crisis) The Kaiser intervenes in Morocco, angering France. However the Kaiser is forced to back down and is humiliated at an international conference in 1906 at Algeiras.
1906	Britain begin developing the Dreadnought .
1907	Signing of the Triple Entente between France, Great Britain and Russia over concerns about Germany.
1908	Bosnian Crisis – conflict between Austria-Hungary and Serbia over Bosnia. Serbia ask Russia for support, but have to back down.
1911	Second Moroccan Crisis (also known as the Agadir Crisis) Germany send a gunboat (Panther) to Morocco. Forced to back down again, humiliated, but get land in French Congo.
1912-13	Balkan Wars – more tensions between Serbia and Austria-Hungary in Balkans. Serbia increase in size and strength after joining Balkan League and taking land from Ottoman Empire
1914	Assassination of Franz Ferdinand (28 th June) Heir to the Austro-Hungarian throne is assassinated by the Black Hand Gang from Serbia.
1914	Austria-Hungary are given the blank cheque by Germany.
1914	Austria-Hungary issue an ultimatum to Serbia, it leads to the declaration of war .
1914	The July Crisis – alliances are triggered and WWI starts, chain reaction as countries declare war on one another from 28 th July to 6 th August.

Key Words	
Militarism	The belief that a country should keep a strong military and be prepared to use it to defend national interests.
Alliance	A group of countries that are formally united or working together for a similar aim or common purpose.
Imperialism	Extending a country's influence by building a large overseas empire – usually using military force.
Nationalism	A feeling of being superior to other countries and following your own national interest above all else.
Arms Race	A race between rival countries to build up their weapons to be bigger and stronger than the other.
Colony	A colony is a country/territory under the complete control and occupied by another country or state.
Encirclement	Where a country is surrounded by others – in this case Germany was surrounded by the Triple Entente.
Weltpolitik	'World politics' – a more aggressive foreign policy aimed at increasing German military strength and overseas empire.
Dreadnought	A type of battleship introduced in 1906, larger, faster and equipped entirely with large-calibre guns.
Balkans	The Balkans are a group of countries in southeast Europe – key countries in WWI are Bosnia, Serbia and Austria-Hungary.
Blank Cheque	Given by Germany to Austria-Hungary signalling that they would be given unlimited support and resources.
Ultimatum	A final demand – in this case given by Austria-Hungary to Serbia, it consisted of ten clauses.
Assassination	The planned political murder of Franz Ferdinand.
Scramble for Africa	The occupation and colonisation of African territory by European powers at the start of the 20 th Century.

Key People/Groups	
Kaiser Wilhelm II	King of Germany. He wanted to develop them into a strong power, with a focus on militarism, imperialism and nationalism, hence his use of Weltpolitik.
Archduke Franz Ferdinand	Heir to the throne of Austria-Hungary. Assassinated by the Black Hand Gang in Sarajevo, Bosnia. He had wanted to reform relationships between Austria-Hungary and other countries.
Black Hand Gang	A political group funded by the Serbian government. Responsible for the assassination of Franz Ferdinand, Gavrilo Princip was the leader and the assassin.



Unit Two: The Stalemate

Timeline Of Key Events	
1914	Germany activate the Schlieffen Plan and invades Belgium. Britain declares war on Germany after ultimatum. The Schlieffen Plan fails due to a mixture of poor decisions, Belgium fighting back, the BEF joining and Russia mobilising quicker.
1914	Battle of Mons. British Expeditionary Force (BEF) meet German forces in August. British rifle-fire is fast and delays the German advance.
1914	Battle of the Marne. The BEF stopped the German advance and 'saved' Paris in September. This leads to 'The Race to the Sea.'
1914	By November WWI reached stalemate as both sides dug in defensive positions.
1914	Introduction of British Blockade which stopped goods reaching Germany.
1915	Gallipoli Campaign. Attempts to attack Turkey in March to relieve pressure. Britain attack by sea, however this failed. Attempts to attack by land are also a failure, leading to retreat in December.
1916	Battle of Verdun. The Germans begin battle to capture strategic forts at Verdun. General Falkenhayn's tactic of attrition was to 'bleed France white'.
1916	Battle of Jutland. German High Seas fleet attempts to break blockade. Neither side won, though Britain lost 14 ships to Germany's 9. However the Germans plan to break the blockade had failed and their fleet never came out to fight again.
1916	Battle of the Somme - Haig launched attack at the Somme to relieve French at Verdun. First day (July 1 st) resulted in 57,000 British casualties. Battle of the Somme ends with loss of 1.25 million men in November, a British victory.
1916	First use of tanks at the Battle of the Somme. They're not successful or reliable.
1917	Battle for Vimy Ridge. Canadian troops capture strategic high position from Germans.
1917	Battle Messines Ridge. The rolling barrage was used effectively and major targets were acquired and the battle was won in a day.
1917	Battle of Passchendaele (Third battle of Ypres) Heavy rain and drainage destroyed by artillery led to the battlefield becoming a muddy quagmire. Over 300,000 Allied troops lost with very little gain.
1917	Battle of Cambrai. British attack - 476 tanks are used along the entire line. British don't win, but it shows the worth of the tank in battle.

Key Words	
Stalemate	Deadlock where neither side can move or achieve outright victory.
Artillery	Very large guns that fire at long range. Moved on wheels or tracks.
Tanks	Tracks enabled tanks to travel on rough terrain. First used at Somme, but took a while to develop effective tactics.
Gas	A dangerous weapon, wounded more than killed. Examples included chlorine and mustard.
BEF	British Expeditionary Force of 150,000 created to travel in the event of war.
Attrition	The wearing down and gradual weakening of the enemy forces.
No-Mans Land	Land between the front line trenches of opposing sides.
Over the Top	Phrase used to describe the infantry climbing out of the trenches to attack the enemy.
Gallipoli	Major campaign of WW1 on the Turkish peninsula .
Front	The point to which an army has advanced and is engaging with an enemy.
U-Boat	German for 'Unterseeboot' or submarine.
Blockade	To seal off – to prevent passage of goods. Introduced by the British to starve the Germans during WWI.
Convoy System	Merchant ships travelling in close formation with British or American warship escort.
Unrestricted warfare	Removed the convention of warning Merchant ships of imminent attack.
Creeping Barrage	New tactic used in WWI – using artillery to cloud the troops who would be advancing behind.

