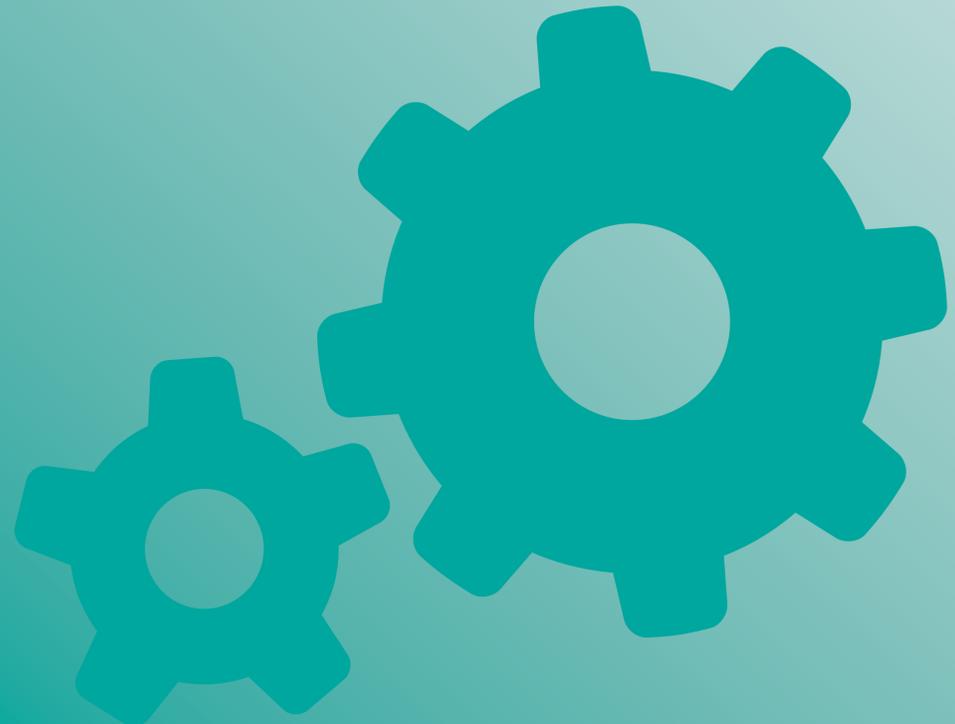






# Maths



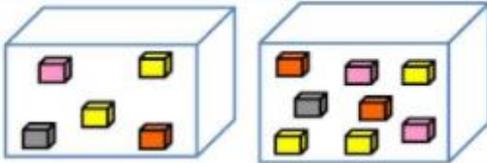


# PROBABILITY

PROBABILITY is usually written as a FRACTION  
(Sometimes decimals or % may be used)

NEVER USE RATIO for probability  
e.g. 2 : 5 ✗ This will ALWAYS be WRONG

Two boxes contain coloured blocks as shown below:



Try to simplify fractions

- Box A:  $p(\text{Pink}) = \frac{1}{5}$       Box B:  $p(\text{Pink}) = \frac{2}{8} = \frac{1}{4}$
- Paul has to choose one block at random. He wants it to be yellow. Which box should he pick from? Explain your choice.

Method 1: Make the denominators the same

Box A:  $p(\text{Yellow}) = \frac{2}{5} = \frac{16}{40}$

He should use Box A

You must show your method

Box B:  $p(\text{Yellow}) = \frac{3}{8} = \frac{15}{40}$

$$\frac{16}{40} > \frac{15}{40}$$

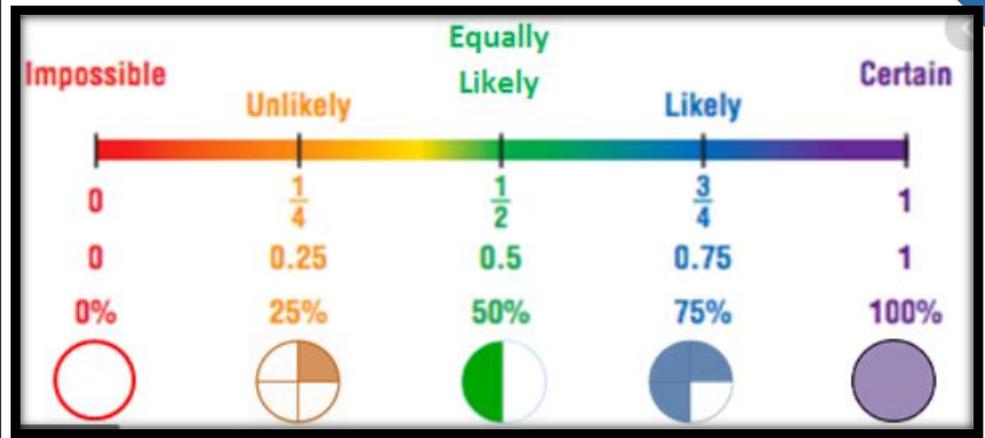
Method 2: Change each fraction to decimal

Numerator divided by denominator

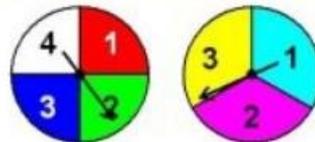
Box A:  $p(\text{Yellow}) = \frac{2}{5} = 0.400$

He should use Box A  
 $0.4 > 0.375$

Box B:  $p(\text{Yellow}) = \frac{3}{8} = 0.375$



Spin both spinners and record the sum below.  
Evaluate the relative frequency of each sum.



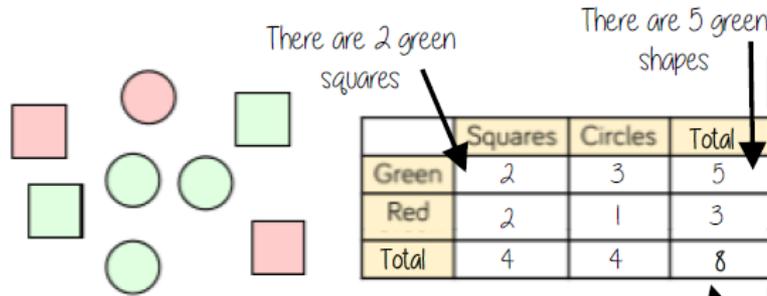
Theoretical  $P(4) = \frac{3}{12} = 0.25$

Sum	Tally	Frequency	Relative frequency
2		5	$\frac{5}{100} = 0.05$
3		16	$\frac{16}{100} = 0.16$
4		28	$\frac{28}{100} = 0.28$
5		25	$\frac{25}{100} = 0.25$
6		16	$\frac{16}{100} = 0.16$
7		10	$\frac{10}{100} = 0.1$
<b>Total</b>		<b>100</b>	<b>1</b>



## Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allows you to make conclusions, find probability or find totals of sub groups



Using your two-way table

To find a fraction

e.g. What fraction of the items are red? 3 red items

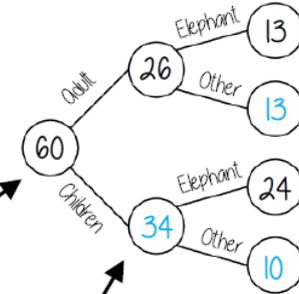
but 8 items in total =  $\frac{3}{8}$

*Interleaving:* Use your fraction, decimal percentage equivalence knowledge

## Frequency trees

60 people visited the zoo one Saturday morning  
 26 of them were adults. 13 of the adult's favourite animal was an elephant. 24 of the children's favourite animal was an elephant.

The overall total "60 people"



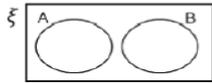
A frequency tree is made up from part-whole models. One piece of information leads to another

Probabilities or statements can be taken from the completed trees  
 e.g. 34 children visited the zoo

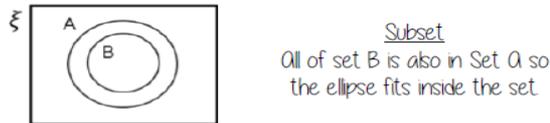
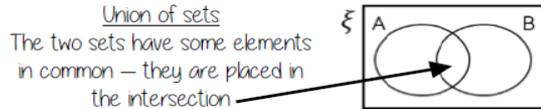
# Venn Diagrams



## Interpret and create Venn diagrams



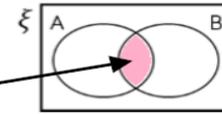
Mutually exclusive sets  
The two sets have nothing in common  
No overlap



The box  
Around the outside of every Venn diagram will be a box. If an element is not part of any set it is placed outside an ellipse but inside the box

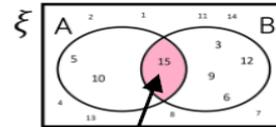
## Intersection of sets

Elements in the intersection are in set A AND set B



The notation for this is  $A \cap B$

$\xi = \{\text{the numbers between 1 and 15 inclusive}\}$   
 $A = \{\text{Multiples of 5}\}$      $B = \{\text{Multiples of 3}\}$



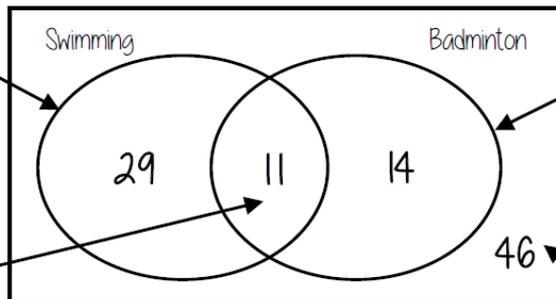
The element in  $A \cap B$  is 15

In this example there is only one number that is both a multiple of 3 and a multiple of 5 between 1 and 15

## Probability from Venn diagrams

100 students were questioned if they played badminton or went to swimming club.  
40 went swimming, 25 went to badminton and 11 went to both.

This whole curve includes everyone that went swimming.  
Because 11 did both we calculate just swimming by  $40 - 11$



This whole curve includes everyone that went to badminton.  
Because 11 did both we calculate just badminton by  $25 - 11$

The intersection represents both.  
Swimming AND badminton

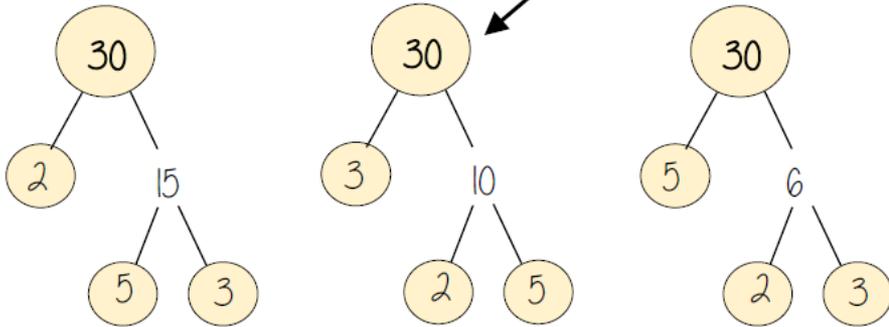
The number outside represents those that did neither badminton or swimming  $100 - 29 - 11 - 14$

$$P(\text{Just swimming}) = \frac{29}{100}$$



## Product of prime factors

Multiplication  
part-whole  
models



All three prime factor trees represent the same decomposition

Multiplication is commutative

$$30 = 2 \times 3 \times 5$$

Multiplication of prime factors

## Using prime factors for predictions

e.g 60     $30 \times 2$      $2 \times 3 \times 5 \times 2$   
 150     $30 \times 5$      $2 \times 3 \times 5 \times 5$

## Prime numbers

- Integer
- Only has 2 factors
- and itself

2

The first prime number  
The only even prime number

Learn or how-to quick recall...

2, 3, 5, 7, 11, 13, 17, 19, 23, 29...

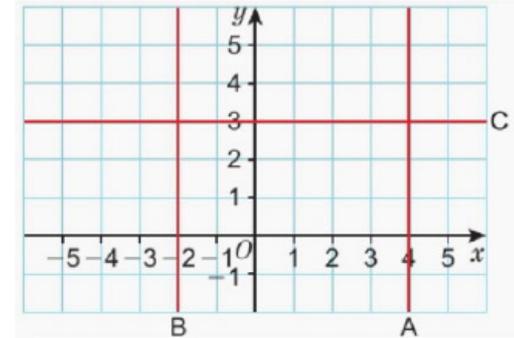


Important Information	
Gradient	Gradients can be positive (/) or (\) negative.
Midpoint	The point exactly in the middle of the line segment.
Linear Equation	Will produce a straight line graph. E.g. $y = 10x + 1$
Speed	The speed is represented by the gradient on a distance time graph.

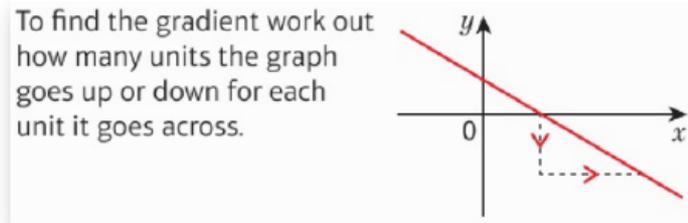
Parallel lines	Have the same gradient. E.g. $y = 7x + 2$ and $y = 7x - 24$
Mid-point	$M = \left( \frac{x_A + x_B}{2}, \frac{y_A + y_B}{2} \right)$
Gradient	The steepness of a graph $\frac{\text{units up or down}}{\text{units across}}$
Equation of a line	$y = mx + c$ gradient $\nearrow$ $\nwarrow$ y-intercept
y-intercept	Where the line crosses the y axis. When $x = 0$ .
Average Speed	Average speed = $\frac{\text{distance travelled}}{\text{time taken}}$

**Constant rate** means the same amount flows in every second.

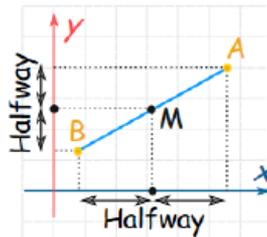
A **rate of change graph** shows how a quantity changes over time. On a **velocity-time graph** the gradient represents the acceleration.



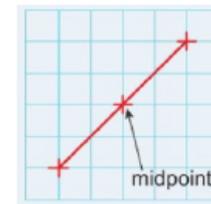
Important vocabulary	
Coefficient	The <b>coefficient</b> is the number in front of the $x$ .
Line Segment	A segment has a beginning and an end point.
Acceleration	Is the rate of change of velocity.
Velocity	Is speed with a direction. It is a vector.



A is line  $x = 4$   
B is line  $x = -2$   
C is line  $y = 3$



$$M = \left( \frac{x_A + x_B}{2}, \frac{y_A + y_B}{2} \right)$$





Previous Knowledge	
Expand $3x(x-2)$	$3x^2 - 6x$
Factorise $10x^2 - 6x$	$2x(5x-3)$
Copy and complete the table and plot the graph of $y = x + 1$ . Label your graph.	Straight Line passing through X -2 -1 0 0 1 2 Y -1 0 1 1 2 3
Squaring a negative number $(-2)^2$	$-2 \times -2 = \text{positive } 4 \text{ so } (-2)^2 = 4$

Important Vocabulary	
Term	A literal or numerical expression that has its own sign.
Expand	To remove brackets by multiplying each term in the bracket by the term outside the bracket.
Factorise	To put into brackets. The reverse of expanding brackets, for example, putting $2x^2 + x - 3$ into the form $(2x + 3)(x - 1)$
Collect Like Terms	Collect together terms whose variables (and their exponents such as the 2 in $x^2$ ) are the same. In other words, terms that are "like" each other
Coefficient	a numerical or constant quantity placed before and multiplying the variable in an algebraic expression (e.g. 4 in $4x$ )
Quadratic	An equation where the highest power of the variable is 2 ie $x^2$
Parabola	A special curve, shaped like an arch
Line of Symmetry	The imaginary line where you could fold the image and have both halves match exactly
Solution to an equation	A value or values which, when substituted for a variable in an equation, make the equation true

### Key facts to memorise

KEY FACTS	What Information is required
Drawing a quadratic graph	<p>For the graph of <math>y = x^2 - 6x + 5</math> write down</p> <ol style="list-style-type: none"> <li>the equation of the line of symmetry</li> <li>the turning point</li> <li>the coordinates of the <math>y</math>-intercept.</li> </ol> <p>The <math>y</math>-intercept is the point where the graph crosses the <math>y</math>-axis.</p> <p>Sketch in the <b>line of symmetry</b>. Write its equation.</p> <p>Write down the coordinates of the point where the curve turns.</p> <p>a line of symmetry <math>x = 3</math>            b turning point <math>(3, -4)</math>            c <math>y</math>-intercept <math>(0, 5)</math></p> <p>d coordinates of the <math>x</math>-intercept</p> <p><b>x-intercepts are the points where the graph crosses the x-axis</b></p> <p>d X-intercepts: <math>x = 1</math> or <math>5</math></p>

## Try these questions

- a Copy and complete the table of values for  $y = x^2 + 5x + 5$ .

$x$	-5	-4	-3	-2	-1	0
$x^2$						
$+5x$						
$+5$						
$y$						

- b Plot the graph of the function. Label your graph.
- c
- Draw the line  $y = 1$  on your graph.
  - Find the solutions to  $x^2 + 5x + 5 = 1$

### Exam-style question

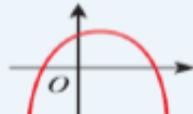
- a Complete the table of values for  $y = 2x^2 - 1$  (2 marks)

$x$	-2	-1	0	1	2
$y$	7			1	

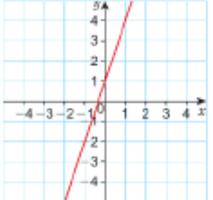
- b On the grid below, draw the graph of  $y = 2x^2 - 1$  for values of  $x$  from  $x = -2$  to  $x = 2$  (2 marks)



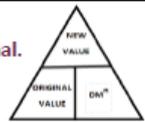
KEY FACTS	Method / Description
Minimum / Maximum	The Turning Point of the curve occurs when the x coordinate lies on the line of symmetry.
Difference of 2 Squares	<p>Example 1: Factor <math>x^2 - 4</math></p> <p>Notice the terms are both perfect squares and we have a difference <math>\rightarrow</math> difference of squares</p> $x^2 = (x)^2 \quad 4 = (2)^2$ $\rightarrow x^2 - 4 = (x)^2 - (2)^2 = (x-2)(x+2)$ <p style="text-align: center;"> <math>a^2 - b^2 = (a-b)(a+b)</math>  <small>factors as</small> </p>
Factorising a quadratic	<p>Factorising <math>x^2 + bx + c</math> into <math>(x+d)(x+e)</math></p> <p><math>b = d + e</math> <math>c = d \times e</math></p> <p>Write down all factor pairs of c Which factors add to give b <b>The factor pair will then be d and e</b></p>
Factorising a quadratic coefficient of $x^2 > 1$ ie. $3x^2$	<p>Step 1. Multiply coeff of <math>x^2</math> by constant <math>11 \times 2 = 24</math> look for two numbers whose product is 24 And sum = 11.</p> <p>Step 2. rewrite equation</p> <p>Step 3. Factorise first 2 terms and last 2 terms.</p> <p>Step 3 note one of each factor is the same.</p> <p>Step 4 write in 2 brackets</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><math>2x^2 + 11x + 12</math></p> <p><math>2x^2 + 8x + 3x + 12</math></p> <p><math>2x(x+4) + 3(x+4)</math></p> <p><math>(2x+3)(x+4)</math></p> </div>
Solving quadratic algebraically	<p>This is when <math>y = 0</math></p> <p>Factorise quadratic into 2 brackets</p> <p>As we have 2 terms multiplied together = 0</p> <p>One of the terms must = 0</p> <p>So if <math>(x-2) = 0</math> x must equal -2 this is a solution.</p>

KEY FACTS	Method / Description																																								
Expanding Double Brackets	<p>Grid method</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td>x</td><td>x</td><td>+2</td></tr> <tr><td>x</td><td>x<sup>2</sup></td><td>+2x</td></tr> <tr><td>+6</td><td>+6x</td><td>+12</td></tr> </table> <p style="margin-left: 20px;"> <math>= x^2 + 2x + 6x + 12</math>  <math>= x^2 + 8x + 12</math> </p> <p>Algebraic Method</p> $(x+3)(x+2)$ $x^2 + 3x + 2x + 6$ $x^2 + 5x + 6$	x	x	+2	x	x <sup>2</sup>	+2x	+6	+6x	+12																															
x	x	+2																																							
x	x <sup>2</sup>	+2x																																							
+6	+6x	+12																																							
Squaring a single bracket	<p>To square a single bracket, multiply it by itself, then expand and simplify.</p> $(x+1)^2 = (x+1)(x+1)$																																								
Plotting a Quadratic	<p>Draw A Table of values and the plot corresponding Co-Ordinate</p> <p><math>Y = x^2 + 2x - 4</math></p> <table border="1" style="display: inline-table;"> <tr><td>x</td><td>-4</td><td>-3</td><td>-2</td><td>-1</td><td>0</td><td>1</td><td>2</td></tr> <tr><td>x<sup>2</sup></td><td>16</td><td>9</td><td>4</td><td>1</td><td>0</td><td>1</td><td>4</td></tr> <tr><td>+2x</td><td>-8</td><td>-6</td><td>-4</td><td>-2</td><td>0</td><td>+2</td><td>+4</td></tr> <tr><td>-4</td><td>-4</td><td>-4</td><td>-4</td><td>-4</td><td>-4</td><td>-4</td><td>-4</td></tr> <tr><td>y</td><td>4</td><td>-1</td><td>-4</td><td>-5</td><td>-4</td><td>-1</td><td>4</td></tr> </table>	x	-4	-3	-2	-1	0	1	2	x <sup>2</sup>	16	9	4	1	0	1	4	+2x	-8	-6	-4	-2	0	+2	+4	-4	-4	-4	-4	-4	-4	-4	-4	y	4	-1	-4	-5	-4	-1	4
x	-4	-3	-2	-1	0	1	2																																		
x <sup>2</sup>	16	9	4	1	0	1	4																																		
+2x	-8	-6	-4	-2	0	+2	+4																																		
-4	-4	-4	-4	-4	-4	-4	-4																																		
y	4	-1	-4	-5	-4	-1	4																																		
Shape of quadratic with a +ve $x^2$ term	<p>A quadratic function has symmetrical U-shaped curve called a <b>parabola</b>.</p>  <p>The curve has a minimum Value</p>																																								
Shape of quadratic with a -ve $x^2$ term	<p>A quadratic function with a <math>-x^2</math> term has a symmetrical <math>\cap</math>-shaped curve.</p>  <p>The curve has a maximum Value</p>																																								
X-Intercept	<p>Points at which the Parabola intersects the X-Axis</p> <p>If Quadratic is written as product of 2 brackets <math>(x-a)(x-b)</math></p> <p>X-Intercepts are X value = a and X value = b</p>																																								
Y-Intercept	<p>Points at which the Parabola intersects the Y-Axis</p> <p>If quadratic written <math>ax^2 + bx + c</math></p> <p>Y Intercept is when Y value = c</p> <p>If quadratic is written as product of two brackets <math>(x-a)(x-b)</math></p> <p>Y Intercept is when Y value = a x b</p>																																								



Prior Knowledge	
Turn a Percentage into a decimal	Divide by 100.
How do you calculate a percentage	To find 20% of an amount x. $X \times 20\%$ or as $20\% = 0.2 \times 0.2$
Conversion of units	10mm = 1cm, 100cm = 1m, 1000m = 1Km 10millilitres (ml) = 1 centilitre (cl), 100cl = 1 litre (l) 1000 Grammes (g) = 1 Kilograms (Kg), 1000 Kg = 1 Tonne 60 seconds = 1 minute, 60 minutes = 1 hour 24 hours = 1 day, 365 days = 1 year
Graph Fluency	<p>Gradient (m) = <math>\frac{a}{b}</math> What is the gradient of this line? Change in y What is the equation of this line? Change in x</p>  <p>The y intercept = c</p> <p>Gradient = <math>\frac{3}{1}</math> : Y intercept = 1 Equation is <math>Y=3x + 1</math></p>

Important vocabulary	
Original Amount	This is the amount before any reductions or increases have taken place.
Decimal Multiplier	<p>If you are increasing by x% then your Decimal Multiplier (DM) is <math>100\% + x\%</math> written as a decimal.</p> <p>If you are decreasing by y% then your Decimal Multiplier (DM) is <math>100\% - y\%</math> written as a decimal.</p> <p>Example Increase by 10% DM = 1.10 Decrease by 7% DM = 0.93</p>
New Amount or Final Amount	This is the amount after the increase or Decrease has taken place.

Key facts to memorise	
Key Facts	Calculation
Actual Change	Current Amount – Actual Amount
Percentage Change	Percentage Change = $\frac{\text{Actual change}}{\text{Original Amount}} \times 100$
Simple Interest	<p>If n = number of years and p = percentage interest as a decimal.</p> <p>Original amount + (n x p x Original amount)</p> 
Compound Interest	<p>If n = number of years and P = percentage in decimal form.</p> <p>Amount = Original Amount <math>\times (1 + p)^n</math> DM<sup>n</sup> = Decimal Multiplier To power of n</p> 
Density	<p>Density = <math>\frac{\text{Mass}}{\text{Volume}}</math>    <math>D = \frac{M}{V}</math></p> 
Pressure	<p>Pressure = <math>\frac{\text{Force}}{\text{Area}}</math>    <math>P = \frac{F}{A}</math></p> 
Speed	<p>Speed = <math>\frac{\text{Distance}}{\text{Time}}</math>    <math>S = \frac{D}{T}</math></p>
Average Speed	Average Speed = $\frac{\text{Total Distance}}{\text{Total Time}}$
KINEMATICS	<p><math>v = u + at</math> <math>s = ut + \frac{1}{2} at^2</math> <math>v^2 = u^2 + 2as</math></p>
x is proportional to y	$Y \propto X$ $Y = kX$ where k is the constant of proportionality
x is indirectly proportional to y	$Y \propto \frac{1}{X}$ $Y = \frac{k}{X}$ where k is the constant of proportionality This can also be written $XY = k$

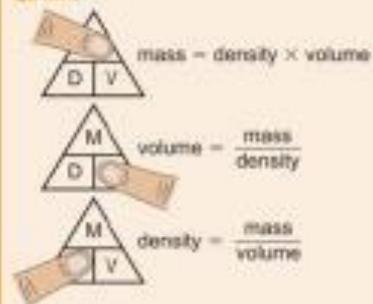


## Examples to try

**STEM / Modelling** Copy and complete this table of mass, volume and density.

Metal	Mass (g)	Volume (cm <sup>3</sup> )	Density (g/cm <sup>3</sup> )
aluminium		10	2.70
copper	648		8.96
zinc	427.8	60	

**Q2 hint**



Cover up the quantity you want to find.

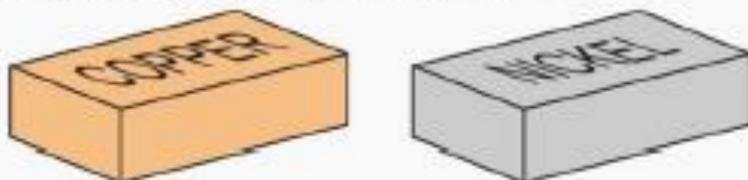
**STEM / Modelling** Copy and complete this table of force, area and pressure.

Force (N)	Area (cm <sup>2</sup> )	Pressure (N/cm <sup>2</sup> )
	20	11
60	15	
45		9

**Q3 hint**



These two metal blocks each have a volume of 0.5 m<sup>3</sup>.



The density of the copper block is 8900 kg per m<sup>3</sup>.

The density of the nickel block is 8800 kg per m<sup>3</sup>.

Calculate the difference between the masses of the blocks.

£650 is invested at 3.4% compound interest.

a Copy and complete the table.