Key People/Groups	
Winston Churchill	First Lord of the Admiralty. Was the man responsible for the decision to attack Gallipoli.
General Falkenhayn	Responsible for the German attack on Verdun. Wanted to wear them down using tactics of attrition.
Admiral Jellicoe	Admiral of the Fleet – led the British Navy at the Battle of Jutland.



Unit Three: Ending the War

Timeline Of Key Events	
1914	Russian troops defeated at Battle of Tannenberg . Large numbers of their army were lost and the General in charge committed suicide
1915	Germans begin unrestricted submarine warfare in the hopes of ending the British Blockade.
1915	American Liner ' Lusitania ' sunk by German U-Boat , 1200 passengers lost, however the USA do not yet join the war.
1917	The Russian Revolution . The Russian Tsar (king) is overthrown by Provisional Government, however they stay committed to war.
1917	The USA declares war on Germany after the continuation of unrestricted submarine warfare against their ships and the sending of the Zimmerman Telegram from Germany to Mexico.
1917	Bolshevik Revolution in Russia led by Lenin. Russia withdraws from the war. This means Germany can start to move troops from the East to the West.
1917	Introduction of the Convoy system to transport goods across Atlantic. This was so successful that only 8 out of 500 supply ships were sunk between July and August.
1918	The Treaty of Brest Litovsk . A peace treaty signed between the Russians and Germany.
1918	In March the Ludendorff Offensive (Spring Offensive) breaks allied lines, using tactics of artillery, gas and fast moving troops. Germany push forward 60km.
1918	The Allies counter in July and August. It is seen as 'Black Day' for German Army – The start of the Hundred Days
1918	Allies reach Hindenburg Line . Over 1.2 million American troops aid the Allies and the Germans end up in full retreat.
1918	Kiel Mutiny in October. The German Navy refuse to follow orders and fight. Other Germans begin to follow and mutiny in towns and cities.
1918	The Kaiser has abdicated. Germany signs the armistice and fighting on the Western Front ends.

Key Words	
Mobilise	To prepare and organize (troops) for active service.
Tannenberg	Battle fought between Russia and Germany from 26–30 August 1914
Offensive	An attacking military campaign.
Revolution	A forcible overthrow of a government or social order, in favour of a new system.
Hindenburg Line	A German defensive position of World War I, built during the winter of 1916–1917 on the Western Front.
Bolshevik	A revolutionary political group in Russia. They overthrow the government and take control of the country, forcing Russia out of the war.
Zimmerman Telegram	Sent by Germany to Mexico to create an alliance by attacking America. Britain intercept this and inform the USA who join the war.
Stormtroopers	Specialist soldiers in the German Army. In the last years of the war, they were trained to fight with "infiltration tactics", part of the Germans' new method of attack on enemy trenches.
Mutiny	A refusal to obey the orders of a person in authority.
Spring or Ludendorff Offensive	Germany's last attempt to win the war, designed by General Ludendorff. The aim was to win the war before the USA had an impact.
Retreat	To withdraw from enemy forces.
Armistice	A formal agreement to stop fighting. Signed on the 11/11/18.
Neutrality	The refusal to take part in a war between other powers. America took this approach until they were provoked.
Abdication	To give up the throne. An action taken by the Kaiser in November 1918 to ensure Germany were allowed to enter peace talks.

Key People/Groups	
Field Marshall Douglas Haig	Leader of the British forces. Responsible for the Battle of the Somme. Criticised for use of outdated tactics, until 1917 when this changes.
Ferdinand Foch	In charge of the Allied forces at the Spring Offensive.
General Ludendorff	Leader of the German forces, responsible for the Spring Offensive.
Lenin	Leader of the Bolsheviks, leads the revolution that takes Russia out of WWI.
Woodrow Wilson	President of the USA. He was the one who decided to end America's stance of neutrality and bring them into the war in 1917.



- **Religion:** Elizabethan **religious settlement** was a compromise; declared herself **Governor of Church of England** which was Protestant, but allowed Catholics to worship in private. Moderate Archbishop of Canterbury appointed, Matthew Parker.
- Elizabeth was practical after the religious rollercoaster left by her father, Mary and Edward. In the Religious Settlement, the **Act of Supremacy** of 1559 gave Elizabeth control of the Church as Supreme Governor. In the **Act of Uniformity**, she would allow Catholics to worship privately but would keep England Protestant with a new **Book of Common Prayer** and an English Bible in every Church. Impact: The Middle way was designed to satisfy the majority for the sake of peace. However, it did not satisfy the extreme Catholics (Jesuits) or Protestants (Puritans)
- **Mary Queen of Scots:** Queen Elizabeth's Catholic cousin was forced to flee to England due to murky past. Placed under house arrest, but became embroiled for the rest of her life in 'attempted' plots to overthrow Elizabeth (**Ridolfi, Norfolk, and Babington**). Finally executed in 1596. Catholics now had a **martyr**,
- **Catholic challenges:** 1570, Pope **excommunicated** Elizabeth; new approach needed. 1581 law made it **treason** to attend Catholic mass or have a Catholic priest in your home. 1593 law said Catholics could not travel 5 miles away from homes. **Recusancy** fines increased to £20 and illegal to own rosary beads. Catholic reaction was to send **Jesuit priests** (from new college at Douai in Spanish Netherlands led by Cardinal William Allen) from 1580. Supported by France and Spain, despite ban on Jesuit priests in 1585. Robert Parsons (later fled England) and Edmund Campion (executed) led Jesuit mission.
- **Puritan challenge:** They were **extreme Protestants**, who began meetings called '**prophesyings**' for prayers and discussions. New Archbishop of Canterbury, **Edmund Grindal** encouraged these meetings and was suspended. Puritans attempted to set up own Churches in Norwich and London but failed. Many supporters in Parliament, including **Peter Wentworth**, **Anthony Cope**, **Robert Dudley** and **Sir Francis Walsingham**. From 1583, crackdown on Puritans: Rules banned unlicensed preaching and enforced attendance at Church. **New High Commission** led by Archbishop of Canterbury, **John Whitgift**, had power to fine and imprison. Puritan printers calling for a reorganised Church without bishops (Presbyterians) were punished such as **John Stubbs**.
- **Conflict between England and Spain** occurred due to the following: Elizabeth would not agree to marry Philip II, Spain was Protestant, the Pope called for all Catholics to challenge Elizabeth in 1570, Sir Francis Drake and other English sailors attacked Spanish shipping and Elizabeth sent help to Protestants rebelling in the Spanish Netherlands.
- **English navy was a thorn in Philip's side;** it had been helped by new technology (mentioned earlier). Also adopted surprise attacks on Spanish ships and the use of fireships such as **Singeing of King of Spain's Beard** at Cadiz in 1587.
- **Spanish Armada: People:** King Philip, Santa Cruz, Duke of Parma, Duke of Medina Sidonia, Lord Howard, Francis Drake. **Pressure:** Elizabeth interference in Spanish Netherlands, piracy, raid on Cadiz. **Planning of Spanish:** Combination of Parma and Santa Cruz plans to pick up soldiers from Netherlands and land in Dover to march on London. **Weaknesses** included quality of barrels to store food, no deep sea ports to use, communication between commanders. **Planning of English:** Fast, speedy and more manoeuvrable ships, close to home, use of cannons. **Performance:** English tactics superior with use of fireships to break tight formation, the weather and Spanish mistakes (not effective warships for English Channel as too slow and unable to defend against English fire power in Battle of Gravelines, Spanish cannonballs did not fit cannons, unable to pick up troops in Netherlands, Duke of Medina Sidonia inexperienced). **Position:** Spanish soon blown off course and battered by storms off Scotland. Only 92 of 127 returned home and half never used again.

AQA GCSE HISTORY 9-1 SUMMARY REVISION GUIDE: Elizabethan England, c.1568-1603



Exam Questions			
How convincing is the interpretation? (8)	Explain what was important about (8)	Write an account of... (8)	Spanish Armada question (16)
10 mins	10 mins	10 mins	20 mins

Part 1: Elizabethan Court and Government

- **Elizabeth:** Had a difficult upbringing (she was labelled as **illegitimate** by some people) and sometimes feared for her life. In 1554 was accused of conspiring against her half-sister. Therefore, she was very cautious and only trusted close advisors. She was intelligent, confident and very well educated. With little experience, she became a very powerful and effective ruler.
- **Government:** The **Privy Council** was made up of people chosen by Elizabeth (mostly nobles) for the day to day running of the country dealing with military, religion, security and foreign affairs. **Led by Secretary of State.**
- **Parliament** made up of **Lords** (nobles, lords, bishops) and **Commons** (wealthy and educated) had power over taxation and laws.
- **Lord Lieutenants** appointed by Queen to take control over areas of country to **raise taxes, settle disputes and raise militia** for Queen. Many were also **Privy Councillors**
- **J.P.'s** ensured law and order were kept. Selected from local gentry and **ensured laws properly enforced** (had power to imprison).
- **Royal Court** made up of government officials, ladies in waiting, servants and advisors who surrounded Elizabeth. Over 1000 people; centre of political power and fashions of the day.
- Key men: **William Cecil**, who served as Secretary of State twice and Elizabeth's most trusted advisor. Played key role in **Poor Laws**.
- Key men: **Francis Walsingham**, who also served as Secretary of State and again one of her most trusted advisors from 1573 to 1590. Known as the '**spymaster**' and played a key role in **execution of Mary Queen of Scots**.

Elizabeth's problems as a female ruler

- **The Succession:** Parliament was keen for Elizabeth to be married and have children to secure the Tudor line.
- Her heir was **Mary Queen of Scots** who was exiled to England from 1568. For many Englishmen, the prospect of a Scottish Catholic taking throne was unimaginable.
- **Religion:** Elizabeth was practical after the religious rollercoaster left by her father. Mary and Edward. She would allow **Catholics to worship privately** but would keep England Protestant. She also had to tackle Puritanism later.
- **Ireland:** Elizabeth and the Irish clashed over her claim to be **Queen of Ireland**. She spent vast sums of money without success of trying to limit Irish rebellions, particularly in 1559.
- **Foreign Policy:** Catholic countries such as France and Spain were keen to assert their influence over England. Her major concern was protecting England.
- **The importance of marriage. Pros:** Marriage could create an alliance with a foreign power, produce an heir and prevent Mary Queen of Scots from ruling England. **Cons:** Could come under control of a foreign power, Elizabeth kept her independence, childbirth was dangerous, hers sister's marriage to Philip seen as a disaster.
- **Worthy suitors: Robert Dudley, Earl of Leicester** – Privy Councillor, former favourite but previously married (wife's death was also controversial). **Francis, Duke of Alencon** – heir to French throne, but Catholic and public against this. **King Philip II of Spain** – most powerful man in world, but Catholic, unpopular and had already married her sister.



- Many in **Parliament** saw it their duty to discuss Elizabeth's marriage. She was furious and one member arrested for openly discussing it and sent to Tower (Peter Wentworth). Elizabeth saw it as her decision alone, so she never married.