Year	Amount at start of year	Multiplier in index form	Total amount at end of year
1	£650	1.034	
2		1.034 <sup>2</sup>	
3		1.034 <sup>3</sup>	
4			
5			

b What is the multiplier for year 10?

c What is the multiplier for year  $n$ ?

d Write a formula for the amount in the account at the end of year  $n$ , when  $£P$  is invested at  $r\%$ .

### Density Extension Question

The diagram shows a solid wooden sphere.

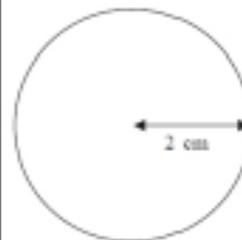


Diagram NOT accurately drawn

Volume of sphere  $\frac{4}{3}\pi r^3$   
Surface area of sphere =  $4\pi r^2$



The radius of the sphere is 2 cm.

The mass of the sphere is 45 grams.

Wood will float on the Dead Sea only when the density of the wood is less than 1.24 g/cm<sup>3</sup>.

Will this wooden sphere float on the Dead Sea?



# 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**

*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.**



# 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

**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.



## For every project/theme

Try out different materials and techniques.

Explore and experiment

Refine ideas and compositions

### 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.

- 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.**



# 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**

### Final pieces can be in any Fine art media

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

#### 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.



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.



### Independent study

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

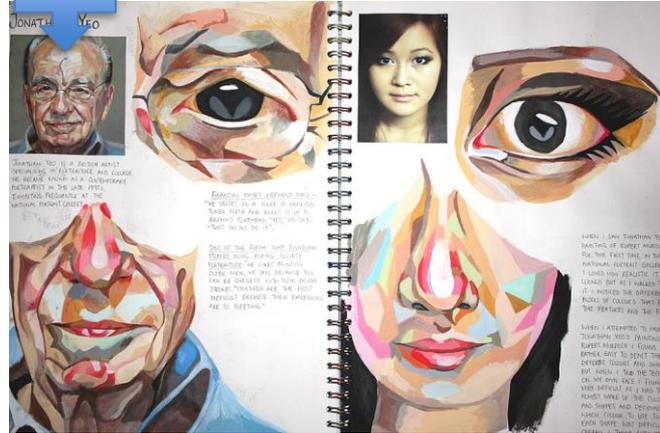


### Explore materials and techniques



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

### Annotate



### Independent study/Research

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

[https://youtu.be/61DZqjNP\\_AM](https://youtu.be/61DZqjNP_AM)



# French



## La famille Family members

les parents = *parents*  
 le père = *father*  
 la mère = *mother*  
 le beau-père = *stepfather/father-in-law*  
 la belle-mère = *stepmother/mother-in-law*  
 le mari = *husband*  
 la femme = *wife*  
 les enfants = *children*  
 le fils = *son*  
 la fille = *daughter*  
 le frère = *brother*  
 la soeur = *sister*  
 le demi-frère = *half-brother, stepbrother*  
 la demi-soeur = *half-sister, stepsister*  
 le beau-frère = *brother-in-law*  
 la belle-soeur = *sister-in-law*  
 les grands-parents = *grandparents*  
 le grand-père = *grandfather*  
 la grand-mère = *grandmother*  
 les petits-enfants = *grandchildren*  
 le petit-fils = *grandson*  
 la petite-fille = *granddaughter*  
 l'oncle (m) = *uncle*  
 la tante = *aunt*  
 le cousin/la cousine = *cousin*



## Les adjectifs de personnalité

= *Personality adjectives*

Il/Elle est ... = *He/She is ...*  
 agaçant(e) = *annoying*  
 amusant(e) = *amusing, funny*  
 arrogant(e) = *arrogant*  
 bavard(e) = *talkative, chatty*  
 charmant(e) = *charming*  
 content(e) = *happy*  
 fort(e) = *strong*  
 impatient(e) = *impatient*  
 impoli(e) = *impolite*  
 indépendant(e) = *independent*  
 intelligent(e) = *intelligent*  
 marrant(e) = *funny*  
 méchant(e) = *nasty/mean*  
 têtu(e) = *stubborn, pig-headed*

## Les mots essentiels = High-frequency words

très = *very*  
 assez = *quite*  
 mais = *but*  
 ou = *or*  
 où = *where*  
 hier = *yesterday*  
 d'abord = *first of all*  
 puis = *then*  
 ensuite = *next*  
 après = *afterwards*  
 plus tard = *later*  
 le soir = *in the evening*

## Ma description physique = My physical description

J'ai les cheveux ... = *I have ... hair*  
 courts/longs = *short/long*  
 raides/bouclés/frisés = *straight/curly*  
 noirs/bruns/blonds = *black/brown/blond*  
 roux/gris/blancs = *red/grey/white*  
 J'ai les yeux ... = *I have ... eyes*  
 bleus/verts = *blue/green*  
 gris/marron = *grey/brown*  
 J'ai ... = *I have ...*  
 des lunettes = *glasses*  
 des boutons = *spots*  
 une moustache/une barbe = *a moustache/a beard*  
 Je suis ... = *I am ...*  
 petit(e)/grand(e) = *short/tall*  
 de taille moyenne = *of average height*  
 mince/gros(se) = *thin/fat*





## Les amis = Friends

l'ami (m)/le copain = (male) friend

l'amie (f)/la copine = (female) friend

le petit ami/le petit copain = boyfriend

la petite amie/la petite copine = girlfriend

Je retrouve mes amis au parc. = I meet up with my friends in the park.

Je traîne en ville avec mes copines. = I hang out in town with my (female) friends.

Je tchatte en ligne avec ma meilleure copine. = I chat online with my best (female) friend.

Avec mon petit ami, j'écoute de la musique. = I listen to music with my boyfriend.

Je passe chez ma petite copine. = I go to my girlfriend's house.

On rigole bien ensemble. = We have a good laugh together.

On regarde un film ou des clips vidéo. = We watch a film or music videos.

On joue au foot ensemble. = We play football together.

On discute de tout. = We talk about everything.

On mange ensemble au fast-food. = We eat together at a fast-food restaurant.

## Les rapports en famille = Family relationships

Je m'entends bien avec ... = I get on well with ...

Je me dispute avec ... = I argue with ...

Je me chamaille avec ... = I bicker with ...

Je m'amuse avec ... = I have fun with ...

Je m'occupe de ... = I look after ...

le frère aîné/cadet = older/younger brother

la soeur aînée/cadette = older/younger sister

Il/Elle est/a l'air/semble ... = He/She is/looks/seems ...

dynamique = lively

égoïste = selfish

jaloux/-ouse = jealous

sévère = strict

timide = shy

travailleur/-euse = hard-working

## L'amitié = Friendship

Je pense que ... = I think that ...

Pour moi, ... = For me ...

À mon avis, ... = In my opinion ...

Un(e) bon(ne) ami(e) est ... = A good friend is ...

compréhensif/-ive = understanding

cool = cool

drôle = funny

fidèle = loyal

généreux/-euse = generous

gentil(le) = kind

honnête = honest

modeste = modest

optimiste = optimistic

patient(e) = patient

sensible = sensitive

sympa(thique) = nice

Un(e) bon(ne) ami(e) ... = A good friend ...

écoute mes problèmes/mes secrets = listens to my problems/secrets

discute de tout avec moi = talks about everything with me

aide tout le monde = helps everyone

accepte mes imperfections = accepts my faults

respecte mes opinions = respects my opinions

a les mêmes centres d'intérêt que moi = has the same interests as me

a le sens de l'humour = has a sense of humour





## On va sortir = *Going out*

Je vais ... = *I am going ...*

aller à un match/au bowling = *to go to a match/the bowling alley*

aller au cinéma/à la piscine = *to go to the cinema/the pool*

voir un spectacle = *to see a show*

faire du patin à glace/du skate = *to go ice skating/skateboarding*

faire les magasins = *to go shopping*

jouer à des jeux vidéo = *to play video games*

Tu veux venir? = *Do you want to come?*

Quand? = *When?*

Avec qui? = *With who(m)?*

On y va comment? = *How are we getting there?*

On se retrouve où? = *Where shall we meet?*

On se retrouve à quelle heure? = *At what time shall we meet?*



## Une sortie = *An outing*

J'ai contacté un copain/une copine. = *I contacted a friend.*

J'ai quitté la maison. = *I left the house.*

J'ai raté le bus. = *I missed the bus.*

Je suis allé(e) en ville. = *I went into town.*

J'ai écouté de la musique. = *I listened to music.*

J'ai retrouvé mon copain/ma copine. = *I met up with my friend.*

J'ai discuté avec mon copain/ma copine. = *I talked to my friend.*

J'ai mangé un sandwich. = *I ate a sandwich.*

J'ai acheté des vêtements. = *I bought some clothes.*

C'était super. = *It was great.*

J'ai passé une très bonne journée. = *I had a very good day.*

## La personne que j'admire = *The person I admire*

Comment s'appelle la personne que tu admires? = *What is the name of the person you admire?*

Mon héros s'appelle ... = *My hero is called ...*

Mon héroïne s'appelle ... = *My heroine is called ...*

Mon modèle s'appelle ... = *My role model is called ...*

C'est qui? = *Who is he/she?*

C'est un pilote de Formule 1. = *He is a Formula 1 driver.*

C'est un scientifique. = *He is a scientist.*

C'est une actrice. = *She is an actress.*

C'est une créatrice de mode. = *She is a fashion designer.*

Fais-moi sa description physique. = *Describe for me what he/she looks like.*

Il/Elle est petit(e)/gros(se), etc. = *He/She is ... small/fat, etc.*

Il/Elle a les cheveux bruns, etc. = *He/She has brown hair, etc.*

Quelle est sa personnalité? = *What is his/her personality?*

Il/Elle est ... = *He/She is ...*

travailleur/-euse/créatif/-ive, etc = *hard-working/creative, etc*

Pourquoi est-ce que tu admires cette personne? = *Why do you admire this person?*

J'admire (Stromae/Malala, etc.) = *I admire (Stromae/Malala, etc.)*

car il/elle ... = *because he/she ...*

a travaillé très dur = *worked/has worked very hard*

a joué dans beaucoup de films = *acted/has acted in lots of films*

a gagné beaucoup de courses = *won/has won lots of races*

a donné de l'argent aux bonnes oeuvres = *gave/has given money to good causes*

a lutté contre ses problèmes = *fought/has fought his/her problems*

J'aimerais être comme lui/elle. = *I would like to be like him/her*



### La famille = family

le petit-enfant = *grandchild*  
 l'ex-mari (m) = *ex-husband*  
 l'ex-femme (f) = *ex-wife*

### Les adjectifs de personnalité = Personality adjectives

aimable = *likeable*  
 paresseux/-euse = *lazy*  
 poli(e) = *polite*  
 sage = *well-behaved, wise*  
 sérieux/-euse = *serious*  
 triste = *sad*

### Ma description physique = My physical description

Je suis ... = *I am ...*  
 beau/belle = *handsome/beautiful*  
 joli(e) = *pretty*  
 moche = *ugly*  
 Je porte des lunettes. = *I wear glasses.*



### On décrit sa famille =

#### Describing family members

adorable = *adorable*  
 débrouillard(e) = *resourceful*  
 dynamique = *lively*  
 énergique/plein(e) d'énergie = *energetic*  
 extraverti(e) = *outgoing*  
 fragile = *fragile*  
 instable = *unstable*  
 introverti(e) = *introverted*

### L'amitié = friendship

Un(e) bon(ne) ami(e) est ... = *a good friend is ...*  
 de bonne humeur = *in a good mood*  
 équilibré(e) = *balanced / level-headed*  
 indépendant(e) = *independent*  
 sûr(e) de lui/d'elle = *self-confident*  
 Un(e) bon(ne) ami(e) n'est pas ... = *A good friend is not ...*  
 de mauvaise humeur = *in a bad mood*  
 déprimé(e) = *depressed*  
 pessimiste = *pessemistic*  
 prétentieux/-euse = *pretentious*  
 vaniteux/-euse = *conceited*  
 Il/Elle ... = *He/She ...*  
 croit en moi = *believes in me*  
 dit toujours la vérité = *always tells the truth*  
 me fait rire = *makes me laugh*  
 prend soin de moi = *takes care of me*  
 voit le bon côté des choses = *sees the positive side of things*

### Les traits de personnalité = Qualities

le sens de l'humour = *sense of humour*  
 la patience = *patience*  
 la générosité = *generosity*  
 la gentillesse = *kindness*  
 la fidélité = *loyalty*  
 la modestie = *modesty*  
 l'honnêteté (f) = *honesty*  
 l'optimisme (m) = *optimism*

### On décrit un(e) ami(e) = Describing a friend

Il/Elle ... = *He/She ...*  
 mesure 1,68 mètre = *is 1 metre 68 tall*  
 semble timide = *seems shy*  
 porte un appareil dentaire = *has a brace*  
 a l'air cool = *looks cool*  
 a des yeux qui inspirent confiance = *has eyes which convey confidence*  
 On a les mêmes centres d'intérêt. = *We have the same interests.*



### Les rapports en famille = family relationships

se confier à = to confide in  
 se disputer avec = to argue with  
 s'entendre bien avec = to get on well with  
 se fâcher contre = to be angry with  
 s'intéresser à = to be interested in  
 s'occuper de = to look after  
 s'aimer = to love each other  
 se chamailler = to bicker with each other  
 mort(e)/décédé(e) = dead  
 divorcé(e)(s) = divorced  
 séparé(e)(s) = separated



### On décrit une sortie

hier soir = last night  
 à 20 heures = at 8pm  
 J'ai.../Il/Elle a.../Nous avons ... = I .../ He .../ She .../ We ...  
 visité le musée = visited the museum  
 vu un match/une exposition = saw a match/an exhibition  
 mangé dans un restaurant = ate in a restaurant  
 refusé de manger = refused to eat  
 bu un coca = drank a coke  
 dit «au revoir» = said goodbye  
 embrassé ... = kissed ...  
 Je suis.../Il est/Elle est.../Nous sommes ... = I/He/She/We  
 allé(e)(s) à un pub = went to the pub  
 resté(e)(s) dehors sur la terrasse = stayed outside on the terrace  
 entré(e)(s) dans un restaurant = went into a restaurant  
 sorti(e)(s) = went out  
 parti(e)(s) = left  
 monté(e)(s) dans le bus = got on the bus  
 rentré(e)(s) à la maison = went home  
 tombé(e)(s) amoureux/-euse(s) = fell in love

### Qui est-ce que tu admires? = Who do you admire?

Moi, j'admire ... Personally, I admire ...  
 J'admire sa créativité. = I admire his/her creativity.  
 Il/Elle ... = He/She ...  
 m'impressionne énormément = impresses me a lot  
 a travaillé très dur pour devenir... = worked very hard to become ...  
 est devenu(e) ... = became ...  
 aide/a aidé ... = helps/has helped  
 a/avait du courage/de la détermination = has/had courage / determination  
 est/était courageux/-euse face à des dangers terribles = is/was brave when faced with terrible danger  
 lutte/a lutté pour ... = fights/fought for ...  
 a obtenu ... = obtained/got ...  
 a sauvé la vie de ... = saved the life of ...  
 C'est un enfant adopté, comme moi. = He/She is adopted, like me.

### On va sortir = Going out

Je vais/Tu vas/On va ... = I'm going/You're going/We're going ...  
 venir chez moi = to come to my house  
 Tu peux venir? = Can you come?  
 On se retrouve quand? = When will we meet?  
 ... où? = Where ...?  
 ... à quelle heure? = At what time ...?  
 Tu y vas avec qui? = Who are you going with?  
 ... comment? = How ...?  
 D'accord. = OK  
 À plus!/À plus tard! = See you later!



## 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>



## Possessive adjectives

Possessive adjectives are words like 'my', 'your', 'his' and 'her'.

In French, there are different words for each of the possessive adjectives.

This is because the possessive adjective needs to agree with the noun it comes before.

English	masculine	feminine	plural
my	mon	ma	mes
Your (1 friend)	ton	ta	tes
his/her/one's/its	son	sa	ses
our	notre	notre	nos
your (plural/polite)	votre	votre	vos
their	leur	leur	leurs

In French, the same set of possessive adjectives is used for both 'his' and 'her', so you have to use context to work out if it means 'his' or 'her'.

- **son** chat (his cat OR her cat)
- **sa** maison (his house OR her house)
- **ses** parents (his parents OR her parents)

If a singular noun starts with a vowel or silent h, we use the masculine possessive adjective, even if the noun is feminine:

- **son** école



For more information and practice using possessive adjectives:  
<https://www.youtube.com/watch?v=jXt-dAm6-U> (video)



## Asking questions

There are different types of question and different ways of asking questions in French.

### 1. Questions without question words (yes/no questions).

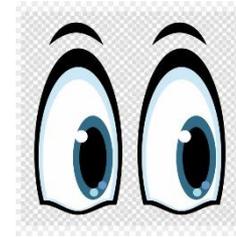
To form questions without question words:

- Keep the word order the same as a statement, add a question mark and raise the tone of your voice at the end.  
Tu aimes la musique?
- Put 'est-ce que' at the start of a statement.  
Est-ce que tu aimes la musique?
- Invert the subject and the verb.  
Aimes-tu la musique?

### 2. Questions with question words.

The most common question words include:

- Où? (Where?)
- Comment? (How?)
- Qui? (Who?)
- Quand? (When?)
- Que? / Qu'est-ce que? (What?)
- Pourquoi? (Why?)
- Quel(le)(s)? (Which?)
- Combien? (How many/much?)
- À quelle heure? (At what time?)



For more information and practice asking questions:

<https://www.bbc.co.uk/bitesize/guides/zvsr7nb/revision/1>

To form questions with question words:

- Put the question word at the end, add a question mark and raise the tone of your voice at the end.  
Tu habites où?
- Put the question word at the start and add 'est-ce que'.  
Où est-ce que tu habites?
- Put a question word at the start and invert the subject and the verb.  
Où habites-tu?



## The present tense with regular verbs

We use the present tense to say:

- what is happening now e.g. I am playing the guitar.
- what usually happens e.g. I sing every day
- how things are e.g. I like spaghetti.

In French, there is just one form of the present tense.

e.g. We translate BOTH 'I play' and 'I am playing' as 'je joue'.

For more information and practice using the present tense:

<https://www.bbc.co.uk/bitesize/guides/z6dx382/revision/1>

The **infinitive** is the form of the verb that you find in the dictionary and it means 'to ...' (e.g. to play).

In French, there are **three types of infinitive: -er verbs, -ir verbs and -re verbs.**

To form the present tense with regular verbs, you **remove the -er / -ir / re** and **add an ending.**

**The ending** depends on the **subject pronoun** (who or what is doing the activity).

-ER verbs (e.g. jouer = to play) Remove the -ER before adding the subject pronoun and ending		-IR verbs (e.g. finir = to finish) Remove the -IR before adding the subject pronoun and ending		-RE verbs (e.g. vendre = to sell) Remove the -RE before adding the subject pronoun and ending	
SUBJECT PRONOUN	VERB ENDING	SUBJECT PRONOUN	VERB ENDING	SUBJECT PRONOUN	VERB ENDING
je (I)	joue	je (I)	finis	je (I)	vend <sup>s</sup>
tu (you - 1 friend)	joues	tu (you - 1 friend)	finis	tu (you - 1 friend)	vend <sup>s</sup>
il/elle/on (he/she/we)	joue	il/elle/on (he/she/we)	finit	il/elle/on (he/she/we)	vend
nous (we)	jouons	nous (we)	finissons	nous (we)	vendons
vous (you-plural/polite)	jouez	vous (you-plural/polite)	finissez	vous (you-plural/polite)	vendez
ils/elles (they)	jouent	ils/elles (they)	finissent	ils/elles (they)	vendent
Only pronounce the nous and vous endings: -ons /-ez. The others (-e/-es/-ent) are silent.		The -s and -t at the end of the je, tu, il/elle/on verb endings is silent. The -ent of the ils/elle verb form is also silent.		There is no ending in the il/elle/on verb form. The -s of the je and tu verb forms is silent, as is the -ent of the ils/elles verb.	



## The present tense with irregular verbs

Some of the most common and important verbs in French are irregular, including:

- être (to be)
- avoir (to have)
- faire (to do/make)
- aller (to go)

For more information and practice using the present tense:

<https://www.bbc.co.uk/bitesize/guides/z6dx382/revision/1>

	être (to be)	avoir (to have)	faire (to do/make)	aller (to go)
I	je suis (I am)	j'ai (I have)	je fais (I do/make)	je vais (I go)
you - 1 friend	tu es	tu as	tu fais	tu vas
he/she/we	il/elle/on est	il/elle/on a	il/elle/on fait	il/elle/on va
we	nous sommes	nous avons	nous faisons	nous allons
you-plural/polite	vous êtes	vous avez	vous faites	vous allez
they	ils/elles sont	ils/elles ont	ils/elles font	ils/elles vont

There are other, important verbs which are irregular, including:

	boire (to drink)	savoir (to know)	voir (to see)	lire (to read)	prendre (to take)
I	je bois (I drink)	je sais (I have)	je vois (I see)	je lis (I read)	je prends (I take)
you - 1 friend	tu bois	tu sais	tu vois	tu lis	tu prends
he/she/we	il/elle/on boit	il/elle/on sait	il/elle/on voit	il/elle/on lit	il/elle/on prend
we	nous buvons	nous savons	nous voyons	nous lisons	nous prenons
you-plural/polite	vous buvez	vous savez	vous voyent	vous lisez	vous prenez
they	ils/elles boivent	ils/elles savent	ils/elles voient	ils/elles lisent	ils/elles prennent



## The near future tense

You use the near future tense to say what you are going to do.

To form the near future tense, we use the **present tense of the verb 'aller' (to go)** + **infinitive verb**. Infinitive verbs are the form found in the dictionary. In French, **infinitives end in -er, -ir or -re**.

- Je vais écouter de la musique. (I am going to listen to music).
- Il va acheter un pull. (He is going to buy a jumper).

Present tense of aller (to go)	Infinitive verb	Meaning
je vais	aller	I am going to go
tu vas	manger	you are going to eat (1 friend)
il/elle/on va	regarder	he/she is going to watch / we are going to watch
nous allons	danser	we are going to dance
vous allez	finir	you are going to finish (plural/polite)
ils/elles vont	boire	they are going to drink



For more information and practice using the near future:  
<https://www.bbc.co.uk/bitesize/guides/z6qhrj6/revision/1>



## The perfect past tense with avoir

You use the perfect past tense to say what you did or what you have done.

To form the perfect past tense, we use a **helping verb** + **past participle**.

For most verbs, the helping verb is the **present tense of the verb 'avoir' (to have)**.

To form the past participle of **regular -er verbs**, remove the -er from the infinitive, replace it with **é** (e.g. jouer → joué)

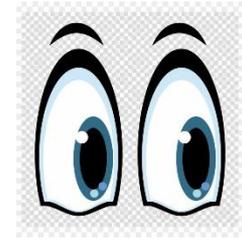
To form the past participle of **regular -ir verbs**, remove the -ir from the infinitive, replace it with **i** (e.g. finir → fini)

To form the past participle of **regular -re verbs**, remove the -re from the infinitive, replace it with **u** (e.g. vendre → vendu)

For some **irregular verbs**, you just have to learn the past participle.

- **faire** (to do/make) → **fait**
- **boire** (to drink) → **bu**
- **prendre** (to take) → **pris**
- **voir** (to see) → **vu**

Present tense of avoir (to have)	Past participle	Meaning
j'ai	joué	I (have) played
tu as	dansé	you (have) danced (1 friend)
il/elle/on a	écouté	he/she (has) listened / we (have) listened
nous avons	regardé	we (have) watched
vous avez	fait	you have done / you did (plural/polite)
ils/elles ont	bu	they have drunk / they drank



For more information and practice using the perfect tense:

<https://www.bbc.co.uk/bitesize/guides/zk3k6v4/revision/1>

To make a perfect tense verb negative, you wrap **ne ... pas** around the helping verb (avoir) to make a sandwich. Ne shortens to n' before a vowel.

- Je **n'ai pas** visité la cathédrale. (I did **not** visit the cathedral).



## The perfect past tense with être

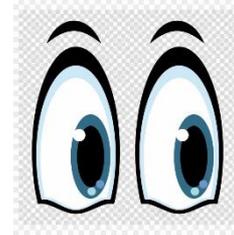
To form the perfect past tense, we use a **helping verb** + **past participle**.

For most verbs, the helping verb is 'avoir' (to have) but 13 verbs (mainly verbs of movement) use the helping verb 'être' (to be). These verbs are: aller (to go), venir (to come), arriver (to arrive), partir (to leave), entrer (to enter), sortir (to go out), monter (to go up), descendre (to come down), naître (to be born), mourir (to die), rester (to stay), tomber (to fall), retourner (to return).

With these verbs, the **past participle has to agree**.

This means, adding an **extra -e in the feminine** and an **extra -s in the plural**.

- Thomas **est allé** à Paris.
- Marie **est allée** à Paris.
- Thomas et Marie **sont allés** à Paris.
- Marie et Clare **sont allées** à Paris.



Present tense of être (to be)	Past participle	Meaning
je suis	parti(e)	I left
tu es	sorti(e)	you went out (1 friend)
il est	allé	he went
elle est	entrée	she entered
on est	venu(e)s	we came
nous sommes	resté(e)s	we stayed
vous êtes	arrivé(e)(s)	you have arrived (plural/polite)
ils sont	nés	they were born (male or mixed group)
elles sont	descendues	they came down (all female group)

For more information and practice using the perfect tense:

<https://www.bbc.co.uk/bitesize/guides/zk3k6v4/revision/1>



# Spanish



## ¿Qué haces en verano?

Compro un montón de revistas.  
 Escucho música / la radio.  
 Hago deporte / kárate / los deberes / submarinismo.  
 Juego a los videojuegos / al baloncesto / al voleibol.  
 Monto a caballo / en bici.  
 Nado en el mar.  
 Salgo con mis amigos / mi hermano/a.  
 Toco la guitarra / el piano.  
 Veo la tele / un partido de fútbol.  
 Voy al parque / a la playa / al centro comercial.

## What do you do in summer?

I buy loads of magazines.  
 I listen to music / the radio.  
 I do sport / karate / homework / diving.  
 I play computer games / basketball / volleyball.  
 I go horseriding / cycling.  
 I swim in the sea.  
 I go out with my friends / my brother / sister.  
 I play the guitar / the piano.  
 I watch TV / a football match.  
 I go to the park / the beach / the shopping centre.



## ¿Con qué frecuencia?

siempre  
 a menudo  
 todos los días  
 a veces  
 una vez a la semana  
 dos o tres veces a la semana  
 casi nunca  
 nunca  
 Cuando...  
     hace buen tiempo  
     hace mal tiempo  
     hace calor / frío  
     hace sol / viento  
     llueve / nieva

## How often?

always  
 often  
 every day  
 sometimes  
 once a week  
 two or three times a week  
 almost never  
 never  
 When...  
     it's good weather  
     it's bad weather  
     it's hot / cold  
     it's sunny / windy  
     it's raining / snowing



## ¿Cómo prefieres pasar las vacaciones?

¿Dónde vives?

Vivo en el...

norte / sur...  
 este / oeste...  
 de España / México  
 de Inglaterra / Escocia  
 de Gales / Irlanda (del Norte)

Tengo... semanas de vacaciones.

Soy adicto/a a...

Soy un(a) fanático/a de...

ya que / dado que

Prefiero...

Me gusta...

Me encanta / Me mola / Me chifla...

No me gusta (nada)...

Odio...

A (mi padre) le gusta...

estar al aire libre  
 hacer artes marciales / deportes acuáticos  
 ir de compras / de excursión  
 leer  
 no hacer nada  
 tomar el sol  
 usar el ordenador  
 ver películas

## How do you prefer to spend the holidays?

Where do you live?