Challenges to Elizabeth's rule:

- The Northern Rebellion of 1569.** Northern Lords led by the Dukes of Westmorland and Northumberland took control of Durham Cathedral and celebrated an illegal Catholic mass. Marched south with 4,500 men but were stopped by Earl of Sussex. Leaders fled. 700 executed including Northumberland.
- The Ridolfi Plot of 1571.** Catholic Duke of Norfolk, Queen's second cousin, had already been implicated in Northern Rebellion and put in Tower of London for a time. Now involved in a plot with Italian banker Ridolfi to encourage rebellion in the North and together with army from the Netherlands, murder Elizabeth, marry Mary Queen of Scots and put her on the throne. Coded letters found under Norfolk's doormat and executed 1572.
- The Essex Rebellion, 1601.** He became a Privy Councillor in 1595, and given a monopoly on sweet wine in England. Achieved military success against Spanish in 1596. Seriously quarrelled with Queen over Ireland in 1598; allegedly was about to draw his sword. In 1599, made Lord Lieutenant of Ireland reluctantly. Job to crush Irish rebels but instead made a deal with them. Quickly lost favour; monopoly not renewed and faced financial ruin. Took 4 Privy Councillors hostage and with 200 followers marched to London. Cecil, his rival declared him a traitor losing him support and hostages released by his own supporters. Tried and executed Feb 1601. Several other rebels executed and others (whom he had confessed to under torture) fined. Whereas the above were motivated by religion, Essex motivated by power.
- Why did the rebellions fail?** Elizabeth had a fantastic network of **spies and informers** under Francis Walsingham. The rebellions had a **lack of popular support**. Even Catholics preferred Elizabeth to Mary Queen of Scots and influence of Philip II of Spain. Elizabeth was a **skilled politician** and worked effectively with Parliament. Finally, Elizabeth was not afraid to use swift action and **punishment** against traitors, using torture and execution. However as long as England was a Protestant country, she would face threats and invasion.

Part 2: Life in Elizabethan times

- Great Chain of Being.** Elizabethans knew their place in society; God was at the top followed, then human beings, followed by animals and plants. Human beings were sub divided into the monarch followed by the nobles, gentry and then the peasants.
- Wealth:** Land made money and raised social status. **Nobles** were the most respected members of society. They had titles such as **Duke, Earl or Baron**. There average income was £6000 a year (£1m today). A member was born into it or awarded a title from the Queen. Privileges included protection from torture or public hanging. 14% of country's income came from 1% of the noble population. Queens right to give and take away influence. **Gentry** were landlords of the countryside. Lived on rents of their tenants and did no manual labour. Income varied from £10 and £200 a year. (Up to £34,000 today). Many were **J.P.s** and served in Parliament. Titles included **knight** and **esquire**. People making money from trade moved into this class. **Peasants** were poorest in society. Often worked as **labourers** and struggled for work especially with a rising population.
- Fashion:** Elizabethans liked to show off their new wealth, like Bess of Hardwick. They built **fine houses** in the countryside and lavishly decorated and furnished them. **Banquets** (meat and wine) were a way of showing off and entertaining. **Fine clothes** and **white faces** became fashionable amongst women. The **ruff** became an important fashion accessory. England had become stable and secure and this period became known as a **Golden Age**.
- The Theatre.** Rich and poor alike visited the theatre. Famous playwrights included **William Shakespeare** and **Christopher Marlowe**. Theatre companies sponsored by a **patron** (a great way to show your culture and get in favour with the Queen) sprung up such as the **Lord Chamberlain's men** and the **Admiral's Men**. Acting was strictly a male profession. The most

famous of the day was **Richard Burbage**. Plays were at first performed in inns or outside in the yard but soon a number of **permanent** and purpose-built theatres existed such as **The Globe** in London. Plays became extremely **popular** and began at 3.00pm and continued into the evening, providing a cheap day's entertainment. The performance became like a circus with jostling and heckling. **Protests** however from **Puritans** saw the theatres as dens of immorality, drunkenness and crime. People instead should read the **Bible**; however, **patronage** from Elizabeth meant that the theatre kept growing in popularity. Elizabeth also used it for **propaganda** purposes to put the Tudors in a favourable light.

- Was it a **Golden Age?** **Pros:** Art, Exploration, Theatre, Building, Science and Technology (navigation and astrology), Theatre, Education, Literature. **Cons:** Blood sports, punishments, Life expectancy low, Poverty, Alchemy.
- Hardwick Hall, more glass than wall:** Designed by **Robert Smythson**, emphasis on symmetry and order, such as **E shape, open courtyards** and **straight chimney columns**. **Glass** was status symbol (note how windows get larger on each level rising). Key features to mention: 1) **Location** – countryside which was peaceful 2) **Function** – residences now to show off wealth and patronage such as **Great Chamber and Long Gallery for guests** 3) **Structure and design** – new renaissance ideas such as **loggias** at front 4) **Owners** showing off wealth to Queen and rise of gentry 5) **Culture, value and fashions of the time** – **tapestries, fireplaces, Long Gallery, Great Hall, heraldry, oak panelling, paintings of Queen**.
- Rise in Poverty** not helped by **Reformation**: The **closing of the monasteries** by HVIII left monks and nuns unemployed, unable to care and help those in need by giving them food and shelter. HVII had banned lords keeping **private armies**, so many soldiers out of work. HVIII also **debased** the coinage to pay for wars. This led to **inflation** and a collapse in cloth industry and trade. **Bad harvests** in 1594 and 1598 led to food shortages and starvation. Landowners also started **enclosing** their land with hedges; fewer workers were needed. A **flu epidemic** of 1558 killed around 200,000 including many needed on the fields.
- Attitudes to poverty: Deserving Poor.** Archbishop Whitgift established Almshouses in Croydon for beds and food. **Undeserving Poor** such as beggars (**Counterfeit crank, Baretop trickster, Clapham Dudgeon, Tom O'Bedlam**) dealt with by punishments such as stocks, whipped, burned or hanged.
- Elizabethan Poor Law** taxed rich to support poor (**helpless poor** receive food and shelter, **able bodied** poor expected to work for food and drink, **idle poor** to be whipped and sent to house of correction) **Pros:** begging reduced, help to poor and not just vagrants. **Cons:** inconsistently applied and how to define categories – paupers still sent from area to area.