I live in the...

north / south...  
 east / west...  
 of Spain / Mexico  
 of England / Scotland  
 of Wales / (Northern) Ireland

I have... weeks holiday.

I'm addicted to...

I'm a... fan / fanatic

given that / since

I prefer...

I like...

I love...

I don't like... (at all)

I hate...

(My dad) likes...

being outdoors  
 doing martial arts / water sports  
 going shopping / on an excursion  
 reading  
 doing nothing  
 sunbathing  
 using the computer  
 watching films



## Mis vacaciones ideales

Prefiero ir de vacaciones en...

primavera / verano /  
 otoño / invierno

Me gusta ir a la costa / al campo /

a la montaña / a la ciudad

Prefiero ir a un hotel / un camping /

un apartamento / una casa rural

Es divertido / barato /

interesante / relajante

## My ideal holidays

I prefer going on holiday in...

spring / summer /  
 autumn / winter

I like going to the coast / country /  
 the mountains / the city

I prefer going to a hotel / campsite  
 apartment / house in the country

It's fun / cheap /

interesting / relaxing





## ¿Adónde fuiste de vacaciones?

Hace una semana / un mes

Hace dos semanas / meses / años

El año / verano pasado

Fui de vacaciones a...

Francia / Italia / Turquía

¿Con quién fuiste?

Fui...

con mi familia / insti

con mi mejor amigo/a

solo/a

¿Cómo viajaste?

Viajé...

en autocar / avión

en barco / coche / tren

## Where did you go on holiday?

A week / month ago

Two weeks / months / years ago

Last year / summer

I went on holiday to...

France / Italy / Turkey

Who did you go with?

I went...

with my family / school

with my best friend

alone

How did you travel?

I travelled...

by coach / plane

by boat / car / train



## ¿Qué hiciste?

primero

luego

después

más tarde

finalmente

Lo mejor / peor fue cuando...

aprendí a hacer vela

comí muchos helados

compré recuerdos

descansé

hice esquí / turismo /

windsurf

perdí mi móvil

saqué fotos

tomé el sol

tuve un accidente en la playa

vi un partido en el estadio

visité el Park Güell

visité... a pie / en bici / en Segway

vomitó en una montaña rusa

fuimos al Barrio Gótico

vimos los barcos en el puerto

visitamos el Museo Picasso

## What did you do?

first

then

after

later

finally

The best / worst thing was when...

I learned to sail

I ate lots of ice creams

I bought souvenirs

I rested

I went skiing / sightseeing /

windsurfing

I lost my mobile phone

I took photos

I sunbathed

I had an accident on the beach

I saw / watched a match at the stadium

I visited Park Güell

I visited... on foot / by bike / by Segway

I was sick on a roller coaster

we went to the gothic quarter

we saw the boats in the port

we visited the Picasso Museum



## ¿Dónde te alojaste?

Me alojé / Me quedé...

en un albergue juvenil / un hotel  
en un parador  
en un camping / una pensión

Estaba...

cerca de la playa  
en el centro de la ciudad  
en el campo

¿Cómo era el hotel?

## Where did you stay?

I stayed...

in a youth hostel / a hotel  
in a state-run luxury hotel  
on a campsite / in a guest house

It was...

near the beach  
in the city centre  
in the country

What was the hotel like?



## Era...

un poco / bastante... a little bit / quite...

muy / demasiado...

antiguo/a  
animado/a  
barato/a  
caro/a  
cómodo/a  
grande  
lujoso/a  
moderno/a  
pequeño/a  
ruidoso/a  
tranquilo/a

## It was...

very / too...

old  
lively  
cheap  
expensive  
comfortable  
big  
luxurious  
modern  
small  
noisy  
quiet

Tenía...

Había...

No tenía ni... ni...

Además, no tenía...

(un) bar  
(un) gimnasio  
(un) restaurante  
(una) cafetería  
(una) discoteca  
(una) piscina climatizada  
(una) sauna  
mucho espacio

It had...

There was/were...

It had neither... nor...

Furthermore, it didn't have...

a bar  
a gym  
a restaurant  
a café  
a disco  
a heated pool  
a sauna  
lots of space



## Quisiera reservar...

¿Hay...

aire acondicionado?  
aparcamiento?  
wifi gratis?  
(una) tienda de recuerdos?

¿Cuánto cuesta una habitación...?

Son... euros por noche.

¿A qué hora se sirve el desayuno?

¿Cuándo está abierto/a el/la...?

¿Hasta qué hora está abierto/a el/la...?

¿Se admiten mascotas?

Hay un suplemento para perros.

Quisiera reservar...

una habitación individual / doble  
con / sin balcón  
con baño / ducha  
con vistas al mar  
con cama de matrimonio  
con desayuno  
con media pensión  
con pensión completa

¿Para cuántas noches?

Para... noches

del... al... de...

## I would like to book...

Is/Are there...

air conditioning?  
parking?  
free wifi?  
a gift shop?

How much does a... room cost?

It's... euros per night.

What time is breakfast served?

When is the... open?

What time is the... open until?

Are pets allowed?

There's a supplement for dogs.

I would like to book...

a single / double room  
with / without balcony  
with a bath / shower  
with sea view  
with double bed  
with breakfast  
with half board  
with full board  
For how many nights?  
For... nights  
from the... to the... of...

## Quiero quejarme

Quiero...

hablar con el director.  
cambiar de habitación.  
un descuento.

El aire acondicionado...

El ascensor...

La ducha...

La habitación...

La luz...

no funciona.  
está sucio/a.

Hay ratas en la cama.

No hay...

Necesito...

papel higiénico  
jabón / champú  
toallas / (un) secador

¿Cuál es el problema?

¿Qué habitación es?

¿Cómo se llama usted?

¿Cómo se escribe?

¿Puede repetir, por favor?

## I want to complain

I want...

to speak to the manager.  
to change room.  
a discount.

The air conditioning...

The lift...

The shower...

The room...

The light...

doesn't work.  
is dirty.

There are rats in the bed.

There is no...

I need...

toilet paper  
soap / shampoo

towels / a hairdryer

What's the problem?

Which room is it?

What are you called? (polite)

How do you spell that?

Can you repeat, please?



## Mis vacaciones desastrosas

Por lo general

Por un lado... por otro lado...

Sin embargo

Por eso

El primer / último día...

Al día siguiente...

alquilé una bicicleta

conocí a mucha gente

fui a una fiesta

perdí mis gafas de sol

visité el pueblo

cogimos el teleférico

decidimos acampar

fuimos de excursión

Tuve / Tuvimos...

un retraso / una avería.

Tuve / Tuvimos que...

ir a la comisaría.

llamar a un mecánico.

Perdí / Perdimos...

el equipaje / la cartera / las llaves.

El paisaje era precioso.

## My disastrous holiday

In general

On one hand... on the other hand...

However

Therefore / So

On) the first / last day...

On the following day...

I hired a bicycle

I met lots of people

I went to a festival / party

I lost my sunglasses

I visited the town / village

we took the cable car

we decided to camp

we went on an excursion

I had / We had...

a delay / a breakdown.

I had to / We had to...

go to the police station.

call a mechanic.

I lost / We lost...

the luggage / the wallet / the keys.

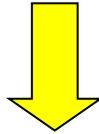
The landscape was beautiful.



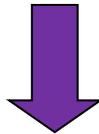


## THE PRESENT TENSE - STEP BY STEP

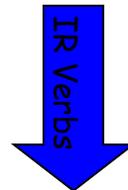
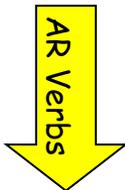
Identify the **REGULAR** verb you want (ending in **-ar**, **-er** or **-ir**)



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**



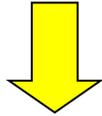
Look at the following website for more information and practise on the present tense

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



## 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

ER Verbs

IR Verbs

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

• <b>í</b>	= I
• <b>íste</b>	= You
• <b>ió</b>	= He/She/It
• <b>ímos</b>	= We
• <b>ísteis</b>	= You (pl)
• <b>ieron</b>	= They

• <b>í</b>	= I
• <b>iste</b>	= You
• <b>ió</b>	= He/She/It
• <b>imos</b>	= We
• <b>isteis</b>	= You (pl)
• <b>ieron</b>	= 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

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

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



## THE PRETERITE TENSE - IRREGULAR VERBS

**IR = TO GO, SER = TO BE, HACER TO DO / MAKE, TENER = TO HAVE**

**IR / SER / HACER / TENER** = these are common irregular verbs in the preterite tense. This means that they do not follow the same verbs endings as regular verbs. We just have to learn them!

Look at the following site for more information and practise on irregulars in the preterite tense: <https://www.bbc.co.uk/bitesize/guides/zhwgmfr/revision/4>

### IR = TO GO

Fui = I went  
Fuiste = you went  
Fui = he/she/it went  
Fuimos = we went  
Fuisteis = you all went  
Fueron = they went

### WATCH OUT!!

**SER AND IR ARE IDENTICAL IN THE PRETERITE TENSE**



### SER = TO BE

Fui = I was  
Fuiste = You were  
Fue = He / She / It was  
Fuimos = We were  
Fuisteis = You all were  
Fueron = They were

### HACER = TO DO / MAKE

Hice = I did/made  
Hiciste = You did / made  
Hizo = He / She / It did /made  
Hicimos = We made / did  
Hicisteis = You all did / made  
Hicieron = they did / made

### TENER = TO HAVE

Tuve = I had  
Tuviste = We had  
Tuve = He/She/It had  
Tuvimos = We had  
Tuvisteis = you all had  
Tuvieron = they had

For example –  
El año pasado fui a España.  
Fuimos en avión.

Last year I went to Spain. We went by plane.

For example –  
Mi padre FUE a España. FUE genial.

My father went to Spain. It was great.

For example –  
Mi amigo hizo un pastel / hicimos una excursion.

My friend made a cake / we did a trip

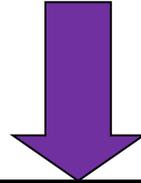
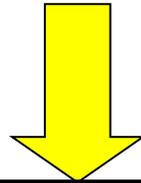
For example –  
Tuve un buen tiempo en el parque de atracciones.

I had a great time at the theme park.



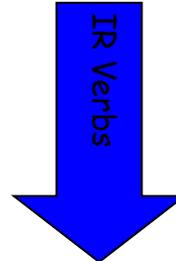
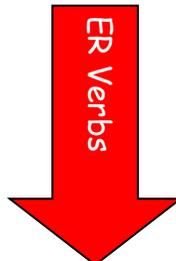
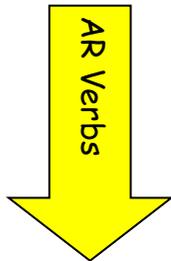
## THE IMPERFECT TENSE - STEP BY STEP

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



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

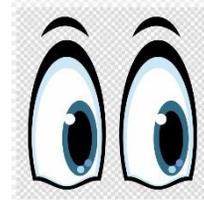
Replace with the correct ending to match the person(s) doing the action



• <b>aba</b>	= I
• <b>abas</b>	= You
• <b>aba</b>	= He/She/It
• <b>ábamos</b>	= We
• <b>abais</b>	= You(pl)
• <b>aba</b>	= They

• <b>ía</b>	= I
• <b>ías</b>	= You
• <b>ía</b>	= He/She/It
• <b>íamos</b>	= We
• <b>íais</b>	= You (pl)
• <b>ían</b>	= They

• <b>ía</b>	= I
• <b>ías</b>	= You
• <b>ía</b>	= He/She/It
• <b>íamos</b>	= We
• <b>íais</b>	= You (pl)
• <b>ían</b>	= 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 site for more information and practise on the imperfect tense.

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



## THE PRESENT, PRETERITE AND IMPERFECT TENSES TOGETHER

You will often see all 3 tenses used together within spoken or written language for example:

### Example:

Normalmente cuando **voy** de vacaciones **tomo** el sol y **nado** en el mar. El año pasado **fui** a Francia durante el verano y **me quedé** en un hotel grande en la costa. **Tuve** un buen tiempo. El hotel **era** muy limpio y **tenía** una piscina, sin embargo el ascensor no **funcionaba**.

**Present – blue**

**Preterite – red**

**Imperfect - purple**



## ¿Dónde vives?

Vivo en el...

norte/noreste/noroeste...

sur/sureste/suroeste...

este/oeste/centro...

de Inglaterra/Escocia

de Gales/Irlanda (del Norte)

## Where do you live?

I live in the...

north/northeast/northwest...

south/southeast/southwest...

east/west/centre...

of England/Scotland

of Wales/(Northern) Ireland



## ¿Qué haces en verano?

En verano/invierno...

chateo en la red

cocino para mi familia

descargo canciones

escribo correos

hago natación/esquí/windsurf

hago una barbacoa

juego al baloncesto/fútbol

monto a caballo/en bici

nado en el mar

salgo con mis amigos/as

toco la guitarra

trabajo como voluntario/a

veo la tele

voy al polideportivo/al parque/

a un centro comercial

voy de paseo

## What do you do in summer?

In summer/winter...

I chat online

I cook for my family

I download songs

I write emails

I go swimming/skiing/windsurfing

I have a barbecue

I play basketball/football

I go horseriding/cycling

I swim in the sea

I go out with my friends

I play the guitar

I work as a volunteer

I watch TV

I go to the sports centre/to the park/

to a shopping centre

I go for a walk





## ¿Con qué frecuencia?

siempre  
a menudo  
todos los días  
a veces  
de vez en cuando  
una vez a la semana  
dos o tres veces al año  
(casi) nunca

## How often?

always  
often  
every day  
sometimes  
from time to time  
once a week  
two or three times a year  
(almost) never



## ¿Qué tiempo hace?

Hace buen/mal tiempo.  
Hace calor/frío/sol/viento.  
Llueve/Nieva.  
El tiempo es variable.  
El clima es caluroso/soleado.  
Hay niebla/tormenta.  
Hay chubascos.  
Está nublado.

## What's the weather like?

It's good/bad weather.  
It's hot/cold/sunny/windy.  
It's raining/snowing.  
The weather is changeable.  
The climate is hot/sunny.  
It's foggy/stormy.  
There are showers.  
It's cloudy.



## ¿Qué te gusta hacer?

Soy adicto/a a...

Soy un(a) fanático/a de...

ya que/dado que/puesto que

Prefiero...

Me gusta...

Me encanta/Me mola/Me chifla/

Me flipa/Me apasiona...

No me gusta (nada)...

Odio...

A (mi padre) le gusta...

Nos encanta...

bucear

estar al aire libre

estar en contacto con los amigos

hacer artes marciales

hacer deportes acuáticos

ir al cine/a la pista de hielo

ir de compras

leer (un montón de revistas)

usar el ordenador

ver películas

Prefiero veranear...

en el extranjero/en España

en la costa/en el campo

en la montaña/en la ciudad

## What do you like doing?

I'm addicted to...

I'm a ... fan/fanatic.

given that/since

I prefer...

I like...

I love

I really love...

I don't like... (at all)

I hate...

(My dad) likes...

We love...

diving

being outdoors

being in touch with friends

doing martial arts

doing water sports

going to the cinema/ice rink

going shopping

reading (loads of magazines)

using the computer

watching films

I prefer to spend the summer...

abroad/in Spain

on the coast/in the country

in the mountains/in the city





## ¿Adónde fuiste de vacaciones?

hace una semana/un mes/un año

hace dos semanas/meses/años

fui de vacaciones a...

Francia/Italia/Turquía

¿Con quién fuiste?

Fui...

con mi familia/insti

con mi mejor amigo/a

solo/a

¿Cómo viajaste?

Viajé...

en autocar/avión

en barco/coche/tren

## Where did you go on holiday?

a week/month/year ago

two weeks/months/years ago

I went on holiday to...

France/Italy/Turkey

Who did you go with?

I went...

with my family/school

with my best friend

alone

How did you travel?

I travelled...

by coach/plane

by boat/car/train





## ¿Qué hiciste?

primero  
luego  
más tarde  
después  
finalmente  
Lo mejor fue cuando...  
Lo peor fue cuando...  
aprendí a hacer vela  
comí muchos helados  
compré recuerdos  
descansé  
fui al acuario  
hice turismo  
llegué tarde al aeropuerto  
perdí mi móvil  
saqué fotos  
tomé el sol  
tuve un accidente en la playa  
vi un partido  
visité el Park Güell  
vomité en una montaña rusa

## What did you do?

first  
then  
later  
after  
finally  
The best thing was when...  
The worst thing was when...  
I learned to sail  
I ate lots of ice creams  
I bought souvenirs  
I rested  
I went to the aquarium  
I went sightseeing  
I arrived at the airport late  
I lost my mobile  
I took photos  
I sunbathed  
I had an accident on the beach  
I saw/watched a match  
I visited Park Güell  
I was sick on a roller coaster

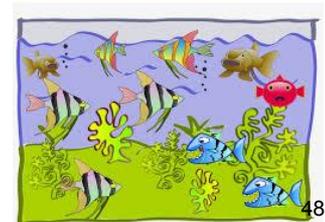


## Puedes...

descubrir el Museo Picasso  
disfrutar del Barrio Gótico  
pasear por las Ramblas  
subir al Monumento a Colón  
ver los barcos en el puerto

## You can...

discover the Picasso Museum  
enjoy the gothic quarter  
walk along Las Ramblas  
go up the Columbus  
Monument  
see the boats in the port





## ¿Qué tal lo pasaste?

Me gustó/Me encantó.  
Lo pasé bomba/fenomenal.  
Lo pasé bien/mal/fatal.  
Fue...

inolvidable/increíble  
impresionante/flipante  
horroroso  
un desastre

## ¿Qué tiempo hizo?

Hizo buen/mal tiempo.  
Hizo calor/frío/sol/viento.  
Hubo niebla/tormenta.  
Llovió/Nevó.

## How was it?

I liked it/I loved it.  
I had a great time.  
I had a good/bad/awful time.  
It was...

unforgettable/incredible  
impressive/awesome  
awful  
a disaster

## What was the weather like?

It was good/bad weather.  
It was hot/cold/sunny/windy.  
It was foggy/stormy.  
It rained/snowed.





## ¿Cómo era el hotel?

Me alojé/Me quedé...  
 Nos alojamos/Nos quedamos...  
 en un albergue juvenil  
 en un apartamento  
 en un camping  
 en un hotel de cinco estrellas  
 en un parador  
 en una casa rural  
 en una pensión  
 Fui de crucero.  
 Estaba...  
     cerca de la playa  
     en el centro de la ciudad  
     en las afueras  
 Era...  
     acogedor(a)  
     antiguo/a  
     barato/a  
     caro/a  
     grande  
     lujoso/a  
     moderno/a  
     pequeño/a  
     ruidoso/a  
     tranquilo/a

## What was the hotel like?

I stayed...  
 We stayed...  
 in a youth hostel  
 in an apartment  
 on a campsite  
 in a five-star hotel  
 in a state-run luxury hotel  
 in a house in the country  
 in a guest house  
 I went on a cruise.  
 It was...  
     near the beach  
     in the city centre  
     on the outskirts  
 It was...  
     welcoming  
     old  
     cheap  
     expensive  
     big  
     luxurious  
     modern  
     small  
     noisy  
     quiet



## Instalaciones

Tenía/Había...  
 No tenía ni... ni...  
 No había ni... ni...  
 Tampoco tenía...  
 (un) aparcamiento  
 (un) bar  
 (un) gimnasio  
 (un) restaurante  
 (una) cafetería  
 (una) lavandería  
 (una) piscina cubierta  
 mucho espacio para mi tienda

## Facilities

It had/There was/were...  
 It had neither... nor...  
 There was neither... nor...  
 Nor did it have...  
 a car park  
 a bar  
 a gym  
 a restaurant  
 a café  
 a launderette  
 an indoor pool  
 lots of space for my tent





## ¿Cómo era el pueblo?

Lo bueno/Lo malo...  
del pueblo...  
de la ciudad...

era que era...

demasiado/muy/bastante...

animado/a

bonito/a

histórico/a

pintoresco/a

turístico/a

Tenía...

mucho ambiente/tráfico

mucho que hacer

mucha contaminación/gente

muchos espacios verdes

muchos lugares de interés

muchas discotecas

## What was the town/village like?

The good thing/The bad thing...  
about the town/village...  
about the city...

was that it was...

too/very/quite...

lively

pretty

historic

picturesque

touristic

It had...

lots of atmosphere/traffic

lots to do

lots of pollution/people

lots of green spaces

lots of places of interest

lots of discos





## Quisiera reservar...

¿Hay...

wifi gratis...

aire acondicionado...

en el hotel/las habitaciones?

¿Cuánto cuesta una habitación...?

¿A qué hora se sirve el desayuno?

¿Cuándo está abierto/a el/la...?

¿Cuánto es el suplemento por...?

¿Se admiten perros?

Quisiera reservar...

una habitación individual/doble

con/sin balcón

con bañera/ducha

con cama de matrimonio

con desayuno incluido

con media pensión

con pensión completa

con vistas al mar

¿Para cuántas noches?

Para... noches

del... al... de...

¿Puede repetir, por favor?

¿Puede hablar más despacio?

## I would like to book...

Is/Are there...

free wifi...

air conditioning...

in the hotel/the rooms?

How much does a... room cost?

What time is breakfast served?

When is the... open?

How much is the supplement for...?

Are dogs allowed?

I would like to book...

a single/double room

with/without balcony

with a bath/shower

with double bed

with breakfast included

with half board

with full board

with sea view

For how many nights?

For... nights

from the... to the... of...

Can you repeat, please?

Can you speak more slowly?





### Quiero quejarme

Quiero hablar con el director.  
Quiero cambiar de habitación.

El aire acondicionado...

El ascensor...

La ducha...

La habitación...

está sucio/a

La luz...

no funciona

Hay ratas en la cama.

No hay...

Necesito...

papel higiénico

jabón/champú

toallas/(un) secador

¡Socorro!

Es inaceptable.

Lo siento/Perdone.

El hotel está completo.

### I want to complain

I want to speak to the manager.

I want to change rooms.

The air conditioning...

The lift ...

The shower...

The room...

is dirty

The light...

doesn't work

There are rats in the bed.

There is no...

I need...

toilet paper

soap/shampoo

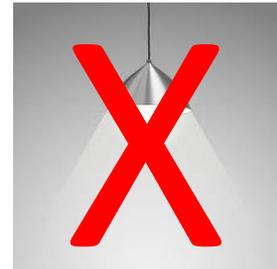
towels/a hairdryer

Help!

It's unacceptable.

I'm sorry.

The hotel is full.





## Mis vacaciones desastrosas

Por desgracia  
 Por un lado... por otro lado...  
 El primer/último día  
 Al día siguiente  
 Tuve/Tuvimos...  
     un accidente/un pinchazo  
     un retraso/una avería  
 Tuve/Tuvimos que...  
     esperar mucho tiempo  
     ir al hospital/a la comisaría  
     llamar a un mecánico  
 Perdí/Perdimos...  
     el equipaje/la cartera  
     la maleta/las llaves  
 Cuando llegamos...  
     era muy tarde  
     estaba cansado/a  
     la recepción ya estaba cerrada

## My disastrous holiday

Unfortunately  
 On the one hand... on the other hand...  
 (On) the first/last day  
 On the following day  
 I had/We had...  
     an accident/a puncture  
     a delay/a breakdown  
 I had to/We had to...  
     wait a long time  
     go to the hospital/to the police station  
     call a mechanic  
 I lost/We lost...  
     the luggage/the wallet  
     the suitcase/the keys  
 When we arrived...  
     it was very late  
     I was tired  
     the reception was already closed

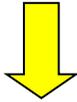


acampar	to camp
decidir	to decide (to)
alquilar bicicletas	to hire bicycles
coger el teleférico	to catch/take the cable car
chocar con	to crash into
hacer alpinismo	to go mountain climbing
volver	to return
el paisaje	the landscape
la autopista	the motorway



## THE PRESENT TENSE - STEP BY STEP

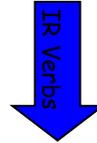
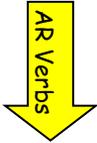
Identify the **REGULAR** verb you want (ending in **-ar**, **-er** or **-ir**)



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
- **eís** = 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/z7kgjhw/revision/1>



## THE PRETERITE TENSE - REGULAR VERBS

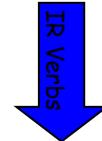
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### The Preterite Tense

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

<https://www.bbc.co.uk/bitesize/topics/zg9mhyc/articles/zhgmfr>

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

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

• <b>í</b>	= I
• <b>iste</b>	= You
• <b>ió</b>	= He/She/It
• <b>imos</b>	= We
• <b>isteis</b>	= You (pl)
• <b>ieron</b>	= They

• <b>í</b>	= I
• <b>iste</b>	= You
• <b>ió</b>	= He/She/It
• <b>imos</b>	= We
• <b>isteis</b>	= You (pl)
• <b>ieron</b>	= They



## THE PRETERITE TENSE - IRREGULAR VERBS

**IR = TO GO, SER = TO BE, HACER TO DO / MAKE, TENER = TO HAVE**

**IR / SER / HACER / TENER** = these are common irregular verbs in the preterite tense. This means that they do not follow the same verb endings as regular verbs. We just have to learn them!



Look at the following site for more information and practise on irregulars in the preterite tense:

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

### IR = TO GO

Fui = I went

Fuiste = you went

Fui = he/she/it went

Fuimos = we went

Fuisteis = you all went

Fueron = they went

### WATCH OUT!!

**SER AND IR  
ARE  
IDENTICAL IN  
THE  
PRETERITE  
TENSE**

### SER = TO BE

Fui = I was

Fuiste = You were

Fue = He / She / It was

Fuimos = We were

Fuisteis = You all were

Fueron = They were

### HACER = TO DO / MAKE

Hice = I did/made

Hiciste = You did / made

Hizo = He / She / It did

/made

Hicimos = We made / did

Hicisteis = You all did / made

Hicieron = they did / made

### TENER = TO HAVE

Tuve = I had

Tuviste = We had

Tuve = He/She/It had

Tuvimos = We had

Tuvisteis = you all had

Tuvieron = they had

For example –

El año pasado fui a España.

Fuimos en avión.

Last year I went to Spain.

We went by plane.

For example –

Mi padre FUE a España.

FUE genial.

My father went to Spain. It

was great.

For example –

Mi amigo hizo un pastel

/ hicimos una excursion.

My friend made a cake /

we did a trip

For example –

Tuve un buen tiempo en

el parque de atracciones.

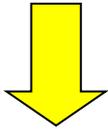
I had a great time at the

theme park.



## THE IMPERFECT TENSE - STEP BY STEP

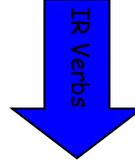
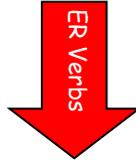
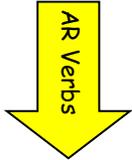
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## Imperfect Tense

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\*\***

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- **ían** = They

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

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



## THE PRESENT, PRETERITE AND IMPERFECT TENSES TOGETHER

You will often see all 3 tenses used together within spoken or written language for example:

### Example:

Normalmente cuando **voy** de vacaciones **tomo** el sol y **nado** en el mar. El año pasado **fui** a Francia durante el verano y **me quedé** en un hotel grande en la costa. **Tuve** un buen tiempo. El hotel **era** muy limpio y **tenía** una piscina, sin embargo el ascensor no **funcionaba**.