Part 3: Troubles at home and abroad

- Exploration: Francis Drake** and his cousin **John Hawkins** became privateers. Attacking enemy ships (mostly Spanish) and taking their cargo. This made them and Elizabeth extremely rich.
- New technology in sailing helped: New **lanteen** sails made ships faster and easier to steer; the **astrolabe** allowed sailors to work out how far north or south they were and better compasses made navigation more accurate.
- Trade boomed: **The East Indian Company** was formed to trade in porcelain, spices and silks with India. Other companies had monopolies in Russia (**Muscovy Company** in 1555) and in Turkey and the Middle East (**Levant Company** in 1581).
- John Hawkins** with Francis Drake began a **slave trade** – taking Africans to South American coast to be sold. **Sir Walter Raleigh** attempted to set up a colony called Roanoke in North America.

Music





- Job Roles**
- Musician
 - Composer
 - Songwriter
 - Record producer
 - Conductor
 - Live Sound Technician
 - Roadie
 - Instrument Technician
 - Artistic Manager
 - Venue Manager
 - Studio Manager
 - Promoter
 - Marketer
 - A&R
 - Sound Engineer
 - Session Musician
 - Mastering Engineer
 - Manufacturer
 - Music Journalist
 - Blogger
 - Broadcaster
 - Software Programmer
 - DJ
 - Retailer
 - Distributor

Employment Types

- Full Time
- Part Time
- Freelance
- Self-Employed
- Permanent
- Casual

Venues

- Large Venues
- Medium Venues
- Small Venues



Health and Safety



Security



Organisations

- Recording Companies
- Record Labels...



Sub Labels




- Music Publishing
- Self Publishing
- Promotion Companies
- PR and Marketing
- Hire and Transport



Identify what the acronyms stand for? What do they do? Who would need to use them?

The examination paper lasts for 1 hour and consists of three sections A, B and C.

Section A tests your knowledge through a series of multiple choice questions and shorter answer questions. *This is a great opportunity to score high by demonstrating that you have revised and understood all of the terminology used in this unit!*

Section B and C will present you with a scenario. You will need to write a longer answer. *During your music lessons you will be given many opportunities to work with and understand the words below*

Know the definitions of each job role in the music industry and be prepared to **link** one job role to another one.

Advantages / Disadvantages

Opportunities / Challenges

Identify

Explain

Priorities

Reasons

Evaluate



BTEC Unit 2 Managing a Music Product

Learning Aim A: Plan, deliver and develop a music product



Any music product you create planning needs to be evidenced from the start.

INITIAL PLANNING

Ideas need a starting point: What is your product? Who is your product for (target audience)? Where will your product be listened to (audio product)? where will it be held? (concert)? When must your product be complete? What kind of marketing will you use? How will you know your product is a success?

Management skills to help develop your product and how to evidence it

Management skill	Evidence
Focus/preparedness to work: the more work you put into a product the more you will get out of it	Diary/log
Time management: each task needs a deadline	Diary/log, minutes
Sharing responsibility/supporting colleagues: share out tasks so each person in your group has the ability to work effectively and to their strength.	Minutes E-mails
Motivation: keep busy, keep going!	Diary/log
Listening to feedback/respecting the opinions of others: keep talking to your target audience and peers. Ask them for feedback at each stage of your product.	Questionnaires Screen shots
Adaptable/trying out new things: if something is going according to plan make some changes	Diary/log
Communication: speak to people who can help deliver your product, make sure communication is effective, polite and mature.	E-mails, minutes
Research: important to gauge the success of similar products	Written documents
Monitoring progress: regularly review progress, adjust plans where necessary to ensure deadlines are met	Diary/log, minutes

Target Audience

Particular group at which your product is aimed. Here is a list of potential audiences:

Friends and family from your educational establishment

Teenagers

Young adults

Niche audience – an audience which prefers a specific genre for example musicals, rock, grunge

It is extremely important you identify your target audience and involve them in the planning of your product.

1. Research what your target audience would like to listen to. Ask them and/or research using the internet
2. Get your target audience involved by:
 - Asking opinions of song choices
 - Asking for feedback on draft versions of your product

Other Evidence
 Floor plans (concert)
 Risk assessments
 Rehearsal schedules
 Audio/visual evidence

Think outside
the box



PROMOTION: Targeting your music product to a target audience through a variety of techniques. Thought for industry practice and target audience is essential when designing your promotional material.

PROMOTIONAL MATERIAL

- Press release
- Poster
- Website
- Audio advert
- Video advert
- Merchandise
- Album/single cover (recording)
- Letter/email to friends and family

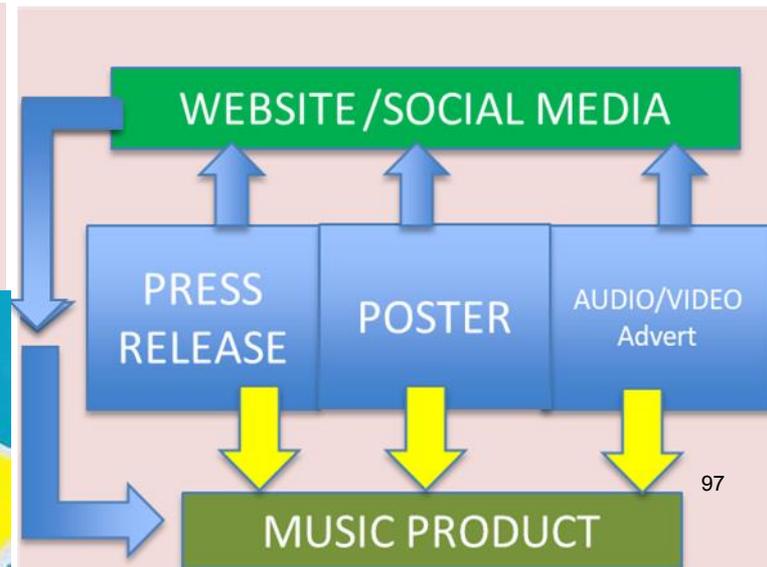
INDUSTRY PRACTICE The Music Industry is constantly changing and to be aware current promotional strategies research is essential.

STEPS TO SUCCESSFUL MARKETING

- 1) Look at successful products, similar to yours, and research how the product was promoted.
- 2) Choose one method of promotion for your own musical product
- 3) Find many examples of your chosen method of promotion and find commonalities in communicating essential information and industry practice.
- 4) Research which way is best to communicate information to your target audience.
- 5) Using all this information create your promotional material
- 6) Evaluate, on a regular basis, if your promotional material is successful.

INDUSTRY PRACTICE

From promotional material the target audience must be able to access your music product. However, audiences may also appreciate accessing information via a website/social networking.



HELPFUL WEBSITES

Designing CD Covers

<http://www.musicbizacademy.com/knab/articles/cdcover.htm>

Promoting a concert

<https://www.attendstar.com/how-to-promote-a-concert/>



BTEC Unit 2 Managing a Music Product

Learning Aim C: Review the management of a music product



Now your product is complete you must review the work undertaken by you, your peers and others leading to the product's success, or lack of success.

MANAGEMENT PROCESS – Questions to ask yourself

- Focus/preparedness to work.** Were you and your team always focussed and ready to work?
- Time management.** Did you and your team organise your team effectively?
- Sharing responsibility/supporting colleagues.** Did you share responsibilities and support others who were falling behind?
- Motivation.** Did you keep motivated throughout the task?
- Listening to feedback/respecting the opinions of others.** Did you listen to feedback and make any changes because of it?
- Adaptable/trying out new things.** Did you try anything innovative?
- Communication.** How well did you communicate instructions?
- Research.** Did your research help in any of your ideas.
- Monitoring progress.** Did you regularly monitor your progress and the progress of your teams.
- Artistic drive:** Were your ideas successful? Did you think outside the box?
- Marketing.** Was it successful? Did you attract your target audience?

Structuring a paragraph

- Identify an element of your product which was successful or identify an element of your product which needs improving.
- Explain why this element of your product was a success/needed improving based on your management process.
- The sentences above should be justified with any evidence you have to support your findings

An example – the product was a concert:
The room had a audience capacity of 50 and we managed to sell 40 tickets. Our marketing strategy was successful; we targeted friends and family of our performers by giving each performer a letter to give to their parents with details on how to purchase tickets. From the minutes of our meetings it is clear we expected, through our 15 performers, we'd sell 2 – 3 tickets per performer and therefore an audience of 30 – 45. To promote it further we could have promoted it throughout our school however we ran the risk of exceeding capacity for the room.

Use your evidence to justify a point you have made

Log book	Minutes to meetings	Screen shots
Feedback	Questionnaires	Recordings
Rehearsal schedule	Product sales	Research



You should create four brief musical ideas that try to capture a range of moods or atmospheres suitable for any four of the following: TV and Film

- Haunted House
- Detective
- Romance



These ideas can be short (under 30 seconds) but should make use of appropriate textures and timbres and have some melodic and rhythmic interest. Your ideas should be varied and have at least two different musical starting points.

Commercial

- Smartphone game
- Perfume or aftershave
- Running shoes
- Romantic holiday for 2
- Popular soft drink

Take ideas from at least two of the following starting points:

- melodic ideas and fragments 
- rhythmic patterns – layered rhythmic patterns 
- chords and chord progressions – 1, 4, 5 and 6 (I, IV, V, vii)
- Textures – interweaving melodies, melody with chords, bass line and percussion, singing with harmony backing vocal.
- riffs and hooks – repetitive ideas. E.g. mission impossible bass line and “We will rock you” drum rhythm.
- improvisation and experimentation – made up solo over chord progression in jazz music. Call and response patterns.
- non-musical starting points such as themes, texts and images.
- **Record all your ideas as audio. You can use software like Audacity, Bandlab or Sibelius to do this. Store your pieces as MP3’s on the Google Drive in school.**

Example ideas

Haunted House: Low pitched strings with long held notes. Minor key. (experimentation) No pulse or tempo. High tinkly bells or piano played quietly (use of riff). Menacing chords come in later. Staggered texture with layers building up to create tension.

Detective: Ride cymbal swing rhythm with acoustic bass riff. Mute trumpet or saxophone jazzy melody with added blues scale notes. See “Theme from Pink Panther” Listen to the first 42 seconds. <https://www.youtube.com/watch?v=lp6z3s1Gig0>



Romantic: Perhaps a chord progression using an acoustic guitar. (I, IV, V and vii) This could be broken chords with a slow tempo. A flute or oboe melody in a major key over the top. Question and answering even phrases in the melody. No percussion.

Advert-Running shoes: Continuous bass line perhaps using a synth bass. Fixed jogging tempo or faster. Chords play over the top but bass remains the same like the runners rhythm. Chords on a synth pad sound or strings. Use of drum beat track. Dramatic use of dynamics (lounds and softs) in chords to keep the audience listening. E.g. Chariots of Fire Theme <https://www.youtube.com/watch?v=CSav51fVIKU>



BTEC Unit 4 Introducing Music Composition

Learning Aim B: develop, extend and shape music for performances



Learning Aim B: Select two contrasting ideas from your original four to develop further. In both, you should develop and extend them harmonically and melodically, to create and maintain your intended mood. (Melody=tune Harmony= accompaniment/backing/chords)

You should develop pieces by use of appropriate melodic and harmonic compositional techniques such as:

• repetition	Melodies can be repeated but with some variation and decoration.
• variation	Drum beats can continue but with changes to percussion instruments. Bass lines can be extended with slight changes to the original idea.
• Modulation and changing tonality (major to minor)	Music can change key, commonly into the dominant (5 th higher), relative minor key or just up a semitone like a pop song sometimes does.
• melodic transformations	Melodies can be written out backwards, inverted in pitch if this fits the genre.
• instrumentation	Use of different instruments from music already composed in learning aim A.
• textures.	Parts could be doubled by new instruments. Played an octave higher as well. Change in accompaniment style from chords to broken chords. Counter melodies can be added as harmonies to a voice.