**Present – blue**

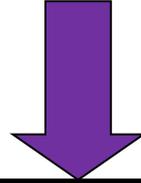
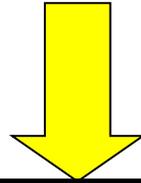
**Preterite – red**

**Imperfect - purple**



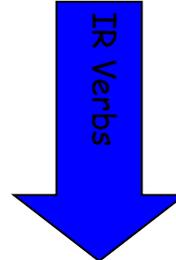
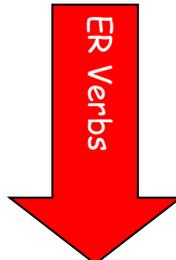
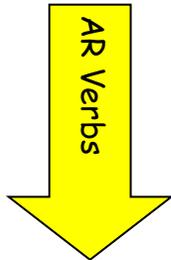
## THE IMPERFECT TENSE - STEP BY STEP

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



• <b>aba</b>	= I
• <b>abas</b>	= You
• <b>aba</b>	= He/She/It
• <b>ábamos</b>	= We
• <b>abais</b>	= You(pl)
• <b>aba</b>	= They

• <b>ía</b>	= I
• <b>ías</b>	= You
• <b>ía</b>	= He/She/It
• <b>íamos</b>	= We
• <b>íais</b>	= You (pl)
• <b>ían</b>	= They

• <b>ía</b>	= I
• <b>ías</b>	= You
• <b>ía</b>	= He/She/It
• <b>íamos</b>	= We
• <b>íais</b>	= You (pl)
• <b>ían</b>	= 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 site for more information and practise on the imperfect tense.

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

This is an example of a photo card you might get in the exam. This part of the exam will last between 2 – 3 minutes and is worth 15 marks



Question 1 usually asks –

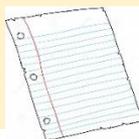
¿Qué hay en la foto?

What is there in the photo?

You will be given 3 questions to answer based on the photo card:

1. ¿Qué hay en la foto?
2. ¿Qué te gusta hacer con tu familia?
3. ¿Qué hiciste el fin de semana pasado con tu familia?

In your preparation time (12minutes) you can prepare your script/answers. You can write them down and read from your script/answers in the exam



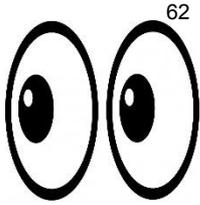
Question 1 - apply the strategy of **PALS** when answering:

**People** = En la foto hay seis personas

**Action** = Comen bocadillos

**Location** = Están en el jardín

**Seem** = Pienso que están contentos.



Questions 2 and 3 on the Photo Card relate to the same topic.

2. ¿Qué **te gusta** hacer con TU familia?

3. ¿Qué hiciste el fin de semana pasado con tu familia?

You will always be asked to give an opinion. **Me gusta(n)/No me gusta(n)/Detesto/Me chifla(n) ...**

**RECYCLE** relevant language.

con MI familia (change YOUR to MY)  
el fin de semana pasado

Time frames in a question indicate which tense you should respond in.

El fin de semana pasado = Last weekend = **Past Tense**

**REMEMBER:**

For the Photo Card, you will need to use the PAST, PRESENT AND FUTURE tense at some points and give an opinion.



# UNSEEN QUESTIONS



After you have been asked the 3 **SEEN** questions on the photo card, you will then be asked two **UNSEEN QUESTIONS**.

## FOR EXAMPLE



**Listen carefully!!**

- 4. ¿Qué vas a hacer el próximo fin de semana?
- 5. ¿Qué haces normalmente los fines de semana con TUS amigos.

Time frames in a question indicate which tense you should respond in

el próximo fin de semana = Next Saturday = **Future Tense**

Normalmente = Normally = **Present Tense**

Can you **recycle** any language you hear in the question and include it in your answer?

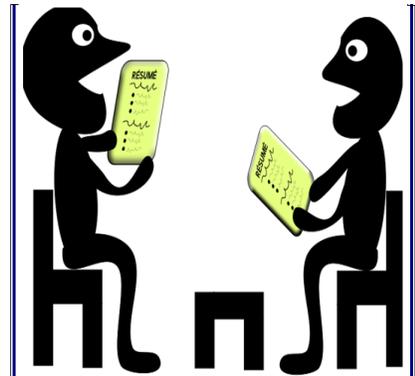
E.g. **Normalmente los fines de semana /con MIS amigos**

**Watch out!!!** Change TUS (your) in the question to MIS (my) in your answer. 63

# Juego de Rol.

## ROLE PLAY:

- First part of your speaking exam (15 marks)
- Role play cards contain five bullet points.
- One bullet point has ! (a surprise question - you have to respond to spontaneously).
- One bullet point has ? (you need to ASK a question - linked to the bullet point).
- You should use your preparation time (12 minutes) to draft a role play script/answers.
- You can read from your prepared script/answers in the exam and you should try to use words from the bullet points in your script/answers.



# GCSE ROLE PLAY CARD

## Look at the Role Play card

Your teacher will play the part of the receptionist and will speak first.

You should address your friend as 'usted'

When you see this -!- you will have to respond to something you have not prepared.

When you see this -?- you will have to ask a question.

Usted está hablando con el/la recepcionista de un hotel en España.

- Tipo de habitación (dos detalles)
- Problemas con el viaje (un detalle)
- Tu opinion sobre esta ciudad (una opinion y una razón)
- !
- ? Piscina

Sometimes you will be asked to use the 'usted' form (formal).

Le gusta ...? Do you like ...?

Sometimes you will be asked to use the 'tú' form (informal).

E.g. Te gusta ...? - Do you like ...?

You need to ask a question **THAT LINKS TO THE BULLET CRITERIA** and so you need to know your question words/phrases.

E.g. ¿Dónde está ...? – Where is ...?

¿Hay ....? = Is there ..?

The - ! – means you will be asked an unprepared/unseen question and so you will need to listen carefully.

**REMEMBER:** If you don't understand, you can ask your teacher to repeat the question. 'Repete por favor'

# QUESTION WORDS ARE IMPORTANT IN THE ROLE PLAY

1. So you know what type of answer you need to give.

2. So you can ask questions yourself!

1. ¿Cuánto/a/os/as?

2. ¿Con quién?

3. ¿A qué hora?

4. ¿Cuánto tiempo?

5. ¿Dónde?

6. ¿Cuándo?

7. ¿Cómo?

8. ¿Qué?

9. ¿Por qué?

10. ¿Cuáles?

11. ¿Hay ...?

A. How many? / How much?

B. With whom?

C. (At) what time?

D. How long?

E. Where?

F. When?

G. How?

H. What?

I. Why?

J. Which?

K. Is there ....?

# GCSE ROLE PLAY CARD

## IMPORTANT:

1. You need to work out what the bullet points are requiring you to say or ask.
2. Then you need to produce a sentence to reflect the information in the bullet point

MODEL ANSWERS: Below in purple are the sort of ANSWERS expected.

Usted está hablando con el/la recepcionista de un hotel en España.

- Tipo de habitación (dos detalles)
- Me gustaría una habitación doble con ducha por favor.
- Problemas con el viaje (un detalle)
- Durante el viaje, hubo un retraso de vuelo.
- Tu opinion sobre esta ciudad (una opinion y una razón)
- Me gusta esta ciudad porque es bonita.
- !
- ? Piscina
- Hay una piscina?

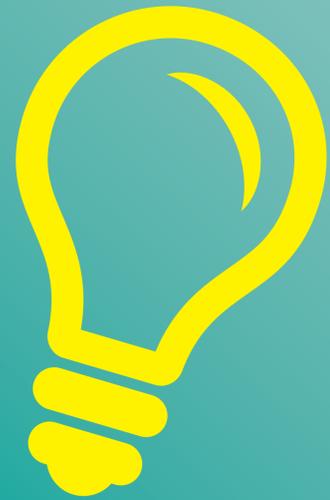
This bullet point requires you to give an **opinion** about **THIS** town with a **reason**. **WATCH OUT!!!** You are **NOT** being asked to give an opinion about **YOUR** town.

This bullet point requires you to say what type of room you would like. **WATCH OUT!!!** You need to give **two details**.

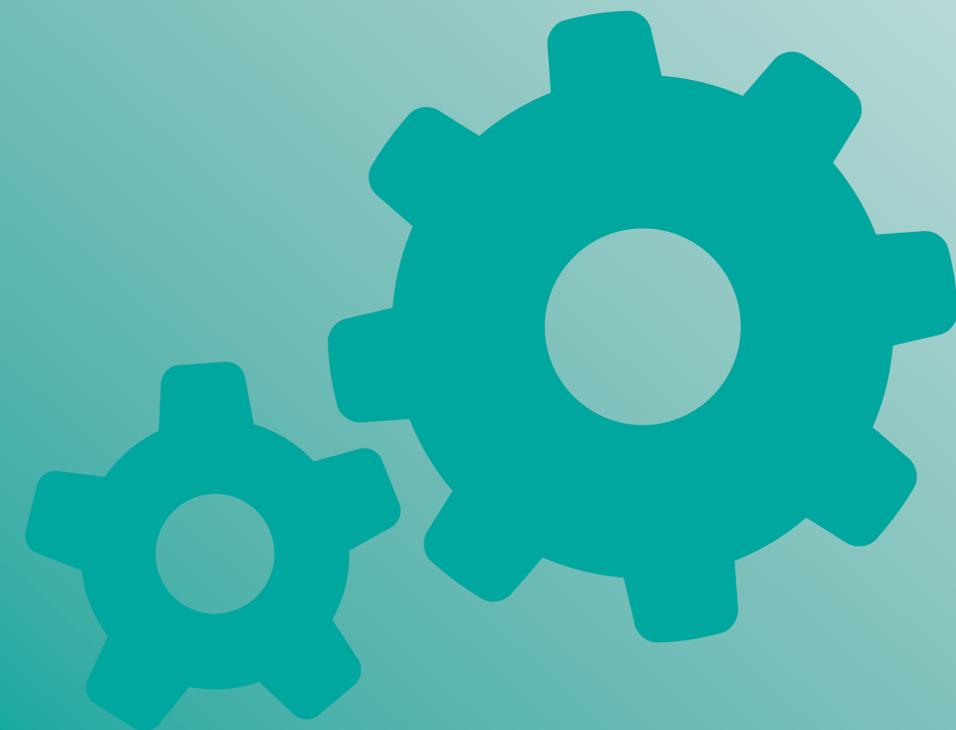
This bullet point requires you to ask a question relating to the swimming pool. There are several possibilities!

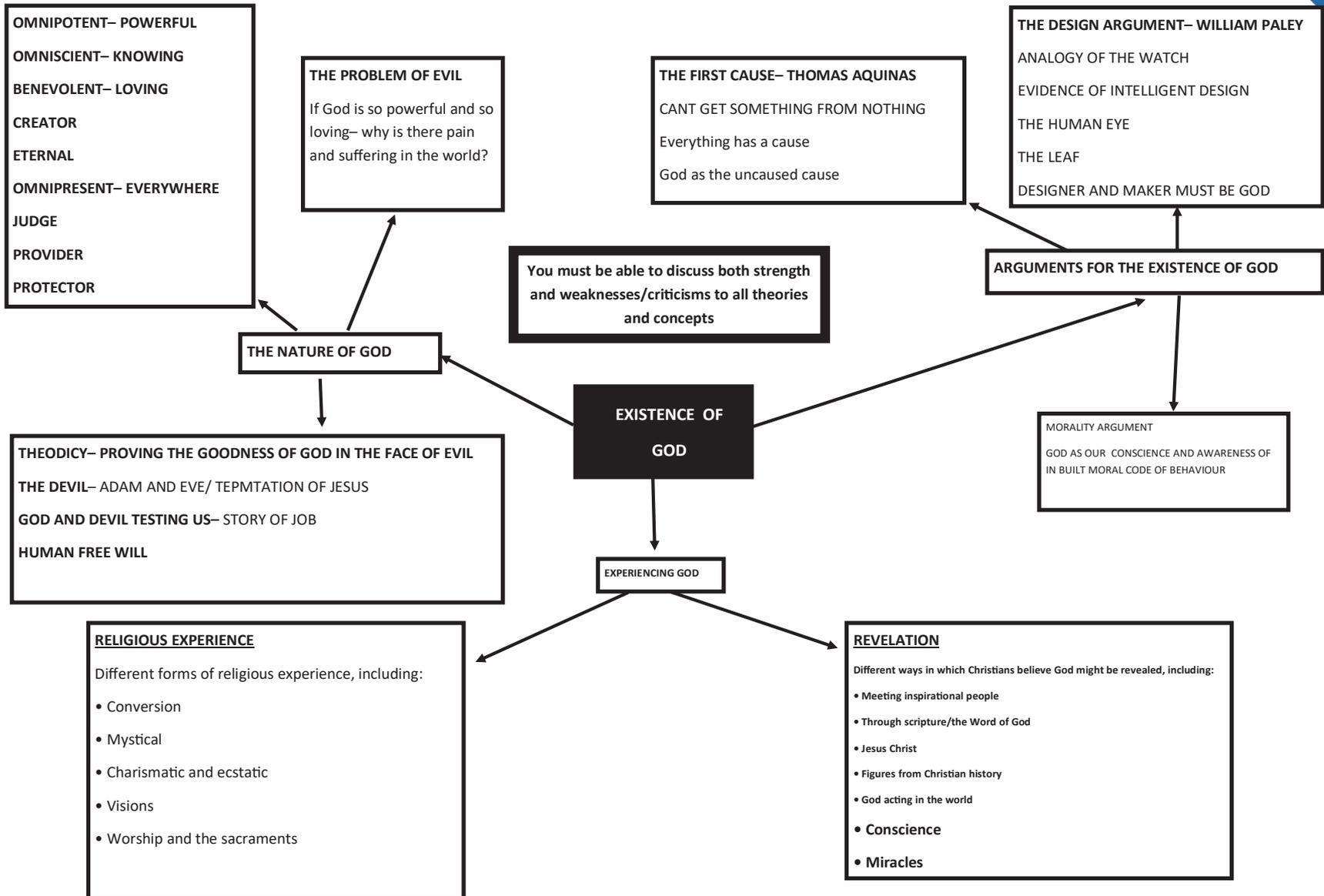
This bullet point requires you to say what problem you had during your journey. There are various possible answers. **REMEMBER** to use the Past Tense here.

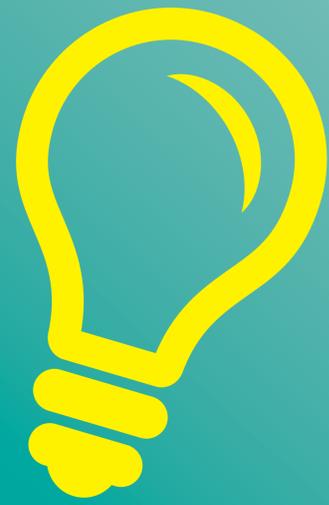
This bullet point requires you to answer an unprepared question. **WATCH OUT!** It could be a two part question.



# Religious Studies







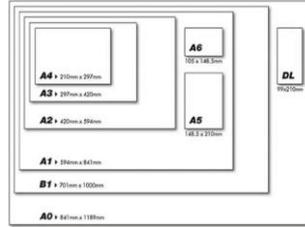
# Design Technology





- 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?

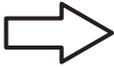
Papers and boards are used for a variety of purposes from writing, drawing, packaging and model making. They are made from cellulose fibres found in wood or grasses which are all renewable.



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.

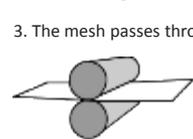
The wood pulp is then bleached to make it white, and fed into a **Fourdrinier** machine. This machine makes the pulp into paper.



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



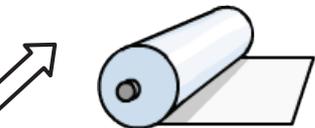
2. The pulp is then spread onto a moving wire mesh conveyor belt.



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

Paper	Example	Properties	Uses
Bleed proof		A smooth paper often used with water and marker pens which prevents bleed (e.g. when inks run 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 (CO<sub>2</sub>) 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.



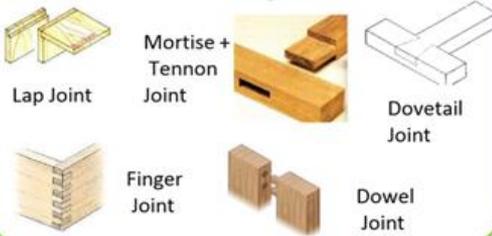


### 1: Joining Methods

Wood joints can be either permanent or temporary depending on the type and if glue is used.

Permanent:	Temporary:
When we do not want to take the pieces apart again	When we will, or might need to take pieces apart again
Glues, welding, rivets	Screws, bolts, nails

#### 1.1 Wood joints



### 3. Adhesives

**P.V.A.** – Poly Vinyl Acetate – best for joining 2 pieces of wood together

**Epoxy** – a *thermosetting* resin that can be used to bond most types of material

**Contact Adhesive** – a glue type that creates a tacky bond on both surfaces to be joined. It can be used with most materials.

## 1. Woods

### Man-Made Woods

<p>Medium density fibreboard (MDF)</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>Has a smooth, even surface</li> <li>Easily machined and painted</li> <li>Available in water and fire-resistant form</li> <li>Often veneered or painted to improve its appearance</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Furniture and interior panelling</li> </ul>
<p>Chipboard</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>Made from chips of wood glued together with urea formaldehyde (glue)</li> <li>Usually veneered with an attractive hardboard or covered in plastic laminate</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Kitchen and bedroom furniture</li> <li>Shelving and general DIY work</li> </ul>
<p>Plywood</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>A very strong board, constructed of layers of veneer or plies, which are glued together with the grains at 90° to each other</li> <li>Interior and exterior grades available</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Furniture making</li> <li>Boat building and exterior work</li> </ul>
<p>Hardboard</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>A very cheap particle board</li> <li>Can have a laminated plastic surface</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Kitchen unit and furniture back panels</li> </ul>

### Hard Woods

<p>Oak</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>A very strong, light-brown wood</li> <li>Open grained</li> <li>Very hard, but quite easy to work with</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>High quality furniture</li> <li>Beams used in building</li> <li>Veneers</li> </ul>
<p>Mahogany</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>Reddish-brown in colour</li> <li>Easy to work with</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Indoor furniture</li> <li>Ship fittings</li> <li>Bars</li> <li>Veneers</li> </ul>
<p>Beech</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>A straight-grained hardwood with a fine texture</li> <li>Light in colour</li> <li>Very hard but easy to work with</li> <li>Can be steam bent</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Furniture</li> <li>Toys</li> <li>Tool handles</li> </ul>
<p>Ash</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>Open grained</li> <li>Easy to work with</li> <li>Pale cream colour, often stained black</li> <li>Can be laminated (i.e. sliced into veneers which are glued together)</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Tool handles</li> <li>Sports equipment</li> <li>Furniture</li> <li>Saddles</li> <li>Golfers</li> </ul>

### Soft Wood

<p>Pine</p>	<p><b>Description</b></p> <ul style="list-style-type: none"> <li>Pale yellow coloured with dark lines and a fine, even texture</li> <li>Medium in weight</li> <li>Soft and stable</li> <li>Inexpensive</li> </ul>	<p><b>Uses</b></p> <ul style="list-style-type: none"> <li>Readily available for DIY work</li> <li>Mainly used for constructional work and simple joinery</li> <li>Furniture</li> </ul>
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## 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 <b>deciduous</b> trees, which lose their leaves in autumn.</p> <ul style="list-style-type: none"> <li>□ usually grow in warmer more humid climates, mainly in South America and Asia</li> <li>□ grow slowly (80+ years)</li> <li>□ are more difficult to sustain than softwoods</li> <li>□ are more expensive than softwoods</li> <li>□ are strong and hardwearing.</li> </ul>	<p>Softwoods are usually obtained from <b>coniferous</b> 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"> <li>□ Usually grow in colder climates and are mainly grown in Scandinavia and Northern Europe</li> <li>□ Grow thin, needle-like leaves</li> <li>□ Grow relatively quickly (30 years)</li> <li>□ Are easier to sustain than hardwood trees</li> <li>□ Are easy to cut and shape</li> <li>□ Are usually cheaper than hardwoods</li> </ul>	<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"> <li>□ Come in sheet form (usually 1.2 x 2.4m)</li> <li>□ Are extremely stable and of uniform thickness</li> <li>□ Are less expensive than laminating planks of timber</li> <li>□ Can be covered with veneers</li> <li>□ Are available in a variety of thicknesses (3, 6, 9, 12, 15, 18, 22mm)</li> </ul>

## 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.





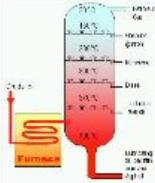
## What you need to know:

- 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 1<sup>st</sup> 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

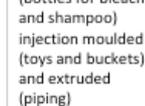
**Acrylonitrile Butadiene Styrene (ABS)** is strong, tough, scratch resistant and resists heat and chemicals. It is injection moulded to make Lego bricks and is used extensively for household appliances like Kettles, vacuum cleaners and housings for cameras and telephones.



**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

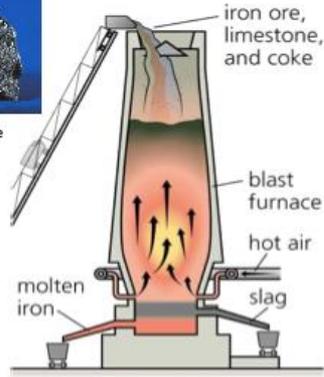
Metal bearing rocks are called ORES, these are mined or quarried from the earth's surface. Metals are obtained from raw ores by a process called smelting. Raw ore is mixed with charcoal and other chemicals, and air is blown into a furnace. The molten metal trickles from the bottom of the furnace and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

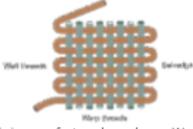
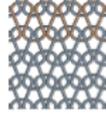
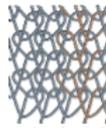
### Natural fibres can come from plant or animal sources

	Origins	Example	Properties	Uses
<b>Cotton</b>	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
<b>Wool</b>	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
<b>Silk</b>	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

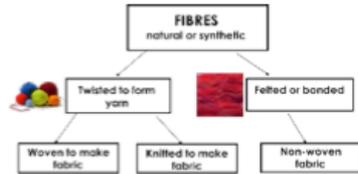
### Synthetic fibres are manufactured from oil based chemicals.

	Example	Properties	Uses
<b>Polyester</b>		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
<b>Polyamide (Nylon)</b>		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
<b>Elastane (Lydra)</b>		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
<b>Woven fabric (Plain Weave)</b>	 <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
<b>Knitted (Weft knitted)</b>	 <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
<b>Warp Knitted</b>	 <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.
<b>Non Woven</b>	<p>Non-woven fabrics are made directly from fibres without the production of yarn. There are two types of non-woven fabrics:</p>  <p><b>Bonded</b> – 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><b>Felted</b> – Felted fabric is produced by needles repeatedly pushing and bonding the fibres together.</p>	<b>Bonded fabrics</b> lack strength, they have no grain so can be cut in any direction and do not fray.	Disposable products such as protective clothing worn for hygiene purposes, tea bags, dish cloths and dusters
			<b>Felted fabrics</b> 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

### 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.

### 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.

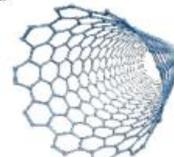


**Thermochromic pigments** are added to plastics and react to specific temperatures. One use is enhancing the safety of a babies bowl.

**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.

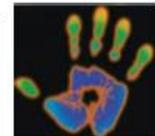


**Nanomaterials** are between 1and 100 nanometres (A nanometre one thousand-millionth of a metre). Nanomaterials include carbon nanotubes, fullerene and quantum dots. Nanomaterials are used in car manufacturing to create cars that are faster, safer and more fuel efficient. They can also be used to produce 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
<b>Carbon Fibre</b>	Aa very high strength-to-weight ratio, and is extremely rigid, waterproof but very expensive.
<b>Glass reinforced plastic</b>	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
<b>Kevlar®</b>	Is five times stronger than steel, flexible and lightweight.
<b>Nomex®</b>	Can withstand high temperatures (thermal stability) strong & flexible.
<b>Gore-Tex®</b>	Waterproof & breathable as it prevents sweating.
<b>Microencapsulation</b>	Substances are trapped into fibres and are released through friction.
<b>Conductive fabrics</b>	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.

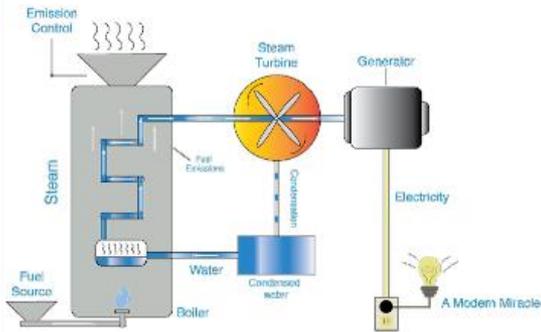
### Energy generation

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

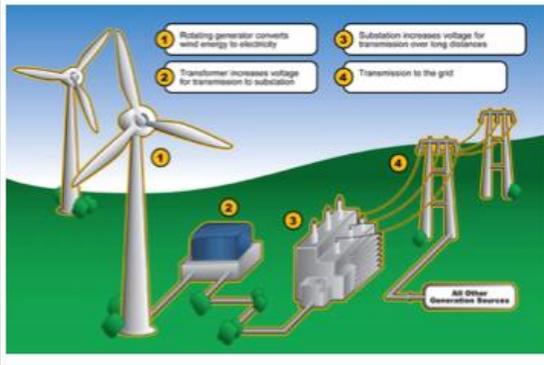
- Fossil fuels (finite)**
- Renewables (non-finite)**

### 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.



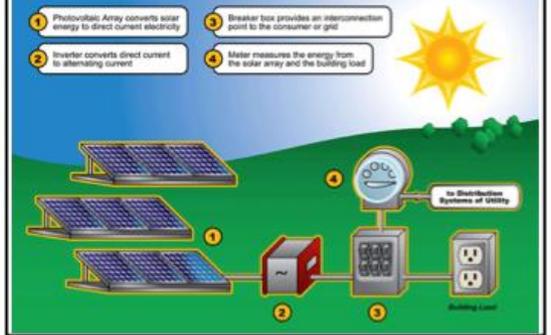
### Biofuel

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.



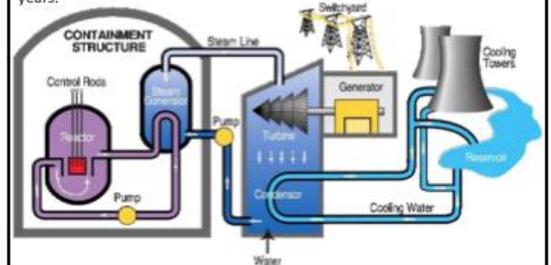
### Solar Energy

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.