One of the extended musical ideas should be developed into a fully completed composition. You should consider techniques commonly used to shape musical ideas into full compositions.

Binary	Sections A with a contrasting B section.
Ternary	ABA but often there is variation in the returning A section.
Rondo	ABACAD etc where A keeps repeating followed by new sections.
Introductions/ Codas (endings)	These sections can be added on later as part of development of the structure.
Song structures	E.g. 12-bar blues or verse chorus structures.

Effective use of repetition and contrast- do the changes create enough interest and momentum? 100



Learning Aim C: Compositions should be presented using an appropriate format to ensure clarity and support communication of musical ideas to others.

Presenting musical ideas.
Learners should be aware of and use as appropriate any of the following:

<ul style="list-style-type: none"> conventions of particular styles, genres (recordings, MIDI and audio files) 	<p>MP3 or other format audio recordings. Work can be saved as MIDI on Bandlab or other software. Audacity will record you playing live.</p>
<ul style="list-style-type: none"> standard notation, e.g. scores, parts 	<p>Scores can be hand written or printed from software like Sibelius or Noteflight. Both of these will import MIDI files and convert to standard notation!</p>
<ul style="list-style-type: none"> tab, e.g. guitar, drum, bass etc 	<p>Scores can be easily converted to TAB or standard drum notation or vice versa using software.</p>
<ul style="list-style-type: none"> graphic notation 	<p>Some pieces like Haunted House with special effects might be better using diagrams to explain the music.</p>
<ul style="list-style-type: none"> lead sheet 	<p>A lead sheet is a form of musical notation that has just the essentials of a popular song: the melody, lyrics and harmony. The melody is written in standard notation, the lyric is written as text and the harmony is specified with chord symbols.</p>
<ul style="list-style-type: none"> chord chart 	<p>Just the chord progression e.g. C F G7</p>



The free versions of **Sibelius** and **Noteflight** allow you to notate scores. Noteflight is cloud based and Sibelius needs downloading onto your computer. **Bandlab** and **Cakewalk** is a free sequencing software allowing you to play and record music. **Audacity** records real time audio.

Physical Education





Grading Criteria 6a

Level – PASS

Describe the attributes of two successful sports leaders.
Create 2 detailed lesson plans

Level – MERIT

Evaluate the attributes of two successful sports leaders.
Justify the choice of activities within your two lesson plans.
Lead a successful sports activity session.

Level – DISTINCTION

Compare and Contrast the attributes of two successful sports leaders.

<u>LEADER 1</u>		<u>LEADER 2</u>	
POSITIVE ATTITUDE 1	Why it will lead to success of the session?	POSITIVE ATTITUDE 1	Why it will lead to success of the session?
POSITIVE ATTITUDE 2	Why it will lead to enjoyment?	POSITIVE ATTITUDE 2	Why it will lead to enjoyment?
NEGATIVE ATTITUDE	Why it could cause issued? (success or enjoyment or safety)	NEGATIVE ATTITUDE	Why it could cause issued? (success or enjoyment or safety)

Leading a sports session

- *Confidence
- * Knowledge
- *Organisation
- *Planning
- *Differentiation
- *Use of Space
- * Leadership Style



Comparing two Sports Leaders

Carry out research into successful sports leaders using textbooks, the internet and sports journals. You may also consider Sports Leaders who have led sporting events that you have taken part in and/or Sports Leaders who coach professional or National teams.

- Describe the skills and qualities of a Sports Leader
- Describe the responsibilities of a Sports Leader
- Explain the attributes needed to become a successful Sports Leader, give examples to explain your answer.

Skills and Attributes

Communication, organisation of equipment, knowledge, activity structure, target setting, use of language, evaluation appearance, enthusiasm, confidence, leadership, motivation, humour, personality, professional conduct, health & safety, equality, insurance, child protection, legal obligations, ethics and values, rules and regulations.

Lesson Planning

- + Session aim/objective (what you want to teach)
- + Equipment needed
- + Warm up
- + Main component (can be more than 1 drill and game)
- + Cool down
- +Timings & Knowledge of group.
- + Health & Safety
- +Questionnaire/ Feedback



Differentiation

- S – Space – Is the space right for the activity?
- T – Task – How will you communicate the task?
- E – Equipment – What equipment will you need?
- P – People – How will you organise the group?





Business Studies and ICT/Computer Science



Quality

Quality is about meeting the needs and wants of the customer by charging the right price for the product or service

Quality control is putting measures in place to check that the customer receives an acceptable level of quality. (checked at end)

Quality assurance attempts to build quality into the way a product or service is delivered, making every member of staff responsible for quality. (checked during)

Quality Culture is the accepted attitudes and practices of staff at a workplace.
A quality culture is where all staff employed in a business take responsibility for ensuring the product or service is delivered to the high expectations of the customers (checked throughout)

Job Production

one-off production of a one-off item for a single customer. Products can be tailored for individual requirements.

Highly flexible; Satisfying work for the individual

It is expensive in a developed; the skills may be in short supply

Suppliers

Procurement- Procurement is obtaining the right supplies from the right supplier to ensure they get there at the right time, place and at a reasonable price
Suppliers must be chosen that deliver goods on time, to the right quality and at the right price.

Logistics means ensuring the right supplies will be ordered and delivered on time. Well managed logistics means:

- better reputation for the business
- lower costs of production, as the product can be completed quicker and sold quicker
- high customer satisfaction, as the product is the right quality, the right price and delivered at the right time.