## AC1.1 describe the structure of the hospitality and catering industry

Job Role	Examples	Responsibilities	Type of Service	Description
	General Manager	In charge of the running of the venue	<b>Service</b>  <b>Cafeteria</b>  <b>Buffet</b>  <b>Fast Food</b>  <b>Carvery</b>  <b>Table</b>  <b>Gueridon</b>	Description  Food displayed on a long counter. Customers use a tray and pick what they want. They pay at a central till.  Food is displayed in containers. Customers choose what they want using a plate.  Food and drink ordered, paid for and collected from the same till. Food is often quick and convenient to eat  Roasted meat often carved by a chef, customers choose what vegetables they want.  Food and drink order is taken at the table by a member of staff, food served at the table, payment taken at the table.  A high class service, food is either cooked or finished at the table by a chef or trained waiting staff
	Assistant Manager	Finance		
	Sales Manager	Employment of staff		
	Head Chef	Business development Legal compliance		
	Secretary	Correspondence		
	Accountant	Organising appointments		
	Financial assistant	Filing and organising paperwork		
	Bar tender	Meeting and greeting		
	Waiting staff	Taking orders		
	Receptionist	Serving food and drink		
	Concierge	Taking bookings		
	Chef	Preparing and cooking food		
	Cleaner	Cleaning and maintenance of the venue		
	Room attendants	Setting up bedrooms		
	Maintenance	Gardening		

Chef	Responsibility
<b>Chef De Cuisine (Head Chef)</b>	In charge of the whole kitchen— menus, staff, ordering
<b>Sous Chef (second chef)</b>	Second in command—deputises for the head chef
<b>Chef De Partie (Station Chef)</b>	In charge of a section of the kitchen
<b>Entremetier (Vegetable chef)</b>	Prepares the vegetables, soups and pasta dishes
<b>Garde Manger (Pantry Chef)</b>	Prepares cold foods such as salads
<b>Grillardin (Grill Chef)</b>	Prepares and cooks all grilled foods
<b>Patisserie (Pastry Chef)</b>	Prepares all deserts and baked items
<b>Saucier (Sauce Chef)</b>	Prepares all sautéed items and sauces
<b>Commis (Trainee Chef)</b>	Training—works in all sections while learning
<b>Plongeur (Kitchen Porter)</b>	Washing up and cleaning of the kitchen



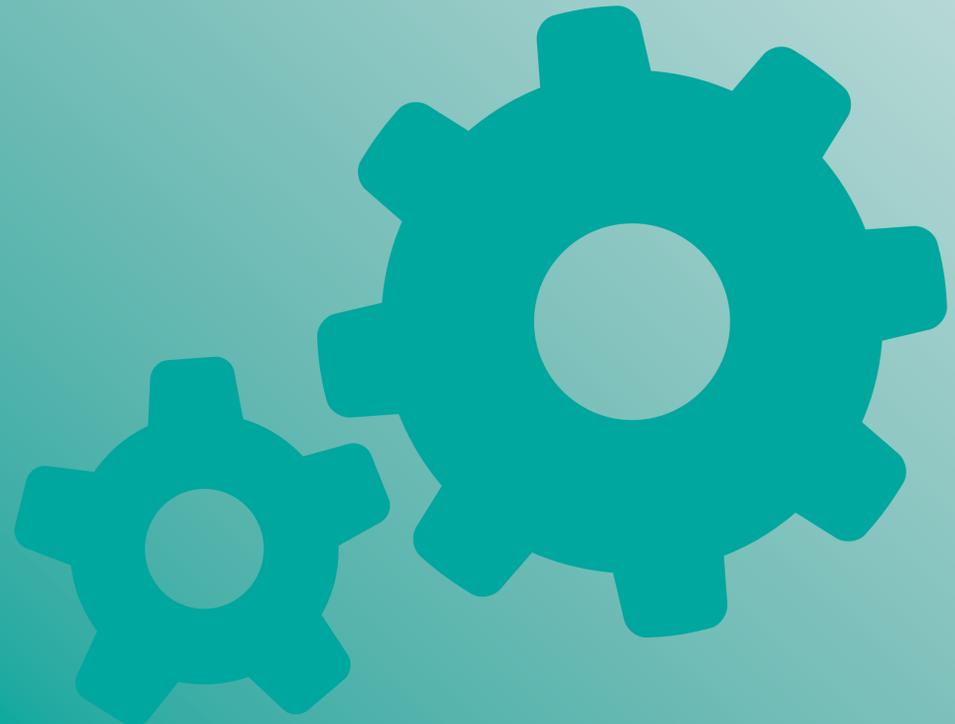
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Sector	Description	Example
Commercial—Residential	Open to the public, makes a profit, offers accommodation	Hotel, Guest house, B&B
Non-commercial—Residential	Not generally open to the public, may take money but not much of a profit (subsidised), offers accommodation	Armed forces, NHS, Prison, Nursing homes
Commercial—Non-residential	Open to the public, makes a profit, does not offer accommodation	Restaurants, Pubs, Cafes,
Non-commercial Non-residential	Not generally open to the public, may take money but not make much profit, does not offer accommodation	School canteen, staff canteen, day care centre

	Michelin Star
	AA rosette
	Hotel/B&B Star Rating
	Food hygiene rating



# English



# A Christmas Carol – Charles Dickens



## Context:



Dickens wrote this story in 1843. At the time there was a tradition for reading ghost stories at Christmas, hence the numerous spirits that Scrooge encounters. The themes of wealth and injustice are clear comments on the inequalities of wealth distribution in Victorian England.

## Plot:



A greedy, miserable and lonely man called Ebenezer Scrooge is visited at Christmas by four ghosts who show him his past, present and his future. They show him how he can use his money to help people and lead a better life and that if he does not repent his sins, he will die alone and be forgotten.

## Characters:

- Ebenezer Scrooge
- Jacob Marley
- Bob Cratchit
- The Ghost of Christmas Past
- The Ghost of Christmas Present

- The Ghost of Christmas Yet to Come
- Fezziwig
- Fred
- Belle
- Tiny Tim
- Little Fan



## Authors intentions:



- Set in Victorian London.
- Dickens had personal experience of being poor and his parents spent time in workhouses.
- Dickens wanted Scrooge to be disliked at the beginning, and liked at the end, to encourage the upper classes to be more generous.

## Structure:



- The tale has been written as a novella. This is a short piece of fiction – shorter than a novel. It was traditional for ghost stories to be read at Christmas.
- Pathetic fallacy is used to represent Scrooge's change. In Stave One, the weather is described as being “Foggier yet, and colder. Piercing, searching, biting cold”. This represents how cold and unfeeling Scrooge was at the beginning of the book.
- In Stave Five, the weather is “clear, bright, jovial” with “Golden sunlight”. This change in weather represents how Scrooge has become kinder and more generous.

## Themes:

- Redemption
- Poverty and the Poor Law
- Thomas Malthus
- Light and dark imagery
- Heat and cold symbolism
- Youth and innocence
- Christmas Spirit



## Key vocabulary:

- Novella
- Stave
- Development
- Transformation
- Miserliness
- Destitute

## Analytical verbs:

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



## Key quotes:

- Hard and sharp as flint, from which no steel had ever struck out generous fire; secret, and self-contained, and solitary as an oyster.
- Are there no prisons? Are there no workhouses?
- I can't afford to make idle people merry... If they would rather die, they had better do it, and decrease the surplus population.
- I wear the chain I forged in life...I made it link by link, and yard by yard; I girded it on of my own free will.
- Yellow, meagre, ragged, scowling, wolfish...Where angels might have sat enthroned, devils lurked, and glared out menacing.
- I would like to be able to say a word or two to my clerk right now.
- I am as light as a feather... I am as merry as a school boy.
- Bob, my good fellow, than I have given you for many a year! I'll raise your salary, and endeavour to assist your struggling family...Bob! Make up the fires, and buy another coal-scuttle before you dot another I, Bob Cratchit!”



## 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.

## AO5

**Communication and organisation.**

### **Band 4:**

Convincing and compelling communication. Extensive, ambitious vocabulary.

### **Band 3:**

Consistently clear and effective communication, writing is engaging with linked ideas.

### **Band 2:**

Some successful communication, some use of linguistic devices.

### **Band 1:**

Simple, limited communication and organisation with simple vocabulary.

## AO6

**Technical accuracy-punctuation, sentence structure, sentence variety, tense accuracy, ambitious vocabulary, spelling.**

### **Band 4:**

Extensive and ambitious use of vocabulary. Wide range of punctuation and sentence forms for effect.

### **Band 3:**

Increasingly sophisticated vocabulary, a range of sentence forms and punctuation.

### **Band 2:**

Some use of varied sentences and vocabulary. Some accurate spelling of complex words.

### **Band 1:**

Simple use of sentence form and occasional punctuation.



## 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

**Level 4:** Perceptive, detailed analysis

**Level 3:** Clear, relevant explanation.

**Level 2:** Some understanding and comment.

**Level 1:** Simple, limited comment.

### 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 mins

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.

Drop Paragraph (for an article):

1. **Evoke an image:** The sun streams through the window; breakfast is being noisily prepared downstairs.
2. **Anecdote:** There are many things that make me angry: racism, sexism, global warming and the Go Compare adverts. But all of these annoyances pale in comparison to Miss Brett's bellowing voice, demanding: "Tuck in your shirt!"
3. **Turn positive to a negative:** Evolution is a wonderful thing. Over the millions of years, humans have progressed, creating the wonders and marvels of space exploration, eliminating disease, creating legendary music and literature. One thing stands against this catalogue of human progress and enlightenment: school uniform.

Speech Openers:

1. Provocative question
2. Shocking statistic
3. Evoke an image

## AO5

**Communication and organisation.**

**Band 4:**

Varied and inventive use of structural features. Writing is compelling, incorporating a range of convincing and complex ideas

**Band 3:**

Effective use of structural features  
Writing is engaging with sophisticated vocabulary

**Band 2:**

Some sustained attempt to match purpose  
Conscious use of vocabulary with some use of linguistic devices  
Some use of structural features

**Band 1:**

Evidence of simple structural features  
One or two relevant ideas, simply linked

## AO6

**Technical accuracy-punctuation, sentence structure, sentence variety, tense accuracy, ambitious vocabulary, spelling.**

**Band 4:**

Extensive and ambitious use of vocabulary. Wide range of punctuation and sentence forms for effect.

**Band 3:**

Increasingly sophisticated vocabulary, a range of sentence forms and punctuation.

**Band 2:**

Some use of varied sentences and vocabulary. Some accurate spelling of complex words.

**Band 1:**

Simple use of sentence forms and occasional use of punctuation.



# Geography



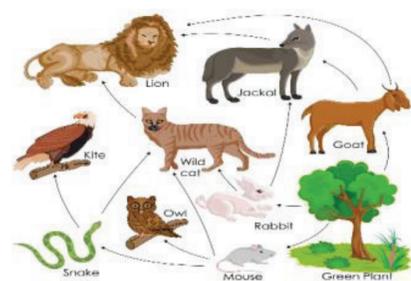


## What is an Ecosystem?

An ecosystem is a system in which organisms interact with each other and with their environment.

## Ecosystem's Components

<b>Abiotic</b>	These are <b>non-living</b> , such as air, water, heat and rock.
<b>Biotic</b>	These are <b>living</b> , such as plants, insects, and animals.
	<b>Flora</b> <b>Plant life</b> occurring in a particular region or time.
	<b>Fauna</b> <b>Animal life</b> of any particular region or time.

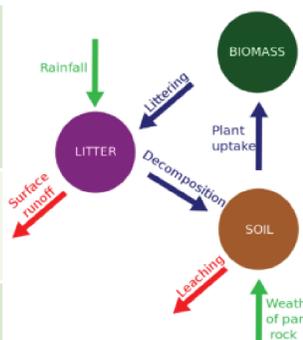


## Food Web and Chains

Simple **food chains** are useful in explaining the basic principles behind ecosystems. They show only one species at a particular trophic level. **Food webs** however consists of a network of many food chains interconnected together.

## Nutrient cycle

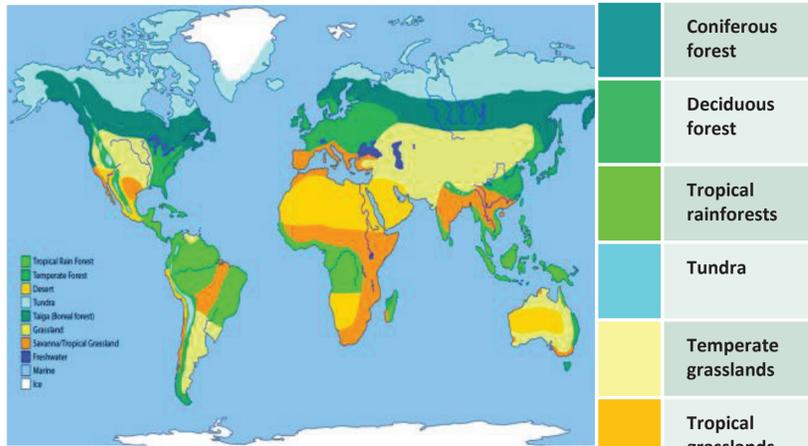
Plants take in **nutrients** to build into new organic matter. Nutrients are taken up when animals eat plants and then returned to the soil when animals die and the body is broken down by **decomposers**.



<b>Litter</b>	This is the <b>surface layer</b> of vegetation, which over time breaks down to become <b>humus</b> .
<b>Biomass</b>	The total <b>mass of living organisms</b> per unit area.

## Biomes

A biome is a **large geographical area of distinctive plant and animal groups**, which are adapted to that particular environment. The climate and geography of a region determines what type of biome can exist in that region.



The **most productive biomes** – which have the greatest biomass- grow in climates that are **hot and wet**.

## Biome's climate and plants

Biome	Location	Temperature	Rainfall	Flora	Fauna
<b>Tropical rainforest</b>	Centred along the Equator.	Hot all year (25-30°C)	Very high (over 200mm/year)	Tall trees forming a canopy; wide variety of species.	Greatest range of different animal species. Most live in canopy layer
<b>Tropical grasslands</b>	Between latitudes 5°- 30° north & south of Equator.	Warm all year (20-30°C)	Wet + dry season (500-1500mm/year)	Grasslands with widely spaced trees.	Large hooved herbivores and carnivores dominate.
<b>Hot desert</b>	Found along the tropics of Cancer and Capricorn.	Hot by day (over 30°C) Cold by night	Very low (below 300mm/year)	Lack of plants and few species; adapted to drought.	Many animals are small and nocturnal: except for the camel.
<b>Temperate forest</b>	Between latitudes 40°- 60° north of Equator.	Warm summers + mild winters (5-20°C)	Variable rainfall (500-1500mm /year)	Mainly deciduous trees; a variety of species.	Animals adapt to colder and warmer climates. Some migrate.
<b>Tundra</b>	Far Latitudes of 65° north and south of Equator	Cold winter + cool summers (below 10°C)	Low rainfall (below 500mm/ year)	Small plants grow close to the ground and only in summer.	Low number of species. Most animals found along coast.
<b>Coral Reefs</b>	Found within 30° north – south of Equator in tropical waters.	Warm water all year round with temperatures of 18°C	Wet + dry seasons. Rainfall varies greatly due to location.	Small range of plant life which includes algae and sea grasses that shelters reef animals.	Dominated by polyps and a diverse range of fish species.

# Unit 1b

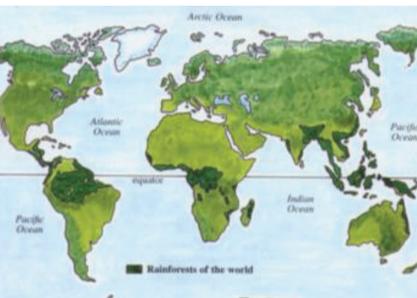
# The Living World

## Tropical Rainforest Biome

Tropical rainforest cover about **2 per cent** of the Earth's surface yet they are home to **over half of the world's plant and animals**.

## Interdependence in the rainforest

A rainforest works through **interdependence**. This is where the plants and animals **depend on each other** for survival. If one component changes, there can be **serious knock-up effects** for the entire ecosystem.



## Distribution of Tropical Rainforests

Tropical rainforests are **centred along the Equator** between the Tropic of Cancer and Capricorn. Rainforests can be found in South America, central Africa and South-East Asia. **The Amazon** is the world's largest rainforest and takes up the majority of northern South America, encompassing countries such as Brazil and Peru.

## Rainforest nutrient cycle

The **hot, damp conditions** on the forest floor allow for the **rapid decomposition** of dead plant material. This provides plentiful nutrients that are easily absorbed by plant roots. However, as these nutrients are in high demand from the many fast-growing plants, they do not remain in the soil for long and stay close to the surface. If vegetation is removed, the soils quickly become **infertile**.

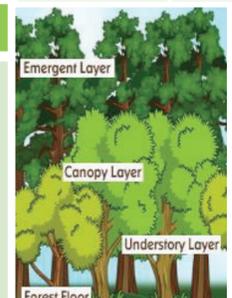
## Climate of Tropical Rainforests

- Evening temperatures rarely fall below **22°C**.
- Due to the **presence of clouds**, temperatures rarely rise above **32°C**.
- Most afternoons have heavy showers.
- At night with no clouds insulating, temperature drops.

## CASE STUDY: UK Ecosystem: Epping Forest, Essex

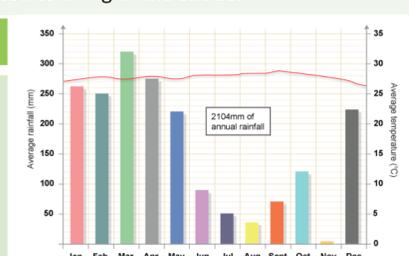
This is a typical English lowland deciduous woodland. **70% of the area** is designated as a **Site of Special Scientific Interest (SSI)** for its biological interest, with **66 %** designated as a **Special Area of Conservation (SAC)**.

Components & Interrelationships		Management
<b>Spring</b>	<b>Flowering plants</b> (producers) such as bluebells store nutrients to be eaten by consumers later.	- Epping has been managed for centuries. - Currently now used for <b>recreation and conservation</b> . - Visitors <b>pick fruit and berries</b> , helping to <b>disperse seeds</b> . - Trees cut down to encourage <b>new growth for timber</b> .
<b>Summer</b>	Broad tree leaves grow quickly to <b>maximise photosynthesis</b> .	
<b>Autumn</b>	Trees shed leaves to <b>conserve energy</b> due to sunlight hours decreasing.	
<b>Winter</b>	Bacteria <b>decompose</b> the leaf litter, releasing the nutrients into the soil.	



## Layers of the Rainforest

<b>Emergent</b>	Highest layer with trees reaching <b>50 metres</b> .
<b>Canopy</b>	80% of life is found here as it receives <b>most of the sunlight and rainfall</b> .
<b>U-Canopy</b>	Consists of trees that reach <b>20 metres high</b> .
<b>Shrub Layer</b>	Lowest layer with <b>small trees</b> that have adapted to living in the <b>shade</b> .





## Tropical Rainforests: Case Study Malaysia



Malaysia is a LIC country in south-east Asia. 67% of Malaysia is a tropical rainforest with 18% of it not being interfered with. However, Malaysia has the fastest rate of deforestation compared to anywhere in the world.

Adaptations to the rainforest		Rainforest inhabitants
<b>Orangutans</b>	Large arms to swing & support in the tree canopy.	Many tribes have developed sustainable ways of survival. The rainforest provides inhabitants with... <ul style="list-style-type: none"> <li>• <b>Food</b> through hunting and gathering.</li> <li>• <b>Natural medicines</b> from forest plants.</li> <li>• <b>Homes and boats</b> from forest wood.</li> </ul>
<b>Drip Tips</b>	Allows heavy rain to <b>run off leaves easily</b> .	
<b>Lianas &amp; Vines</b>	<b>Climbs</b> trees to reach sunlight at canopy.	

### Issues related to biodiversity

Why are there high rates of biodiversity?	What are the causes of deforestation?	
<ul style="list-style-type: none"> <li>• <b>Warm and wet climate</b> encourages a wide range of vegetation to grow.</li> <li>• There is <b>rapid recycling of nutrients</b> to speed plant growth.</li> <li>• Most of the rainforest is <b>untouched</b>.</li> </ul>	<b>Logging</b> <ul style="list-style-type: none"> <li>• Most widely reported cause of destructions to biodiversity.</li> <li>• Timber is harvested to create <b>commercial items</b> such as furniture and paper.</li> <li>• <b>Violent confrontation</b> between indigenous tribes and logging companies.</li> </ul>	<b>Agriculture</b> <ul style="list-style-type: none"> <li>• Large scale <b>'slash and burn'</b> of land for ranches and palm oil.</li> <li>• Increases <b>carbon emission</b>.</li> <li>• <b>River saltation</b> and <b>soil erosion</b> increasing due to the large areas of <b>exposed land</b>.</li> <li>• Increase in <b>palm oil</b> is making the <b>soil infertile</b>.</li> </ul>

Main issues with biodiversity decline	Mineral Extraction	Tourism
<ul style="list-style-type: none"> <li>• <b>Keystone species</b> (a species that are important of other species) are extremely important in the rainforest ecosystem. Humans are threatening these vital components.</li> <li>• <b>Decline in species</b> could cause tribes being unable to survive.</li> <li>• <b>Plants &amp; animals</b> may become <b>extinct</b>.</li> <li>• Key medical <b>plants</b> may become <b>extinct</b>.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Precious metals</b> are found in the rainforest.</li> <li>• Areas <b>mined</b> can experience <b>soil and water contamination</b>.</li> <li>• <b>Indigenous people</b> are becoming <b>displaced</b> from their land due to roads being built to transport products.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Mass tourism</b> is resulting in the building of hotels in extremely <b>vulnerable areas</b>.</li> <li>• Lead to <b>negative relationship</b> between the government and indigenous tribes</li> <li>• Tourism has <b>exposed animals</b> to human <b>diseases</b>.</li> </ul>

### Impacts of deforestation

Economic development	Energy Development	Road Building
<ul style="list-style-type: none"> <li>+ Mining, farming and logging creates employment and tax income for government.</li> <li>+ Products such as palm oil provide valuable income for countries.</li> <li>- The loss of biodiversity will reduce tourism.</li> </ul>	<ul style="list-style-type: none"> <li>• The <b>high rainfall</b> creates ideal conditions for <b>hydro-electric power (HEP)</b>.</li> <li>• The <b>Bakun Dam</b> in Malaysia is key for creating energy in this developing country, however, both people and environment have suffered.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Roads</b> are needed to bring supplies and <b>provide access</b> to new mining areas, settlements and energy projects.</li> <li>• In Malaysia, logging companies use an <b>extensive network of roads</b> for heavy machinery and to transport wood.</li> </ul>

**Soil erosion**

- Once the land is **exposed by deforestation**, the soil is more **vulnerable to rain**.
- With **no roots to bind soil together**, soil can easily **wash away**.

**Climate Change**

- When rainforests are cut down, the climate becomes **drier**.
- Trees are **carbon 'sinks'**. With greater deforestation comes more greenhouse emissions in the atmosphere.
- When trees are burnt, they **release more carbon in the atmosphere**. This will enhance the **greenhouse effect**.

### Sustainability for the Rainforest

Uncontrolled and unchecked exploitation can cause irreversible damage such as loss of biodiversity, soil erosion and climate change.

Possible strategies include:

- **Agro-forestry** - Growing trees and crops at the same time. It prevents soil erosion and the crops benefit from the nutrients.
- **Selective logging** - Trees are only felled when they reach a particular height.
- **Education** - Ensuring those people understand the consequences of deforestation
- **Afforestation** - If trees are cut down, they are replaced.
- **Forest reserves** - Areas protected from exploitation.
- **Ecotourism** - tourism that promotes the environments & conservation

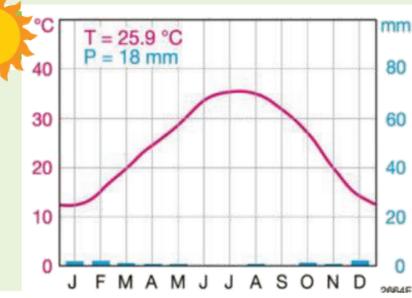
## Hot Desert: Case Study Thar Desert – India/Pakistan



The Thar Desert is located on the border between India and Pakistan in Southern Asia. With India soon becoming the most populated country in the world in the next five years. With this, more people will plan to live in the desert.

Distribution of the world's hot deserts	Major characteristics of hot deserts	
<p>Most of the world's hot deserts are found in the <b>subtropics</b> between <b>20 degrees and 30 degrees north &amp; south</b> of the Equator. The <b>Tropics of Cancer and Capricorn</b> run through most of the world's major deserts.</p>	<ul style="list-style-type: none"> <li>• <b>Aridity</b> – hot deserts are extremely dry, with annual rainfall below <b>250 mm</b>.</li> <li>• <b>Heat</b> – hot deserts rise over <b>40 degrees</b>.</li> <li>• <b>Landscapes</b> – Some places have dunes, but most are <b>rocky</b> with <b>thorny bushes</b>.</li> </ul>	

Hot Deserts inhabitants	Climate of Hot Deserts
<ul style="list-style-type: none"> <li>- People often live in large <b>open tents</b> to <b>keep cool</b>.</li> <li>- Food is often <b>cooked</b> slowly in the <b>warm sandy soil</b>.</li> <li>- <b>Head scarves</b> are worn by men to provide <b>protection from the Sun</b>.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Very little rainfall</b> with less than <b>250 mm per year</b>.</li> <li>• It might only <b>rain once every two to three years</b>.</li> <li>• Temperatures are <b>hot in the day</b> (45 °C) but are <b>cold at night</b> due to little cloud cover (5 °C).</li> <li>• In winter, deserts can sometimes receive occasional frost and snow.</li> </ul>



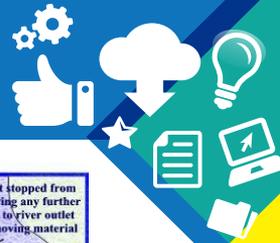
Adaptations to the desert		Desert Interdependence
<p>Small surface area minimises evaporation. Spines instead of leaves. Stems that can store water. Widespread root system.</p>	<ul style="list-style-type: none"> <li>• <b>Large roots</b> to absorb water soon after rainfall.</li> <li>• <b>Needles</b> instead of leaves to reduce surface area and therefore <b>transpiration</b>.</li> </ul>	Different parts of the hot desert ecosystem <b>are closely linked together and depend on each other</b> , especially in a such a harsh environment.
	<ul style="list-style-type: none"> <li>• Hump for storing <b>fat (NOT water)</b>.</li> <li>• <b>Wide feet</b> for walking on sand.</li> <li>• <b>Long eyelashes</b> to protect from sand.</li> </ul>	

### Opportunities and challenges in the Hot desert

Opportunities	Challenges
<ul style="list-style-type: none"> <li>• <b>There are valuable minerals for industries and construction.</b></li> <li>• <b>Energy resources such as coal and oil can be found in the Thar desert.</b></li> <li>• <b>Great opportunities for renewable energy such as solar power at Bhaliari.</b></li> <li>• <b>Thar desert has attracted tourists, especially during festivals.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>The extreme heat makes it difficult to work outside for very long.</b></li> <li>• <b>High evaporation rates from irrigation canals and farmland.</b></li> <li>• <b>Water supplies are limited, creating problems for the increasing number of people moving into area.</b></li> <li>• <b>Access through the desert is tricky as roads are difficult to build and maintain.</b></li> </ul>

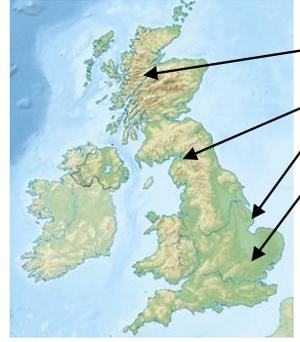
### Causes of Desertification

Causes of Desertification		Strategies to reduce Desertification
<b>Desertification means the turning of semi-arid areas (or drylands) into deserts.</b>	<b>Climate Change</b> Reduce rainfall and rising temperatures have meant less water for plants.	<ul style="list-style-type: none"> <li>• <b>Water management</b> - growing crops that don't need much water.</li> <li>• <b>Tree Planting</b> - trees can act as windbreakers to protect the soil from wind and soil erosion.</li> <li>• <b>Soil Management</b> - leaving areas of land to rest and recover lost nutrients.</li> <li>• <b>Technology</b> – using less expensive, sustainable materials for people to maintain. i.e. sand fences, terraces to stabilise soil and solar cookers to reduce deforestation.</li> </ul>
<b>Fuel Wood</b> People rely on wood for fuel. This removal of trees causes the soil to be exposed.	<b>Overgrazing</b> Too many animals mean plants are eaten faster than they can grow back. Causing soil erosion.	
<b>Over-Cultivation</b> If crops are grown in the same areas too often, nutrients in the soil will be used up causing soil erosion.	<b>Population Growth</b> A growing population puts pressure on the land leading to more deforestation, overgrazing and over-cultivation.	



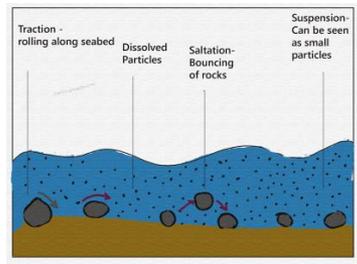
**Year 10 KO1**

**Relief of the UK** can be divided up into uplands and lowlands. Each have their own characteristics



Areas 600m: Peaks and ridges cold misty and snow common. E.G Scotland

Areas 200m: flat or rolling hills warmer weather e.g.: Fens



**Types of Erosion**  
The break down and transportation of rocks: Smoothed rounded and sorted.  
**Abrasion:** Rocks that bash together to become smooth/smaller  
**Solution:** A chemical reaction that dissolves rocks  
**Abrasion:** Rocks hurled at the base of a cliff to break into pieces  
**Hydraulic action:** Water enters the cracks in the cliff, air compressed, causing the crack to expand

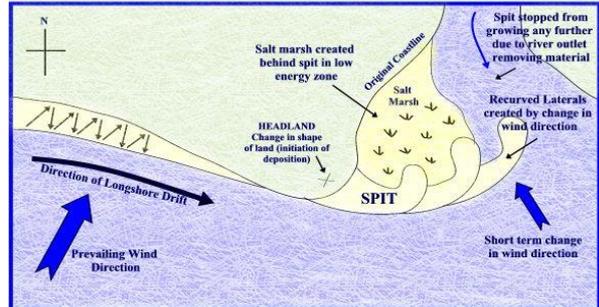
**Types of transportation:**  
A natural process by which eroded material is carried/transported.  
**Solution:** Minerals dissolve in water and are carried along  
**Suspension:** Sediment is carried along in the flow of the water  
**Saltation:** Pebbles that bounce along the sea bed  
**Traction:** Boulders that roll along the seabed by the force of the waves

**Mass Movement:**  
A large movement of soil and rock debris that moves down slopes in response to the pull of gravity in a vertical direction.  
1: **Rain saturates** the permeable rock above making it heavy  
2: **Waves will erode** the base of a cliff to make it unstable.  
3: eventually the weight of the permeable rock above the impermeable **rock weakens and collapses.**  
4: Debris at the base of the cliff is then removed and transported by the waves

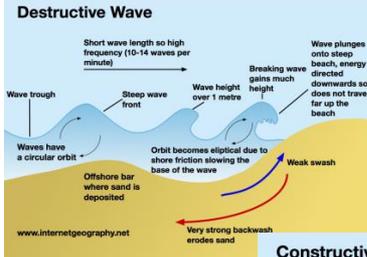
**What is deposition?**  
When the sea loses energy it drops sand and rock particles it has been carrying. This can happen at the mouth of a river or in a sheltered bay.

**How do waves form?**  
Waves are created by the wind blowing over the surface of the sea. As the wind blows friction is created producing a swell in the water

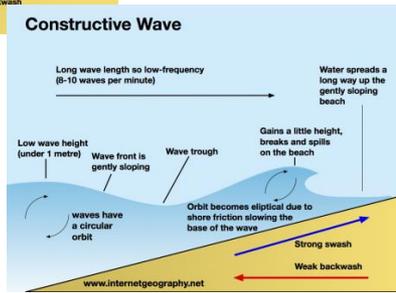
**The Formation of a Spit**



- 1) Swash moves up the beach at an angle to the prevailing wind.
- 2) Backwash moves down the beach at 90° to the coastline due to gravity.
- 3) Zig zag movement ( longshore drift) transports material along the beach.
- 4) Deposition causes the beach to extend until reaching an estuary.
- 5) Changes in the prevailing wind direction forms a hook
- 6) Sheltered areas behind the spit encourages
- 7) Deposition and salt marsh forms.



**Size of waves**  
**Fetch** how far the wave has travelled  
**Strength of the wind**  
**How long** the wind has been blowing for

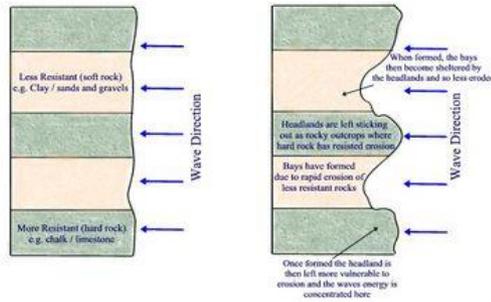




**Formation of Bays and Headlands**

- 1) Waves attack the coastline
- 2) Softer rocks are eroded more easily forming a bay. The sheltered bay leads to deposition and beaches can form
- 3) More resistant rock is left jutting out into the sea. This is the headlands and on the headland caves etc. can form.

The Formation of Headlands and Bays



**Case study: Coastal management at Lyme Regis**

**Location and issues:**

A small coastal town on the south coast of England. The town has been built on unstable cliffs. The coastline is eroding rapidly. Properties have been destroyed or damaged. The sea wall has been breached many times

**Management**

A mixture of hard and soft engineering, rock armour sand imported from France. A stone groyne, shingle beach, beach nourishment and a new sea wall

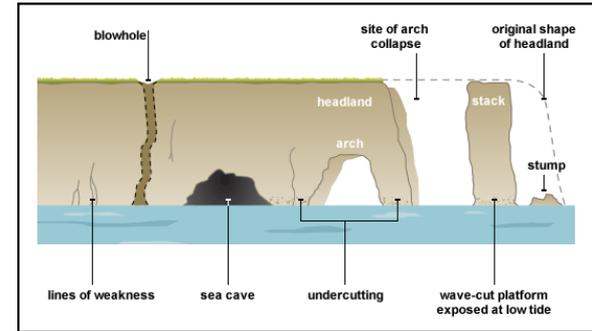
**Positives:** the new beach has increased visitor numbers. Boost to local businesses. Harbour now better protected benefits boat owners and fishermen. They have withstood recent storms.

**Negatives:** Spoil the local landscape. Sea wall interferes with coastal processes. Increased visitors leads to congestion. Fossils no longer revealed in cliff collapses

**Formation of a coastal stack.**

- 1: Hydraulic action widens cracks in the cliff face overtime
- 2: Abrasion forms a wave cut notch between the HT and LT mark
- 3: Further abrasion widens the wave cut notch to form a cave
- 4: Caves form on both sides of the headland and break through to form an Arch
- 5: Due to weathering above and erosion below the roof of the arch collapses leaving an arch
- 6: further weathering and erosion reduces the tall stack to a stump.

Example: Old Harry rocks Dorset



<b>Hard Engineering</b>		
Groynes	Barriers at 90° to the sea trap sediment carried by long shore drift so the beach can build up	Beach can still be accessible ✓ Wide beach+ good sea defence ✓ No deposition further down the coast increase problems ✗
Sea walls	Concrete walls break up the energy of the waves. Has a lip to send waves back out to sea	Long life span ✓ Protects from flooding ✓ Expensive ✗ Reduces erosion for beach material deposition further down the coast ✗
Gabions/rip rap	Cages of rocks and boulders absorb the wave energy protecting the cliffs behind	Cheap ✓ Local materials can be used ✓ Ugly ✗ Will need replacing ✗
<b>Soft engineering</b>		
Beach nourishment	Beaches built up with sand so the waves have to travel, up the beach	Cheap ✓ Beach for tourists ✓ Storms=needs replacing ✗ Offshore dredging damages sea bed ✗
Managed retreat	Low value areas are left to flood	Reduces the risk of flooding ✓ Creates wildlife habitat ✓ Compensation for land lost ✗



# Science



**B3: Genetics**

- Lesson sequence**
1. Meiosis
  2. DNA
  3. DNA extraction
  4. Alleles
  5. Inheritance
  6. Gene mutation
  7. Variation

1. Meiosis	
<b>Gametes</b>	Egg cell and sperm cell
<b>Fertilisation</b>	Sperm cell fuses with egg cell and nuclei combine
<b>Zygote</b>	Single cell formed by fertilisation
<b>Gene</b>	Length of DNA coding for a protein. Controls your characteristics
<b>Genome</b>	All the DNA and genes in an organism
<b>Protein</b>	Polymer made from amino acids
<b>Polymer</b>	Long molecule made by chaining together many shorter ones
<b>Diploid</b>	A cell with 23 pairs of chromosomes (46 in total)
<b>Haploid</b>	A cell with 23 single chromosomes
<b>Meiosis</b>	Cell division that makes gametes
<b>Meiosis stages</b>	DNA replicates, cell divides into 2 diploid cells, these divide into 4 haploid daughters.
<b>Why gametes are different</b>	Chromosomes in a pair are slightly different. Different gametes get are different combinations of chromosomes.

2. DNA	
<b>Chromosome</b>	Large DNA molecule made into a small package by tightly coiling DNA around a protein.
<b>DNA structure</b>	Two strands, double helix, complementary base pairs, sugar-phosphate backbone
<b>DNA bases</b>	Adenine, A; thymine, T; cytosine, C; guanine, G

<b>Complementary base pairs</b>	A pairs with T C pairs with G
<b>Hydrogen bonds</b>	Weak force holding the two strands of DNA together.
<b>DNA analysis</b>	Uses small differences in DNA to determine family relationships or link people to crimes.

3. DNA extraction	
<b>DNA extraction: Salt water, salt and detergent.</b>	Makes DNA clump together, detergent breaks down cell membranes to release DNA
<b>DNA extraction: Mash fruit/veg and add the solution</b>	Increases the surface area
<b>DNA extraction: Leave in water bath at 60°C</b>	Heat makes it react quicker
<b>DNA extraction: Filter the mixture and collect filtrate</b>	To remove unwanted lumps
<b>DNA extraction: Measure out 10 cm<sup>3</sup> of filtrate</b>	It's easier to work with a small amount
<b>DNA extraction: Add two drops of protease solution</b>	Protease breaks down proteins around the DNA
<b>DNA extraction: Gently add ice-cold ethanol</b>	DNA is insoluble in ethanol so precipitates
<b>DNA extraction: Leave for several minutes</b>	So white DNA layer forms

4. Alleles	
<b>Allele</b>	Different version of the same gene. We have two alleles of each gene.
<b>Homozygous</b>	We have two copies of the same allele
<b>Heterozygous</b>	We have two different copies of an allele
<b>Dominant allele</b>	One copy needed for characteristic to show. Written as a capital.

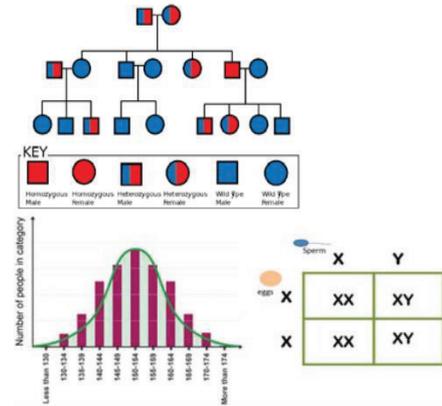
<b>Recessive allele</b>	Two copies for the characteristic to show. Written as lowercase.
<b>Genotype</b>	The combination of alleles in an organism.
<b>Phenotype</b>	The characteristics produced by the alleles.
<b>Genetic diagram</b>	Shows the likelihood of offspring produced by parents with certain genotypes

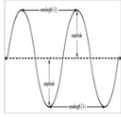
5. Inheritance	
<b>Sex chromosomes</b>	Female: XX Males: XY
<b>Inheriting sex</b>	All eggs are X, 50% of sperm are X and 50% are Y, so 50% of zygotes are XX and 50% are XY
<b>Punnett squares</b>	Uses the genotypes of male and female gametes to predict the genotypes of the offspring.
<b>Probability Punnett squares</b>	Punnett squares tell you the likelihood of certain offspring, not what will actually happen.
<b>Cystic fibrosis</b>	Illness caused by a inheriting two copies of a faulty recessive allele.
<b>Family pedigree chart</b>	Chart showing how genotypes are inherited down through a family.

6. Gene mutation	
<b>Mutation</b>	A change to the bases in a gene.
<b>Effect of mutations</b>	Change the structure of a protein and how it works. Sometimes harmless, normally harmful, very rarely beneficial
<b>Cause of mutations</b>	Mistakes copying DNA during cell division, DNA damage from chemicals or radiation
<b>Inheriting mutations</b>	Only if they occur in gametes (egg and sperm)
<b>Human Genome Project</b>	(HGP) Project involving many scientists from many countries to find the order of bases in human DNA
<b>How is the HGP useful?</b>	To tailor drugs to genes, to design better drugs

<b>Genetic differences</b>	HGP found 99% of DNA in all people is identical.
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7. Variation	
<b>Variation</b>	Natural differences between members of a species that affect the chance of survival.
<b>Genetic variation</b>	Caused by genes
<b>Environmental variation</b>	Caused by interaction with the surroundings – such as food, climate etc.
<b>Causes of most variation</b>	A combination of genes and the environment.
<b>Acquired characteristics</b>	Changes caused by the environment during your lifetime, such as losing a leg
<b>Continuous variation</b>	Can be anywhere within a range, such as height , following a normal distribution.
<b>Discontinuous variation</b>	Can be only one of a few possibilities, such as blood type: A, B, AB, O
<b>Normal distribution</b>	Bell-shaped curve with more in the middle and fewer either side.





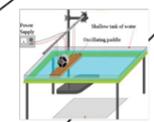
Velocity	<i>The speed of the wave in a certain direction</i>
Wavelength	<i>Distance from one point on a wave to the same point of the next wave</i>
Amplitude	<i>The maximum disturbance from its rest position</i>
Frequency	<i>Number of waves per second</i>
Wave front	<i>The position of all the particles of the medium, vibrating in the same state</i>
Period	<i>Time taken to produce 1 complete wave</i>

Wave speed	Wave speed = frequency X wavelength	$V = f \times \lambda$
Wave period	Wave period = $1 \div$ frequency	$T = 1 \div f$
Wave Speed	Speed = distance $\div$ time	$v = d \div t$

Sound waves travelling through different mediums, the frequency stay constant.

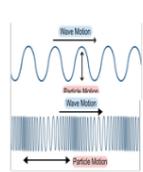
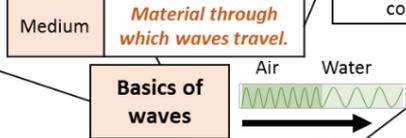
**Equations**

<b>Core Practical</b>
<i>Determine the speed of frequency and wavelength of a wave in a solid and a fluid</i>
Fluid - Using ripple tank
Solid - using peak frequency



**Waves transfer energy**  
Waves transfer energy and information in the direction they are travelling without transferring matter

When waves travel through a medium, the particles of the medium vibrate but stay in the same place. The energy and information is transferred between particles.



<b>Transverse wave</b>	<i>Vibration causing the wave is at right angles to the direction of energy transfer</i>	Energy is carried outwards by the wave.	Water and light waves, S waves.
<b>Longitudinal wave</b>	<i>Vibration causing the wave is parallel to the direction of energy transfer</i>	Energy is carried along the wave.	Sound waves, P waves.

**EDEXCEL TOPIC 4 - WAVES**

**Measuring waves**

<b>Speed</b>	<i>Measure the time it takes for waves to travel a certain distance</i>	Time how long an echo takes to reach you (air)	Time how long a wave travels between 2 fixed points (water)
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Waves change speed due to the different density of mediums.

If the waves goes from a thinner medium to a thicker medium, (e.g. air to glass), it will slow down.

If the waves goes from a thicker medium to a thinner medium, (e.g. glass to air), it will quicken up.



**HIGHER ONLY**

**Refraction** *Waves changes direction at boundary.*

Waves travel through different medium at different speeds

Speed of waves in water depends upon depth

From deep water to shallow water, speed slows down

What actually happens to a wave depends upon it's wavelength and the property of the material involved.

Sound waves enters a different medium, wavelength or velocity change.

**Properties of waves**

Speed of sound = 340m/s

When waves travel from medium to medium, velocity, frequency and wavelength may be affected.

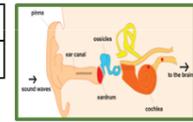
Sound waves have the same pitch regardless of medium travelled through.

Speed of Light =  $3 \times 10^8$  m/s

*Wave speed = frequency X wavelength so if velocity changes either frequency or wavelength (or both) also changes*

**PHYSICS HIGHER ONLY**

<b>Sonar</b>	<i>Reflected off objects</i>	Used to determine depth of objects under the sea.
<b>Ultra sound</b>	<i>Partially reflected off boundary</i>	Used for medical and foetal scans.
<b>Infra-sound</b>	<i>Seismic waves (P and S) used to explore Earth's core</i>	P waves can travel through the core, S waves cannot.
<b>Ultrasound</b>	<i>Above 20,000Hz</i>	
<b>Infrasound</b>	<i>Below 20Hz</i>	



*You must know how sound travels through the ear.*

<b>Absorption</b>	<i>Passes into but not out of, transfers energy and heats up the object.</i>	<b>PHYSICS ONLY</b>
<b>Transmission</b>	<i>Passes through the object.</i>	
<b>Reflection</b>	<i>Wave bounces off the surface.</i>	
<b>Refraction</b>	<i>Waves changes direction at boundary.</i>	

**PHYSICS HIGHER ONLY**

Calculating depth or distance from time and wave velocity

*Energy stored inside a system by particles*

*Heating changes the energy stored within a system*

Internal energy is the total kinetic and potential energy of all the particles (atoms and molecules) in a system.

Heating causes a change in state. As particles separate, potential energy stored increases. Heating increases the temperature of a system. Particles move faster so kinetic energy of particles increases.

Frequency does not change but wavelength does ( $v = f\lambda$ ).

Wavelength increases as speed increases, if speed slows down, wavelength get shorter.



138 Name three different types of wave.

139 What property of a wave does the wavelength describe?

140 What are the units for wavelength?

141 What property of a wave does the frequency describe?

142 What are the units for frequency?

143 What is transferred by a wave? Particles or energy?

144 What does amplitude mean?

145 In which direction do the particles in a sound wave move compared to the direction the wave is travelling?

146 What word is used to describe waves like sound waves? 147 What word is used to describe waves like the waves on water?

148 Name a type of transverse wave.

149 Name a type of longitudinal wave.

150 What is the difference between longitudinal and transverse waves?

151 What word describes the number of waves per second?

152 What word describes the time taken for one wave to pass? 153 What word describes the distance between a point on one wave and the same point on the next wave?

154 What are the units for frequency?

155 Name two things that waves can transfer.

156 Name one thing that waves do not transfer.

157 What is the equation that links wave speed, frequency and wavelength?

158 What two things do you need to measure to find the speed of a wave?

159 What is the word that describes light bouncing off a material?

160 What does refraction mean?

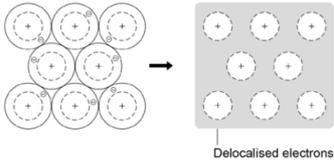
161 When does refraction happen to light waves?

162 Name three materials that light can travel through.



## Metallic bonding

Metals LOSE ELECTRONS to form POSITIVE IONS



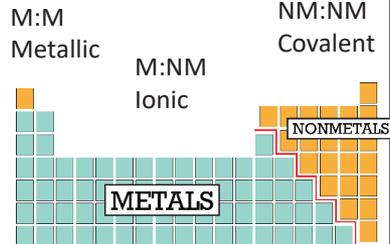
GIANT structures of atoms in a REGULAR pattern

Delocalised electrons are free to move.

What is a metallic bond?

Sharing delocalised electrons – STRONG metallic bonds.

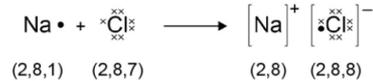
Which type of bonding is it?



## Ionic bonding

Metals LOSE ELECTRONS to form POSITIVE IONS  
Non-metals GAIN ELECTRONS to form NEGATIVE IONS

Electrons transferred from metal to non-metal



Ions have electronic structure of a noble gas

What is an ionic bond?  
STRONG electrostatic force of attraction between oppositely charged ions

How do we quickly work out the charges on ions?

Group	Electrons in outer shell	Charge on ion
1	1	1+
2	2	2+
6	6	2-
7	7	1-

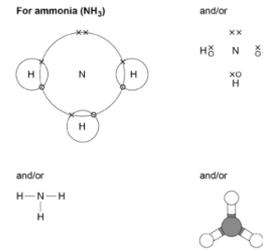
## SC5-SC7 Structure and Bonding

## Covalent Bonding

Two non-metals will SHARE pairs of electrons  
STRONG bond formed.

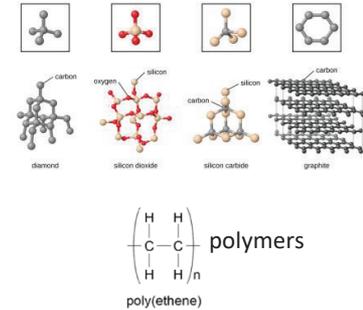
### Small molecules

A small group of atoms sharing electrons



### Giant Structures

Many atoms sharing electrons



### Limitations of these models

Model	Limitations
Dot and cross	Looks like electrons aren't identical Electrons look like they are in fixed positions
Displayed formula	Doesn't show true shape of the molecule
Ball and stick	Can attempt to show 3D shape but doesn't show electrons



## Properties of Metallic Substances

Metals have high melting and boiling points **because...**

...they are **giant structures** of atoms with **strong metallic bonding**

Can be bent or shaped **because...**

...atoms are arranged in **LAYERS** which can **SLIDE** over each other



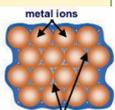
Alloys are harder than pure metals **because...**



Alloys are a mixture of two or more elements, at least one of which is a metal

...the layers are **DISTORTED** so can't slide over each other

Metals are good conductors of electricity and thermal energy **Because...**

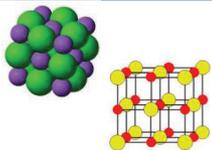


Electrons are free to move and carry an electrical charge.

...the **electrons are free** to move and carry thermal energy and charge

## Properties of Ionic Substances

Ionic compounds have high melting and boiling points **because...**



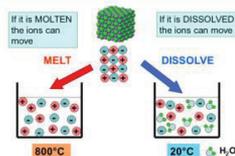
...they are giant structures of atoms (**giant ionic lattice**) with **strong electrostatic forces** of attraction in **ALL DIRECTIONS** between oppositely charged ions.

A large amount of **energy** is needed to break the many strong bonds.

Only conduct electricity when melted or dissolved in water **because...**

...the **ions are free** to move and so charge can flow.

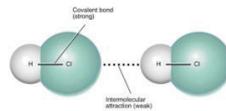
As ionic compounds are made of **CHARGED IONS**, they can **CONDUCT ELECTRICITY** but **ONLY** if the ions can **MOVE**.



## SC5-SC7 Structure and Bonding

Small molecules

Small molecules have relatively low melting and boiling points **because...**



...**intermolecular forces** are overcome on melting and boiling and these are weak forces.

The bigger the size of the molecule the higher the melting and boiling point **because...**

...intermolecular forces increase with the size of the molecules.

Don't conduct electricity **because...**

...the molecules have **no overall electric charge**.

## Properties of Covalent substances

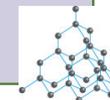
Giant Structures

Polymers are solids at room temperature **because...**



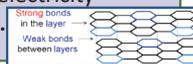
...intermolecular forces increase with the size of the molecules and polymer molecules are **very large**.

Diamond is very hard, has a very high melting and boiling point and doesn't conduct electricity **because...**



...each carbon is bonded to **4** other carbons by **strong covalent bonds**. There are **no free electrons**.

Graphite is very hard, has a very high melting and boiling point and does conduct electricity **because...**

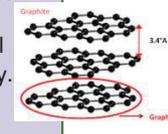


...each carbon is bonded to **3** other carbons by **strong covalent bonds**. It forms **layers of hexagonal rings** with no covalent bonds between layers. There are **free electrons**.

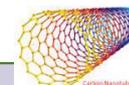
Giant covalent compounds have high melting and boiling points **because...**

...all of the atoms linked by **strong covalent bonds**.

Graphene is strong, light and an excellent conductor of thermal energy and electricity. **because...**



...it is a single layer of graphite so has **free electrons**.

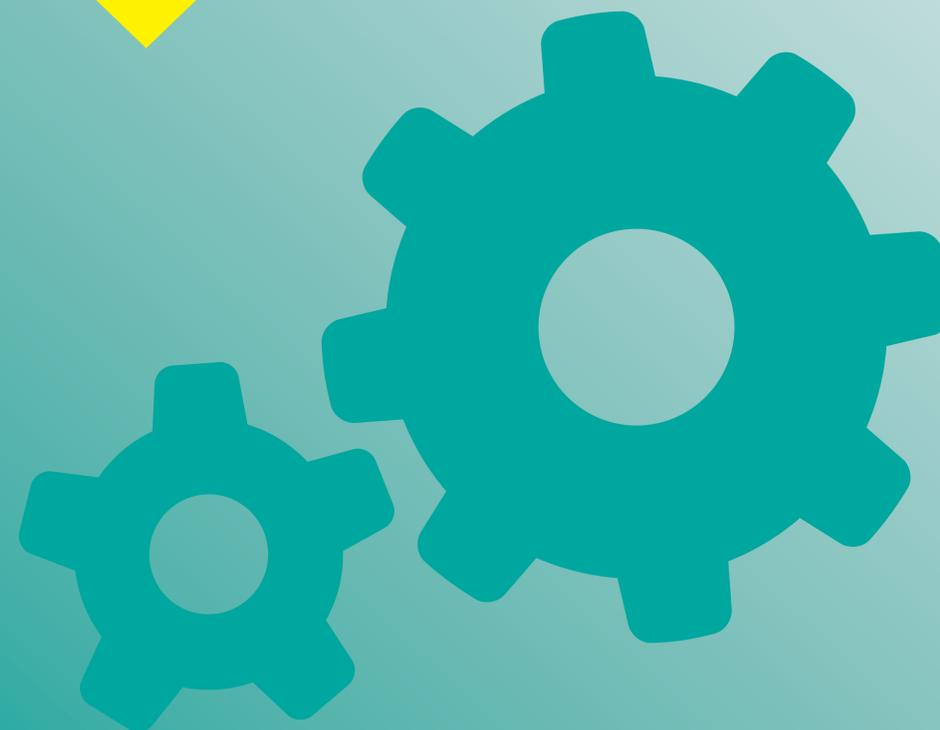


Fullerenes (e.g. carbon nanotubes) are extremely strong and are excellent conductors of thermal energy and electricity **because...**



... they have **strong covalent bonds** and **free electrons**.

# History





## Unit One: The causes of the First World War

Timeline Of Key Events	
1882	Signing of the <b>Triple Alliance</b> between Austria-Hungary, Germany and Italy.
1904	Signing of the <b>Entente Cordiale</b> between France and Great Britain.
1905-06	<b>First Moroccan Crisis</b> (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 <b>Dreadnought</b> .
1907	Signing of the <b>Triple Entente</b> between France, Great Britain and Russia over concerns about Germany.
1908	<b>Bosnian Crisis</b> – conflict between Austria-Hungary and Serbia over Bosnia. Serbia ask Russia for support, but have to back down.
1911	<b>Second Moroccan Crisis</b> (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	<b>Balkan Wars</b> – 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	<b>Assassination of Franz Ferdinand</b> (28 <sup>th</sup> June) Heir to the Austro-Hungarian throne is assassinated by the Black Hand Gang from Serbia.
1914	Austria-Hungary are given the <b>blank cheque</b> by Germany.
1914	Austria-Hungary issue an <b>ultimatum</b> to Serbia, it <b>leads to the declaration of war</b> .
1914	<b>The July Crisis</b> – alliances are triggered and WWI starts, chain reaction as countries declare war on one another from 28 <sup>th</sup> July to 6 <sup>th</sup> August.