Technology

Benefits of technology

- Efficient leading to increase in productivity
- Less human error
- All products are identical
- Machines do not need break and can work 24/7, 365 days a year.



Drawbacks of technology

- Capital intensive when first purchased
- Replaces jobs leading to redundancies
- can be difficult to fix if broken
- Production stops if machines break
- Doesn't allow for variety in products made



Batch Production

Producing a limited number of identical products, then moving on to a different product

Some cost advantages from producing several items at once

Production costs far higher than with flow production; Not as flexible as job production

Flow Production

Continuous production of identical products, which allows for high levels of automation.

Can automate production fully; More consistency.

Expensive to set up and inflexible to use; Modern customers like to see products tailored to their specific needs.

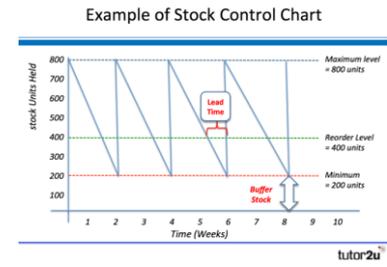
Stock

Stock- this is the product/service that a business has to sell as part of its day to day operations. Sometimes known as inventories.

Just in time- this is a stock control method where a business orders supplies so they arrive just before they are needed.

Just in case- another stock control method where businesses order too much, in case of an increase in demand.

Buffer- reserve stock level
Reorder- the point where more stock must be ordered
Maximum- the maximum amount of stock that can be held



Sales Process

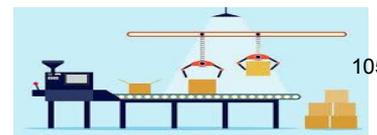
The sales process is how the business engages with customer to get them to purchase their product or service.

Product knowledge

Speed and efficiency

Customer engagement

Post sales service





3.1 Data

Data is 'raw facts and figures before they have been processed'. It plays a big part of our lives. The different data types that be used in a database are:

- Text
- Alphanumeric
- Integer
- Real
- Currency
- Percentage
- Fraction
- Decimal
- Date/ time
- Limited choice
- Object
- Logical/ Boolean



3.2 Information

Information is created when data is processed. The meaning of data is revealed when it is in the correct structure and put into context. For example 01012019 actual means 01/01/2019.



3.3 The methods used to collect data and store data/ information and then the IT used to support data collection

There are many different methods that can be used to collect data and information. For example:

- Questionnaires/ surveys
- Email
- Sensors
- Interviews
- Consumer panels
- Loyalty schemes
- Statistical reports
- Secondary research methods



There are a range of data collection methods that use Information technology, such as;

- Barcode readers
- QR codes
- Web-based surveys
- Wearable technology
- Mobile technologies



3.4 Different storage methods and the appropriateness of the use of these in context

When data and information has been collected, it needs to be stored before it can be processed. There are different methods that can be used. For example;

- The cloud
- Physical devices- hard disk drive, solid state drive, optical device, flash memory device.



3.5 The use of data, the applications and interaction of data stores and the benefits and drawbacks of the use off data.

The amount of data that is being collected, processed and stored is growing every day. Big Data is the term given to these large data sets. Big Data can come from the following sources;

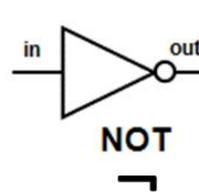
*Law enforcement, Education, Health and fitness, Shopping, Entertainment and leisure, Lifestyle*¹⁰⁶



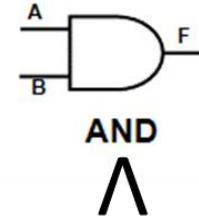
KEY VOCABULARY	
Logic	A system designed to perform a specific task according to strict principles.
Logic Gates	The physical switches inside an electronic device which are able to perform the calculations a computer needs to carry out on electronic signals
Truth Table	A tabular representation of the possible inputs and outputs from a given logic gate, or collection of gates
Boolean	Mathematical <i>TRUE</i> or <i>FALSE</i>
Operator	A mathematical symbol in computing
+	Addition [$1+2=3$]
-	Subtraction [$2-1=1$]
/	Division [$5 / 2=2.5$]
*	Multiplication [$2 * 2 = 4$]
^	Exponentiation, raising a number to the power of... [$3^3 = 3 * 3 * 3 = 27$]
MOD	Modulus division. To divide a number by another, but only return the <i>remainder</i> [$10 \text{ MOD } 3 = 1$]
DIV	Integer Division. To divide a number by another, but only return the <i>number of full sets</i> . [$10 \text{ DIV } 3 = 3$]

LOGIC GATES

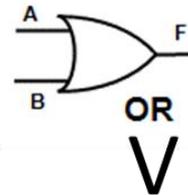
These gates take inputs (usually labelled A, B, C etc, and provide a single output. In this case labelled F, but could be another letter. Each gate is shown with its TRUTH TABLE



Input	Output
I	F
0	1
1	0



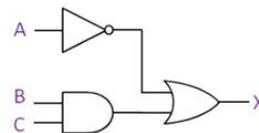
Inputs		Output
A	B	F
0	0	0
1	0	0
0	1	0
1	1	1



Inputs		Output
A	B	F
0	0	0
1	0	1
0	1	1
1	1	1

COMBINED GATES – Logic gates can be combined in any order to provide a range of computational possibilities. Inside a CPU, the physical switches are logic gates, and but combining them in different sequences, computers can undertake incredibly complex mathematics with these very simple tools.

$$(\text{NOT } A) \text{ OR } (B \text{ AND } C)$$



A	B	C	NOT A	B AND C	X = (NOT A) OR (B AND C)
0	0	0	1	0	1
0	0	1	1	0	1
0	1	0	1	0	1
0	1	1	1	1	1
1	0	0	0	0	0
1	0	1	0	0	0
1	1	0	0	0	0
1	1	1	0	1	1