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

Key People/Groups	
<b>Kaiser Wilhelm II</b>	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.
<b>Archduke Franz Ferdinand</b>	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.
<b>Black Hand Gang</b>	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 <b>Schlieffen Plan</b> and invades Belgium. Britain declares war on Germany after ultimatum. The <b>Schlieffen Plan fails</b> due to a mixture of poor decisions, Belgium fighting back, the BEF joining and Russia mobilising quicker.
1914	<b>Battle of Mons.</b> British Expeditionary Force (BEF) meet German forces in August. British rifle-fire is fast and delays the German advance.
1914	<b>Battle of the Marne.</b> The BEF stopped the German advance and 'saved' Paris in September. This leads to 'The Race to the Sea.'
1914	By November WWI reached <b>stalemate</b> as both sides dug in defensive positions.
1914	Introduction of <b>British Blockade</b> which stopped goods reaching Germany.
1915	<b>Gallipoli Campaign.</b> 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	<b>Battle of Verdun.</b> The Germans begin battle to capture strategic forts at Verdun. General Falkenhayn's tactic of attrition was to 'bleed France white'.
1916	<b>Battle of Jutland.</b> 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	<b>Battle of the Somme -</b> Haig launched attack at the Somme to relieve French at Verdun. First day (July 1 <sup>st</sup> ) resulted in 57,000 British casualties. Battle of the Somme ends with loss of 1.25 million men in November, a British victory.
1916	<b>First use of tanks</b> at the Battle of the Somme. They're not successful or reliable.
1917	<b>Battle for Vimy Ridge.</b> Canadian troops capture strategic high position from Germans.
1917	<b>Battle Messines Ridge.</b> The rolling barrage was used effectively and major targets were acquired and the battle was won in a day.
1917	<b>Battle of Passchendaele (Third battle of Ypres)</b> 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	<b>Battle of Cambrai.</b> 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	
<b>Stalemate</b>	Deadlock where neither side can move or achieve outright victory.
<b>Artillery</b>	Very large guns that fire at long range. Moved on wheels or tracks.
<b>Tanks</b>	Tracks enabled tanks to travel on rough terrain. First used at Somme, but took a while to develop effective tactics.
<b>Gas</b>	A dangerous weapon, wounded more than killed. Examples included chlorine and mustard.
<b>BEF</b>	British Expeditionary Force of 150,000 created to travel in the event of war.
<b>Attrition</b>	The wearing down and gradual weakening of the enemy forces.
<b>No-Mans Land</b>	Land between the front line trenches of opposing sides.
<b>Over the Top</b>	Phrase used to describe the infantry climbing out of the trenches to attack the enemy.
<b>Gallipoli</b>	Major campaign of WW1 on the Turkish peninsula .
<b>Front</b>	The point to which an army has advanced and is engaging with an enemy.
<b>U-Boat</b>	German for 'Unterseeboot' or submarine.
<b>Blockade</b>	To seal off – to prevent passage of goods. Introduced by the British to starve the Germans during WWI.
<b>Convoy System</b>	Merchant ships travelling in close formation with British or American warship escort.
<b>Unrestricted warfare</b>	Removed the convention of warning Merchant ships of imminent attack.
<b>Creeping Barrage</b>	New tactic used in WWI – using artillery to cloud the troops who would be advancing behind.

Key People/Groups	
<b>Winston Churchill</b>	First Lord of the Admiralty. Was the man responsible for the decision to attack Gallipoli.
<b>General Falkenhayn</b>	Responsible for the German attack on Verdun. Wanted to wear them down using tactics of attrition.
<b>Admiral Jellicoe</b>	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 <b>Battle of Tannenberg</b> . Large numbers of their army were lost and the General in charge committed suicide
1915	Germans begin <b>unrestricted submarine warfare</b> in the hopes of ending the British Blockade.
1915	American Liner ' <b>Lusitania</b> ' <b>sunk by German U-Boat</b> , 1200 passengers lost, however the USA do not yet join the war.
1917	<b>The Russian Revolution</b> . The Russian Tsar (king) is overthrown by Provisional Government, however they stay committed to war.
1917	<b>The USA declares war on Germany</b> after the continuation of unrestricted submarine warfare against their ships and the sending of the Zimmerman Telegram from Germany to Mexico.
1917	<b>Bolshevik Revolution</b> 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	<b>Introduction of the Convoy system</b> to transport goods across Atlantic. This was so successful that only 8 out of 500 supply ships were sunk between July and August.
1918	<b>The Treaty of Brest Litovsk</b> . A peace treaty signed between the Russians and Germany.
1918	In March the <b>Ludendorff Offensive (Spring Offensive)</b> 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 – <b>The start of the Hundred Days</b>
1918	<b>Allies reach Hindenburg Line</b> . Over 1.2 million American troops aid the Allies and the Germans end up in full retreat.
1918	<b>Kiel Mutiny</b> 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. <b>Germany signs the armistice</b> and fighting on the Western Front ends.

Key Words	
<b>Mobilise</b>	To prepare and organize (troops) for active service.
<b>Tannenberg</b>	Battle fought between Russia and Germany from 26–30 August 1914
<b>Offensive</b>	An attacking military campaign.
<b>Revolution</b>	A forcible overthrow of a government or social order, in favour of a new system.
<b>Hindenburg Line</b>	A German defensive position of World War I, built during the winter of 1916–1917 on the Western Front.
<b>Bolshevik</b>	A revolutionary political group in Russia. They overthrow the government and take control of the country, forcing Russia out of the war.
<b>Zimmerman Telegram</b>	Sent by Germany to Mexico to create an alliance by attacking America. Britain intercept this and inform the USA who join the war.
<b>Stormtroopers</b>	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.
<b>Mutiny</b>	A refusal to obey the orders of a person in authority.
<b>Spring or Ludendorff Offensive</b>	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.
<b>Retreat</b>	To withdraw from enemy forces.
<b>Armistice</b>	A formal agreement to stop fighting. Signed on the 11/11/18.
<b>Neutrality</b>	The refusal to take part in a war between other powers. America took this approach until they were provoked.
<b>Abdication</b>	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	
<b>Field Marshall Douglas Haig</b>	Leader of the British forces. Responsible for the Battle of the Somme. Criticised for use of outdated tactics, until 1917 when this changes.
<b>Ferdinand Foch</b>	In charge of the Allied forces at the Spring Offensive.
<b>General Ludendorff</b>	Leader of the German forces, responsible for the Spring Offensive.
<b>Lenin</b>	Leader of the Bolsheviks, leads the revolution that takes Russia out of WWI.
<b>Woodrow Wilson</b>	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

106

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



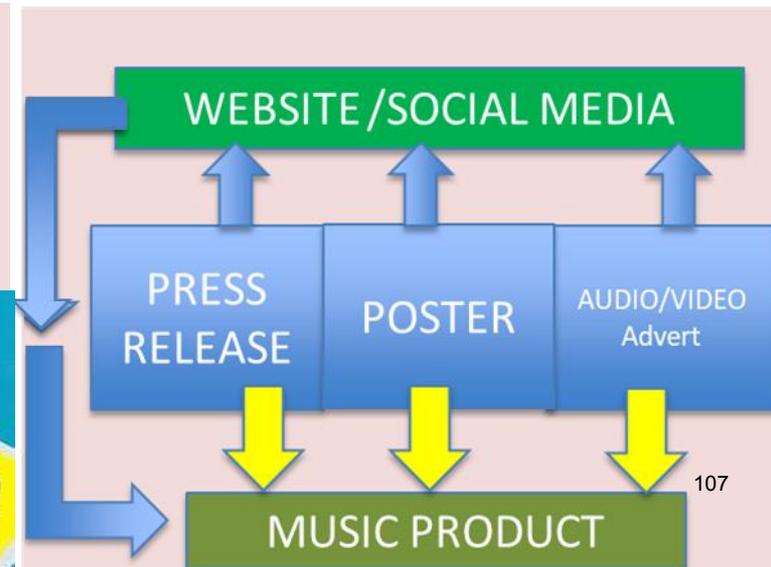
### HELPFUL WEBSITES

Designing CD Covers

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

Promoting a concert

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





**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

110

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:

• <b>repetition</b>	Melodies can be repeated but with some variation and decoration.
• <b>variation</b>	Drum beats can continue but with changes to percussion instruments. Bass lines can be extended with slight changes to the original idea.
• <b>Modulation and changing tonality (major to minor)</b>	Music can change key, commonly into the dominant (5 <sup>th</sup> higher), relative minor key or just up a semitone like a pop song sometimes does.
• <b>melodic transformations</b>	Melodies can be written out backwards, inverted in pitch if this fits the genre.
• <b>instrumentation</b>	Use of different instruments from music already composed in learning aim A.
• <b>textures.</b>	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?** 110



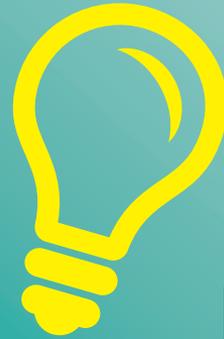
**Learning Aim C: Compositions should be presented using an appropriate format to ensure clarity and support communication of musical ideas to others.**

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

<ul style="list-style-type: none"> <li>conventions of particular styles, genres (recordings, MIDI and audio files)</li> </ul>	<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"> <li>standard notation, e.g. scores, parts</li> </ul>	<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"> <li>tab, e.g. guitar, drum, bass etc</li> </ul>	<p>Scores can be easily converted to TAB or standard drum notation or vice versa using software.</p>
<ul style="list-style-type: none"> <li>graphic notation</li> </ul>	<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"> <li>lead sheet</li> </ul>	<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"> <li>chord chart</li> </ul>	<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 <sup>111</sup> time audio.



# Physical Education



# UNIT 1 – Term 1

## Fitness For Sport And Exercise

# THE Physical Components Of Fitness– WHAT YOU NEED TO KNOW



## Aerobic Endurance

**DEFINITION:** "THE ABILITY OF THE CARDIORESPIRATORY SYSTEM TO WORK EFFICIENTLY, SUPPLYING OXYGEN TO WORKING MUSCLES DURING SUSTAINED PHYSICAL ACTIVITY."  
**EXAMPLE:** A MARATHON RUNNER OR LONG DISTANCE RUNNER/SWIMMER/CYCLIST

## Muscular Endurance



### MUSCULAR

**DEFINITION:** "THE ABILITY TO OF THE MUSCULAR SYSTEM TO WORK EFFICIENTLY WITHOUT GETTING TIRED."  
**EXAMPLE:** PRESS UPS / SIT UPS



## Flexibility

**DEFINITION:** "THE ABILITY TO MOVE A JOINT THROUGH ITS COMPLETE RANGE OF MOVEMENT,  
**EXAMPLE:** A HURDLER NEEDS GOOD FLEXIBILITY AT THE HIP TO CLEAR THE HURDLE



## Muscular Strength

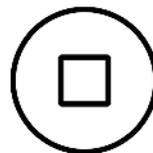
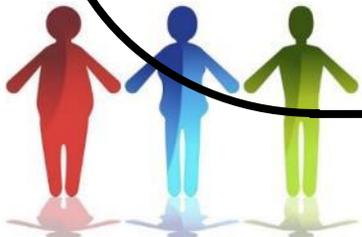
**DEFINITION:** "THE MAXIMUM FORCE (IN KG OR N) THAT CAN BE GENERATED BY A MUSCLE OR MUSCLE GROUP."  
**EXAMPLE:** A WEIGHT LIFTER NEEDS HIGH LEVELS OF MUSCULAR STRENGTH TO LIFT HEAVY WEIGHTS

**DEFINITION:** "THE RATIO OF FAT TO FAT FREE MASS IN THE BODY"  
**DIFFERENT SPORTS WILL NEED DIFFERENT BODY FAT PERCENTAGE.**

## Body Composition

**DEFINITION:** "DISTANCE TRAVELLED DIVIDED BY TIME TAKEN."  
**EXAMPLE:** SPRINTERS REQUIRE SPEED TO COVER SHORT DISTANCES QUICKLY

## Speed



FINISH



START



**Definition:** The ability of the cardiorespiratory system to work efficiently, supplying nutrients and oxygen to working muscles during sustained physical activity.

## Methods of training

**Continuous training** - this is steady-state training. Performers train at a steady pace and moderate intensity for at least 30 minutes.

**Fartlek training** - it is the Swedish word for 'speed play'. It is continuous. You vary the intensity by running at different speeds and different terrains.

**Interval training** - alternating periods of work followed by periods of rest.

## Sporting example

**Sport:** marathon runner

**Justification:** A marathon runner requires good levels of aerobic endurance because the marathon is a form of sustained physical activity. They are required to run for a long period of time.

**Links to performance:** Without good aerobic endurance the runner will not be able to run at a steady pace for the duration of the race.

## Testing aerobic endurance

Test 1: Multi-stage fitness test (maximal test)

- Good prediction of VO<sub>2</sub> max if you run to maximum exhaustion
- More valid than the forestry step test
- Maximal test so requires motivation

Test 2: Forestry step test (submaximal test)

- It is submaximal so not as valid
- Only provides a prediction of VO<sub>2</sub> max
- Relies on endurance of leg muscles

## Cardiorespiratory system

There are 3 components of the cardiorespiratory system:

- Heart
- Lungs
- Blood vessels



## Improving aerobic endurance

**Frequency** - need to train at least 3-5 times a week

**Intensity** - to improve aerobic endurance you need to train at 60-85% of your maximum heart rate

**Time** - train for at least 30 minutes to improve aerobic endurance and gradually increase

**Type** - continuous, fartlek and interval

## Units of measurement

Aerobic endurance is measured by someone's VO<sub>2</sub> max.

The units of measurement for VO<sub>2</sub> max is ml/kg/min

## **Exam question: Explain how an improvement in aerobic endurance will improve the performance of a football player?**

An improvement in aerobic endurance for a football player will mean that they will be able to move up and down the pitch for a longer period of time without tiring. This means that they will be able to help their team in attack and defence throughout the game and maintain a high skill level as they will not be tiring.

**Tip:** If a question asks you to explain how an improvement in aerobic endurance will be beneficial you need to say what an improvement will allow and the impact this will have on performance

# Body Composition



**Definition:** The relative ratio of fat mass to fat free mass (vital organs, muscle, bone) in the body.

## Sporting example

**Sport:** marathon runner

**Specific example:** A marathon runner requires a slight frame with minimal excess weight including muscle and fat.

**Justification:** A marathon runner will want to carry as little weight as possible when running as the more weight they carry the harder it will be to run for a long period of time and it is likely that they will become fatigued more quickly

## Sporting example

**Sport:** football

**Specific example:** A football player will require a lean body composition with minimal fat but will have a muscular frame

**Justification:** Footballers require a muscular build as they require components of fitness such as muscular strength and power in their performance. A lower level of fat will help with their aerobic endurance allowing them to cover the pitch with more ease

## Sporting example

**Sport:** shot put

**Specific example:** Shot put athletes tend to have a more endomorph body type with a higher percentage of fat and muscle

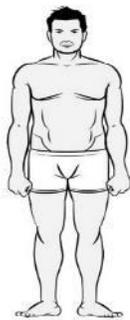
**Justification:** Shot put is a pure power based sport and therefore they do not need a slight frame like a marathon runner. The higher level of muscle mass allows greater power to be produced.



Ectomorphe



Mésomorphe



Endomorphe

## Fitness tests

**Fitness Test 1:** Body Mass Index (BMI):

- Not valid for trained athletes
- Does not take muscle into account

**Fitness Test 2:** Bioelectrical Impedance Analysis (BIA)

- Accurate measurement of % body fat
- Takes into consideration age and gender

**Fitness Test 3:** Skinfold Testing

- Most valid test
- Complicated method to follow

## Units of measurement

**BMI**

Body weight (kg)/height (m) x height (m) = kg/m<sup>2</sup>

**BIA**

% body fat

**Skinfold**

Jackson-Pollock nomogram (% body fat)

**Exam question:** How would an improvement in body composition improve performance in rock climbing?

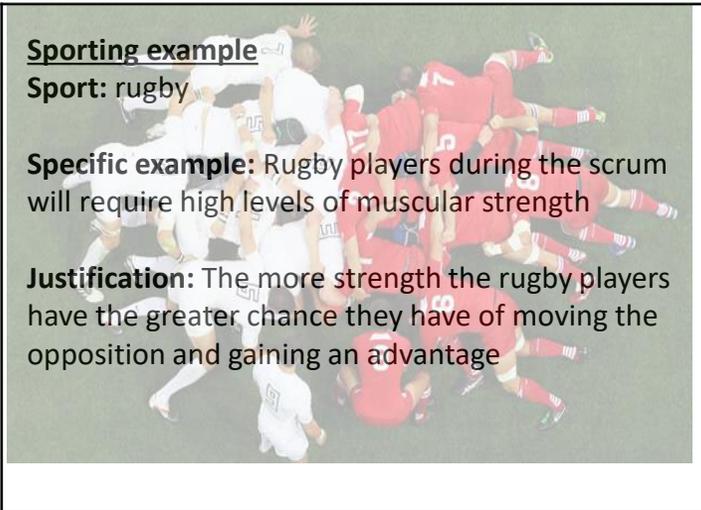
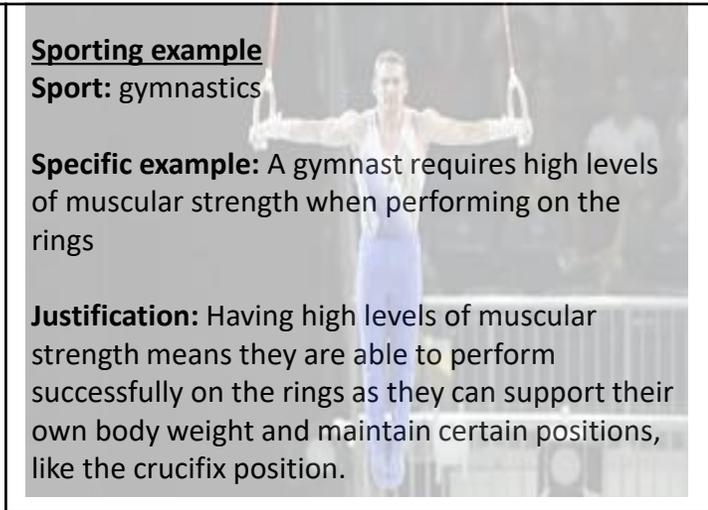
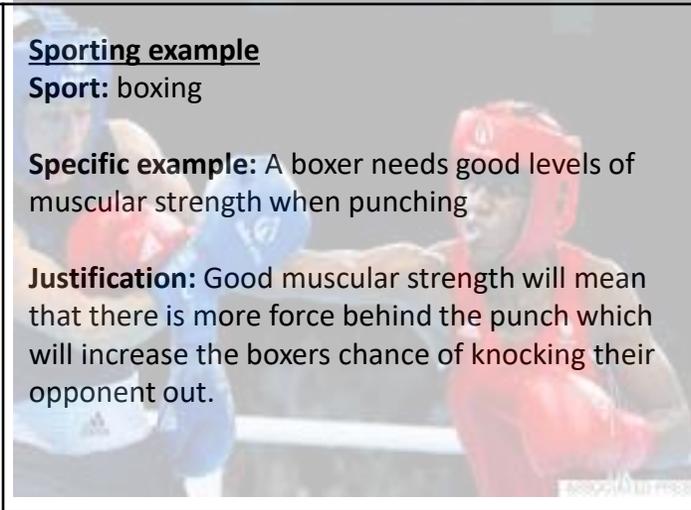
A reduction in body fat will improve performance in rock climbing as it will be easier for the climber to pull themselves up the wall/rocks. In turn, this will give them less chance of becoming fatigued.

**Tip:** If a question asks you to explain how an improvement in agility will be beneficial you need to say what an improvement will allow and the impact this will have on performance

# Muscular Strength



**Definition:** The maximum force (in kg or N) that can be generated by a muscle or muscle group

<p><b>Sporting example</b> Sport: rugby</p> <p><b>Specific example:</b> Rugby players during the scrum will require high levels of muscular strength</p> <p><b>Justification:</b> The more strength the rugby players have the greater chance they have of moving the opposition and gaining an advantage</p> 	<p><b>Sporting example</b> Sport: gymnastics</p> <p><b>Specific example:</b> A gymnast requires high levels of muscular strength when performing on the rings</p> <p><b>Justification:</b> Having high levels of muscular strength means they are able to perform successfully on the rings as they can support their own body weight and maintain certain positions, like the crucifix position.</p> 	<p><b>Sporting example</b> Sport: boxing</p> <p><b>Specific example:</b> A boxer needs good levels of muscular strength when punching</p> <p><b>Justification:</b> Good muscular strength will mean that there is more force behind the punch which will increase the boxers chance of knocking their opponent out.</p> 
<p><b>Methods of training</b></p> <p><b>Circuit training:</b> consists of a series of exercises arranged in an order</p> <p><b>Free weights:</b> use of low load resistance and high reps to develop muscular endurance</p> <p><b>Plyometrics:</b> repeating an explosive movement such as hopping, skipping and box jumps</p>	<p><b>Improving muscular endurance</b></p> <p><i>Frequency</i> - need to train at least 3-5 times a week</p> <p><i>Intensity</i> - high intensity. When doing weight training, low reps and high weight</p> <p><i>Time</i> - gradually increase length of session/number of reps and sets</p> <p><i>Type</i> - free weights, circuit training and plyometrics</p>	<p><b>Testing muscular strength</b></p> <p><b>Test:</b> hand grip dynamometer test</p> <p><b>Equipment:</b> hand grip dynamometer</p> <p><b>Key advantages:</b></p> <ul style="list-style-type: none"> <li>• Simple test that is easy to administer</li> <li>• A lot of normative data available</li> </ul> <p><b>Key disadvantages:</b></p> <ul style="list-style-type: none"> <li>• Only measures grip strength</li> <li>• Dynamometer must be calibrated correctly</li> </ul>

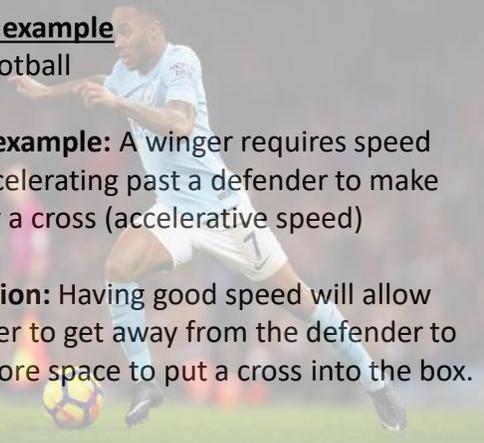
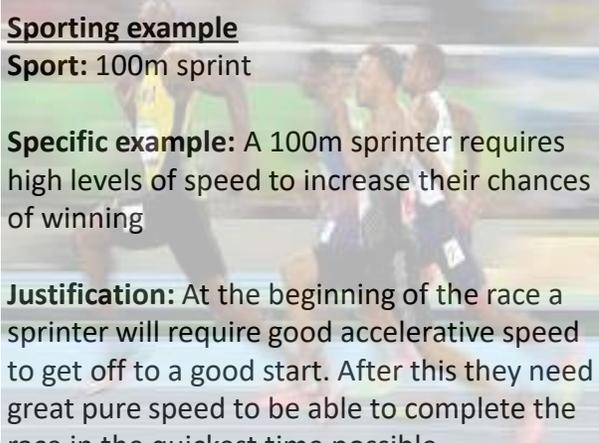
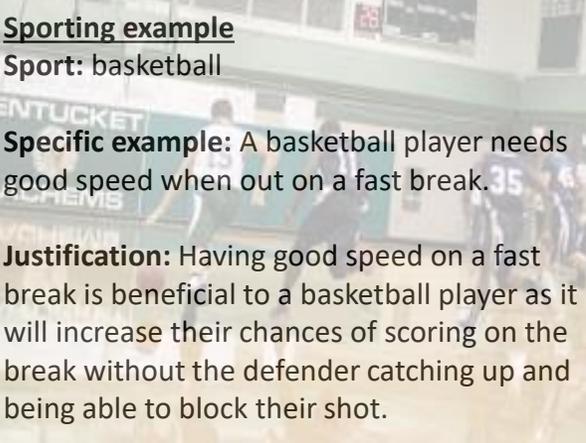
**Exam question:** Explain one reason why a basketball player requires good levels of muscular strength.

One reason that a basketball player requires good levels of muscular strength is to ensure that they can get enough power on their passes. Without good levels of strength it would make the passes easier to intercept or they might not make it to where they are intended to go and this could result in a turnover.

**Tip:** If you are asked to explain one reason you must first identify a specific example from that sport. You then must explain why that specific example requires that component of fitness



**Definition:** Distance divided by time taken. Speed is measured in metres per second (m/s). There are 3 types of speed: accelerative speed, pure speed and speed endurance.

<p><b><u>Sporting example</u></b> <b>Sport:</b> football</p> <p><b>Specific example:</b> A winger requires speed when accelerating past a defender to make space for a cross (accelerative speed)</p> <p><b>Justification:</b> Having good speed will allow the winger to get away from the defender to create more space to put a cross into the box.</p> 	<p><b><u>Sporting example</u></b> <b>Sport:</b> 100m sprint</p> <p><b>Specific example:</b> A 100m sprinter requires high levels of speed to increase their chances of winning</p> <p><b>Justification:</b> At the beginning of the race a sprinter will require good accelerative speed to get off to a good start. After this they need great pure speed to be able to complete the race in the quickest time possible.</p> 	<p><b><u>Sporting example</u></b> <b>Sport:</b> basketball</p> <p><b>Specific example:</b> A basketball player needs good speed when out on a fast break.</p> <p><b>Justification:</b> Having good speed on a fast break is beneficial to a basketball player as it will increase their chances of scoring on the break without the defender catching up and being able to block their shot.</p> 
<p><b><u>Methods of training</u></b></p> <p><b>Acceleration sprints:</b> this is when speed is gradually increased from jogging to striding to running and then sprinting at maximum.</p> <p><b>Hollow sprints:</b> this is similar to interval training. It is a period of work (sprint) followed by a hollow period (rest or walking)</p> <p><b>Interval training:</b> intervals should be short and at high intensity. The higher the intensity, the greater the work period.</p>	<p><b><u>Types of speed</u></b></p> <p><b>Accelerative speed:</b> this is 0-35m. For example, a hockey player sprinting onto a pass from a standing position</p> <p><b>Pure speed:</b> this is up to 60m. For example, a rugby player intercepts a pass on the half way line and sprints to score a try (50m)</p> <p><b>Speed endurance:</b> this is sprints with short recovery periods in between. This type of speed is most common for games players as they require bursts of speed throughout a game.</p>	<p><b><u>Testing speed</u></b></p> <p><b>Test:</b> 35m sprint test (The Illinois agility test also tests speed)</p> <p><b>Equipment:</b> stopwatch, measuring tape</p> <p><b>Key advantages:</b></p> <ul style="list-style-type: none"> <li>• Good test of accelerative speed</li> <li>• Quick and easy test to perform</li> </ul> <p><b>Key disadvantages:</b></p> <ul style="list-style-type: none"> <li>• Only measures accelerative speed</li> <li>• Can be hard to get accurate results due to human error</li> </ul>

**Exam question:** Explain why speed is an important component of fitness for a netball player.

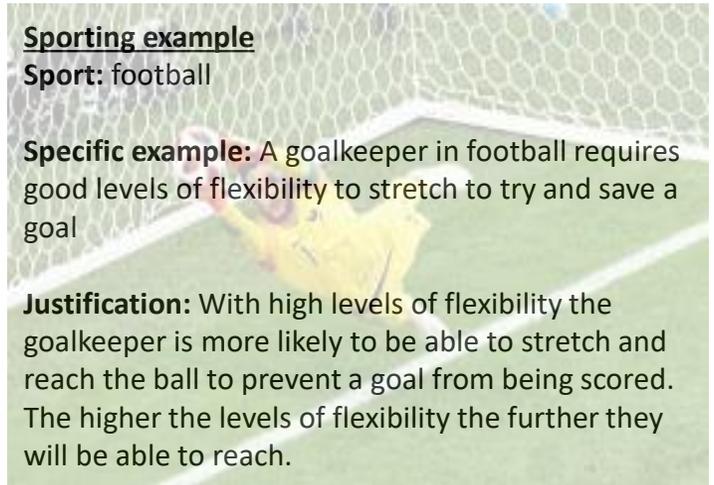
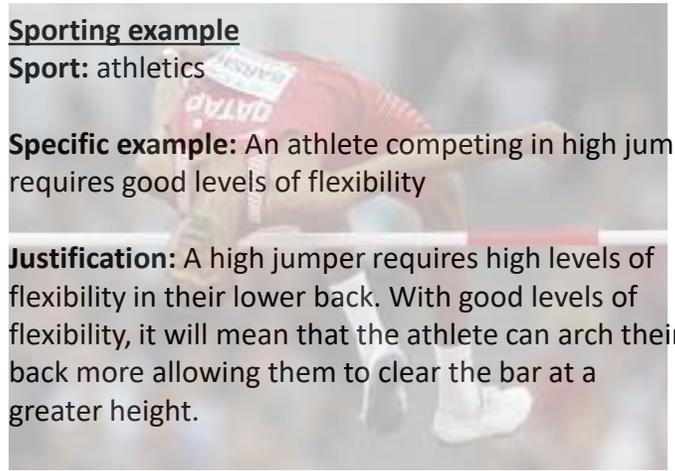
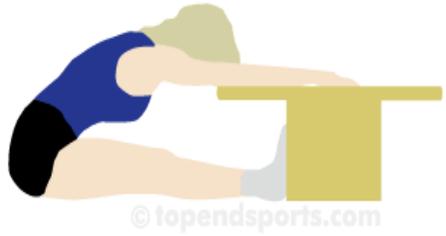
Speed is an important component of fitness for a netball player when they are accelerating away from a defender. The more speed the player has the more likely they are to create space allowing their teammate to pass them the ball without risk of the ball being intercepted. This is accelerative speed.

**Tip:** Make sure that a specific example from the sport has been provided. You must then explain how this will have a positive impact on their performance. To show even more knowledge you can also name the type of speed

# Flexibility



**Definition:** The ability to move all joints fluidly through their complete range of movement smoothly

<p><b>Sporting example</b> <b>Sport:</b> athletics</p> <p><b>Specific example:</b> An athlete competing in the hurdles requires good levels of flexibility</p> <p><b>Justification:</b> With good levels of flexibility a hurdler is able to clear the hurdles successfully and with the correct technique which will increase their chance of winning the race</p> 	<p><b>Sporting example</b> <b>Sport:</b> football</p> <p><b>Specific example:</b> A goalkeeper in football requires good levels of flexibility to stretch to try and save a goal</p> <p><b>Justification:</b> With high levels of flexibility the goalkeeper is more likely to be able to stretch and reach the ball to prevent a goal from being scored. The higher the levels of flexibility the further they will be able to reach.</p> 	<p><b>Sporting example</b> <b>Sport:</b> athletics</p> <p><b>Specific example:</b> An athlete competing in high jump requires good levels of flexibility</p> <p><b>Justification:</b> A high jumper requires high levels of flexibility in their lower back. With good levels of flexibility, it will mean that the athlete can arch their back more allowing them to clear the bar at a greater height.</p> 
<p><b>Methods of training</b></p> <p><b>Static stretching:</b> There are two different types, active and passive. Active stretching is alone, when the individual applies force. Passive stretching involves a partner or object to help perform the stretch.</p> <p><b>Ballistic stretching:</b> Involves fast, jerky movements and uses momentum to move muscles/joints beyond their normal range of movement.</p> <p><b>PNF:</b> A partner is used to provide resistance. It inhibits the stretch reflex allowing to stretch further. Leads to the most rapid improvements in flexibility.</p>	<p><b>Testing flexibility</b></p> 	<p><b>Testing flexibility</b></p> <p>The name of the test for flexibility is the sit and reach test.</p> <p>The units of measurement for the sit and reach test is cm.</p> <p>The sit and reach test, tests flexibility of the lower back and hamstrings</p>

**Exam question:** Explain how an improvement in flexibility will improve performance in swimming.

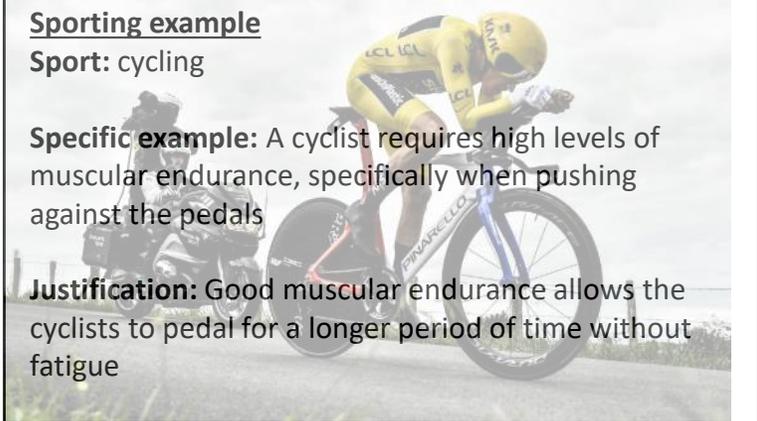
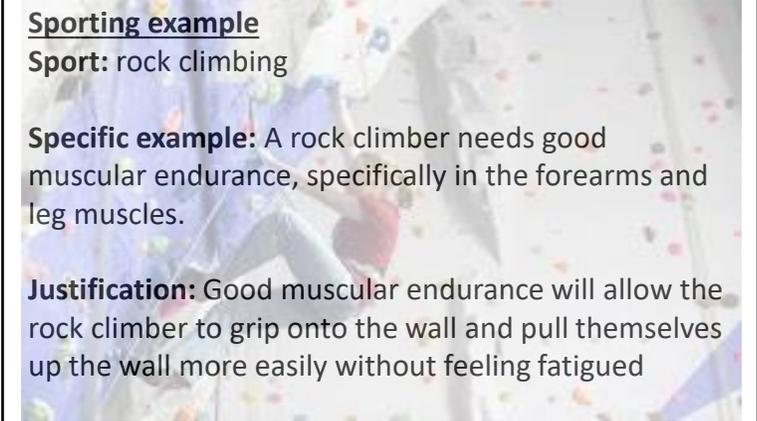
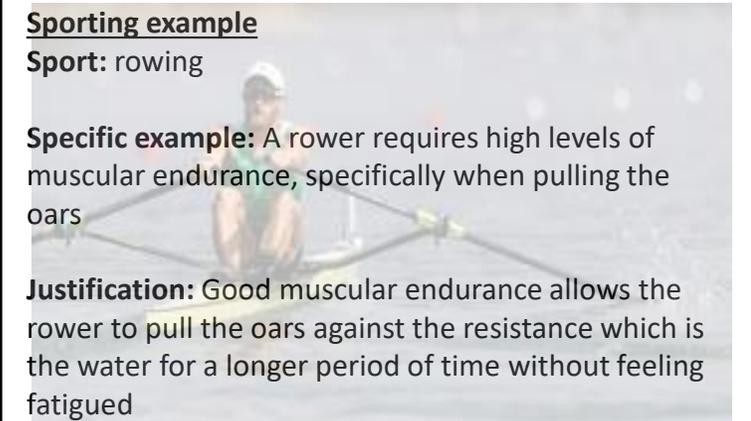
Swimmers need good flexibility in their shoulders, especially when competing in the butterfly. An improvement in flexibility in the shoulders would allow a greater range of movement at the shoulders. In turn this would provide a smoother and more efficient stroke allowing them to reach further and pull more water. This will increase the speed at which they can cover the distance.

**Tip:** If it asks you for how an improvement in a component of fitness will improve performance you should first identify why that component is important. You should then say what will happen with an improvement and finally the impact this will have on the performance

# Muscular Endurance



**Definition:** The ability of the muscular system to work efficiently, in which a muscle can repeatedly contract over a period of time against a light to moderate fixed-resistance load.

<p><b>Sporting example</b> <b>Sport:</b> cycling</p>  <p><b>Specific example:</b> A cyclist requires high levels of muscular endurance, specifically when pushing against the pedals</p> <p><b>Justification:</b> Good muscular endurance allows the cyclists to pedal for a longer period of time without fatigue</p>	<p><b>Sporting example</b> <b>Sport:</b> rock climbing</p>  <p><b>Specific example:</b> A rock climber needs good muscular endurance, specifically in the forearms and leg muscles.</p> <p><b>Justification:</b> Good muscular endurance will allow the rock climber to grip onto the wall and pull themselves up the wall more easily without feeling fatigued</p>	<p><b>Sporting example</b> <b>Sport:</b> rowing</p>  <p><b>Specific example:</b> A rower requires high levels of muscular endurance, specifically when pulling the oars</p> <p><b>Justification:</b> Good muscular endurance allows the rower to pull the oars against the resistance which is the water for a longer period of time without feeling fatigued</p>
<p><b>Methods of training</b></p> <p><b>Circuit training:</b> consists of a series of exercises arranged in an order</p> <p><b>Free weights:</b> use of low load resistance and high reps to develop muscular endurance</p> <p><b>Plyometrics:</b> repeating an explosive movement such as hopping, skipping and box jumps</p>	<p><b>Improving muscular endurance</b></p> <p><i>Frequency</i> - need to train at least 3-5 times a week</p> <p><i>Intensity</i> - to improve muscular endurance you need to use a low load and 15-25 reps</p> <p><i>Time</i> - train for at least 30 minutes to improve muscular endurance and gradually increase the time</p> <p><i>Type</i> - free weights, circuit training and plyometrics</p>	<p><b>Testing muscular endurance</b></p> <p><b>Tests:</b> one minute sit up test and one minute press up test</p> <p><b>Equipment:</b> stopwatch and a gym mat</p> <p><b>Key advantages:</b></p> <ul style="list-style-type: none"> <li>• They are quick and easy to set up</li> <li>• They require minimal equipment</li> </ul> <p><b>Key disadvantages:</b></p> <ul style="list-style-type: none"> <li>• They must be technically correct - affects validity and could cause injury</li> <li>• Maximal test/high intensity</li> </ul>

**Exam question:** Explain why tennis players need good levels of muscular endurance.

Tennis players need good levels of muscular endurance to ensure they can continue to strike the ball with the same amount of power throughout the game. Without good levels of muscular endurance their muscles will become fatigued and therefore their shots will become less effective.

**Tip:** You must provide a specific example from the sport that requires them to have good muscular endurance. You should then explain why it is needed and what would happen without it

# THE Skill Components Of Fitness– WHAT YOU NEED TO KNOW



## Agility

**DEFINITION:** THE ABILITY TO CHANGE DIRECTION AT SPEED, WITHOUT LOSING BALANCE OR TIME

**EXAMPLE:** A FOOTBALLER TRYING TO BEAT AN OPPONENT WILL CHANGE DIRECTION QUICKLY TO AVOID THE OPPOSITION

## Coordination

**DEFINITION:** THE ABILITY TO USE PARTS OF THE BODY TOGETHER TO MOVE SMOOTHLY AND ACCURATELY.

**EXAMPLE:** HAND EYE – TENNIS PLAYERS

FOOT-EYE– FOOTBALL PLAYERS

HAND TO HAND – BASKETBALL PLAYERS

## Reaction Time

**DEFINITION:** “THE TIME TAKEN FOR A SPORTS PERFORMER TO RESPOND TO A STIMULUS AND THE INITIATION OF THEIR RESPONSE

**EXAMPLE:** A GOALKEEPER REACTING TO A SHOT. A SPRINTER REACTING TO THE STAR GUN

## Balance

**DEFINITION:** THE ABILITY TO MAINTAIN CENTRE OF MASS OVER A BASE OF SUPPORT

**EXAMPLE:** THERE ARE 2 TYPES; STATIC BALANCE AND DYNAMIC BALANCE.

**STATIC** – MAINTAINING BALANCE IN A STATIONARY POSITION, E.G A GYMNAST HOLDING THE HEADSTAND

**DYNAMIC** - MAINTAINING BALANCE IN MOTION, E.G A GYMNAST PERFORMING A CONTROLLED CARTWHEEL.



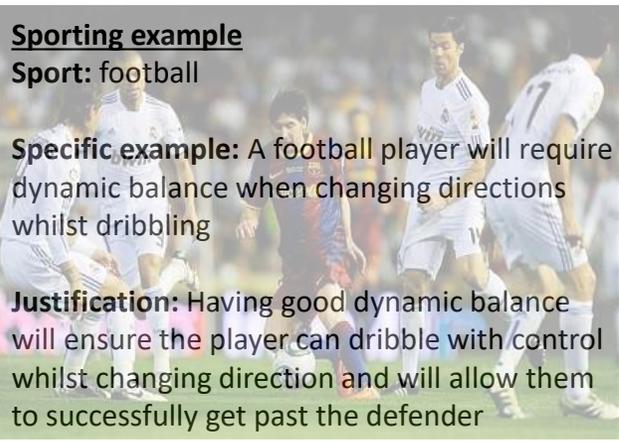
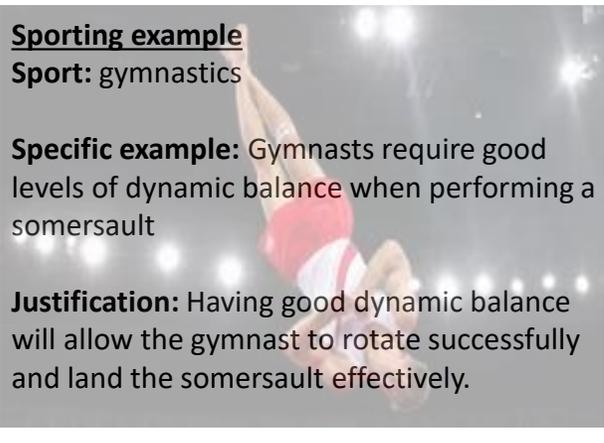
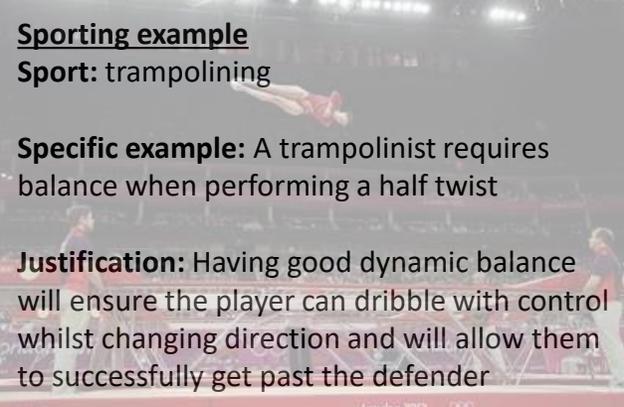
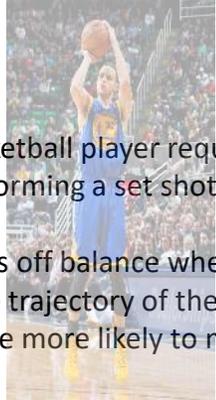
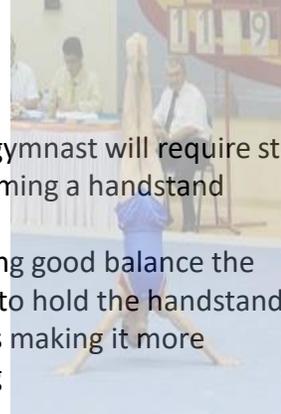
START

FINISH

# Balance



**Definition:** The ability to maintain your centre of mass over a base of support. There are two types: static balance and dynamic balance.

<p><b>Types of balance</b> There are two types of balance:</p> <ul style="list-style-type: none"> <li>• <b>Static</b> balance - this is when the performer is still</li> <li>• <b>Dynamic</b> balance - this is whilst the performer is moving</li> </ul>	<p><b>Sporting example</b> <b>Sport:</b> football</p> <p><b>Specific example:</b> A football player will require dynamic balance when changing directions whilst dribbling</p> <p><b>Justification:</b> Having good dynamic balance will ensure the player can dribble with control whilst changing direction and will allow them to successfully get past the defender</p> 	<p><b>Sporting example</b> <b>Sport:</b> gymnastics</p> <p><b>Specific example:</b> Gymnasts require good levels of dynamic balance when performing a somersault</p> <p><b>Justification:</b> Having good dynamic balance will allow the gymnast to rotate successfully and land the somersault effectively.</p> 
<p><b>Sporting example</b> <b>Sport:</b> trampolining</p> <p><b>Specific example:</b> A trampolinist requires balance when performing a half twist</p> <p><b>Justification:</b> Having good dynamic balance will ensure the player can dribble with control whilst changing direction and will allow them to successfully get past the defender</p> 	<p><b>Sporting example</b> <b>Sport:</b> basketball</p> <p><b>Specific example:</b> A basketball player requires good balance when performing a set shot</p> <p><b>Justification:</b> If a player is off balance when shooting it will affect the trajectory of the shot and they will therefore be more likely to miss</p> 	<p><b>Sporting example</b> <b>Sport:</b> gymnastics</p> <p><b>Specific example:</b> A gymnast will require static balance when performing a handstand</p> <p><b>Justification:</b> By having good balance the gymnast will be able to hold the handstand in a stable position thus making it more aesthetically pleasing</p> 

**Exam question: Explain how an improvement in balance would help in karate.**

Balance is the ability to maintain your centre of mass over a base of support and there are two types: static and dynamic. In karate they would primarily require dynamic balance as they move around the dojo. An improvement in balance would mean that the athlete will have greater stability when attacking and also when defending from their opponent. This would increase their chances of winning as they will be less likely to be caught off balance making it harder for their opponent to land points.

**Tip:** If a question asks you to explain how an improvement in agility will be beneficial you need to say what an improvement will allow and the impact this will have on performance

# Co-ordination



**Definition:** The ability of the body parts to work together to move smoothly and accurately

<p><b>Types of co-ordination</b></p> <p>There are different kinds of co-ordination. Where possible try and be specific with what type of co-ordination the performer requires. Some examples:</p> <ul style="list-style-type: none"> <li>• Hand-eye co-ordination</li> <li>• Foot-eye co-ordination</li> </ul> <p>Co-ordination can also include linking different phases of a skill together. For example, the hop, step and jump in triple jump</p>	<p><b>Sporting example</b></p> <p><b>Sport:</b> tennis</p> <p><b>Specific example:</b> A tennis player requires good co-ordination when returning the ball with the racket</p> <p><b>Justification:</b> Having good hand-eye co-ordination will allow the player to hit the ball accurately. By being able to hit the ball accurately the player is more likely to secure the points</p>	<p><b>Sporting example</b></p> <p><b>Sport:</b> basketball</p> <p><b>Specific example:</b> A basketball player requires good co-ordination when performing a layup</p> <p><b>Justification:</b> Having good co-ordination allows the player to link the different phases of the layup together into one smooth movement. This means they are more likely to score the layup.</p>
<p><b>Sporting example</b></p> <p><b>Sport:</b> football</p> <p><b>Specific example:</b> A football player requires good foot-eye co-ordination when dribbling.</p> <p><b>Justification:</b> Having good foot-eye co-ordination allows the player to dribble whilst keeping the ball under control and therefore they are more likely to keep possession of the ball.</p>	<p><b>Sporting example</b></p> <p><b>Sport:</b> athletics</p> <p><b>Specific example:</b> A triple jump athlete requires good co-ordination to compete in their event</p> <p><b>Justification:</b> Having good co-ordination allows the athlete to successfully link the three phases of the jump into one smooth movement. This increases their chances of jumping further.</p>	<p><b>Sporting example</b></p> <p><b>Sport:</b> cricket</p> <p><b>Specific example:</b> A cricket player requires hand-eye co-ordination when performing a catch in the field</p> <p><b>Justification:</b> Having good hand-eye co-ordination will allow the fielder to move into the correct position to catch the ball successfully.</p>

**Exam question:** Explain why co-ordination is needed in basketball.

One reason that co-ordination is needed in basketball is when performing a layup. A basketball player needs co-ordination when performing a layup to link the different phases of the layup together into one smooth movement making it more likely that they will score.

**Tip:** If it asks you for why a component of fitness is needed in a named sport, always provide a specific example from within that sport and explain why that skill requires that component of fitness

# Reaction Time



**Definition:** The time taken for a sports performer to initiate a response to a stimulus

## What does the definition mean?

**Response** - the movement/action initiated by the sports performer

**Stimulus** - this is what the sports performer is reacting to e.g. a sound or a movement

### **Example (100m sprint)**

**Stimulus** - starting gun

**Response** - pushing out of the starting blocks

## Sporting example

**Sport:** swimming

**Specific example:** A 50m freestyle swimmer needs a good reaction time at the beginning of the race

**Justification:** A 50m freestyle swimmer needs a good reaction time because the race is won in such a short period of time. A slow reaction time can reduce their chances of winning the race. The stimulus is the starting beep and the reaction is the dive from the block

## Sporting example

**Sport:** volleyball

**Specific example:** A volleyball player will require a good reaction time after their opponent has played a spike shot

**Justification:** The volleyball player requires a good reaction time so they can quickly move to the correct space on the court to return the shot. With a poor reaction time it is likely they will miss the ball and the opposing team will score a point

## Sporting example

**Sport:** 100m sprinting

**Specific example:** A 100m sprinter requires a good reaction time at the beginning of the race

**Justification:** A 100m sprinter requires a good reaction time as it will give the sprinter the lead at the start of the race. There are fine margins between winning and losing so it is important they get a quick start. The stimulus is the gun and the reaction is pushing on the block

## Sporting example

**Sport:** football

**Specific example:** A goalkeeper requires a good reaction time

**Justification:** Having a good reaction time will mean that the goalkeeper can react quicker to the ball being struck to move into a position to attempt to save the shot. With a poor reaction time, it is more likely that the goalkeeper will not be able to save the shot.

## Sporting example

**Sport:** boxing

**Specific example:** A boxer receives a punch from their left and rapidly moves their head to avoid being struck

**Justification:** Having a good reaction time will mean that the boxer can avoid their opponents punches which in turn will reduce the number of points that they concede

## **Exam question: Explain why a fast reaction time is important for a sprinter in a 100m race.**

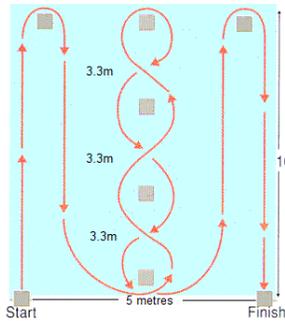
Reaction time is important for a sprinter so the sprinter can react to the stimulus at the start of the race. This will allow them to get away from the blocks quicker, giving them a better start which, in turn, increases their chances of winning.

**Tip:** Always provide a specific example from the sport. You must then explain how the component of fitness will benefit that specific example

# Agility



**Definition:** The ability of a sports performer to quickly and precisely move or change direction without losing balance or time

<p><b>Sporting example</b>  <b>Sport:</b> Basketball</p> <p><b>Specific example:</b> A basketball player will need good agility on the court to get past their defender when performing a cross over</p> <p><b>Justification:</b> By having good agility the basketball player will be able to quickly change direction which will allow them to create space past their defender which may open up a scoring opportunity.</p>	<p><b>Sporting example</b>  <b>Sport:</b> karate</p> <p><b>Specific example:</b> In karate an athlete needs good agility in defence to side step an opponent's attack</p> <p><b>Justification:</b> By being able to successfully side step an opponent's attack you will be in a position to counter-attack</p>	<p><b>Sporting example</b>  <b>Sport:</b> tennis</p> <p><b>Specific example:</b> Tennis players require agility to move efficiently around the court to reach the ball to return the shot</p> <p><b>Justification:</b> Having good agility will allow the tennis player to change direction quickly to get into the correct position on the court to return the shot</p>
<p><b>Methods of training</b></p> <p>There are no specific methods of training that you need to learn for agility. However, agility is closely linked to speed so by improving speed, you will be improving agility:</p> <ul style="list-style-type: none"> <li>• Interval training</li> <li>• Acceleration sprints</li> <li>• Hollow sprints</li> </ul> <p>You can also carry out SAQ drills (speed, agility, quickness)</p>	<p><b>Testing agility</b></p>  <p>The name of the test is the Illinois Agility test. It is a maximal test. The dimensions of the test are: 10m long, 5m wide and the cones in the middle are 3.3m apart</p>	<p><b>Units of measurement</b></p> <p>The Illinois agility test is measured in seconds so this is the units of measurement for agility.</p> <p><b>Illinois agility test</b></p> <p>This is a valid test for agility as it tests a person's speed and ability to change direction.</p>

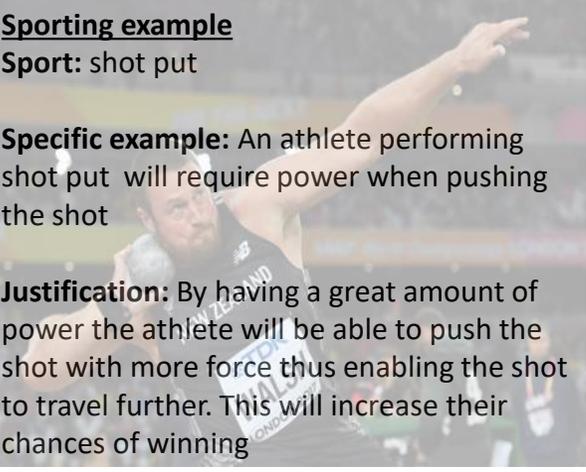
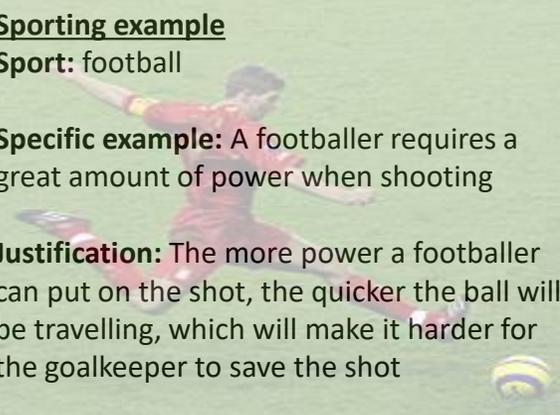
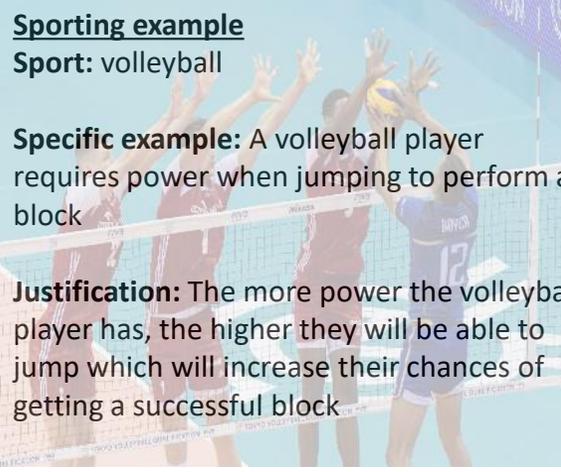
**Exam question:** Explain how an improvement in agility will improve the performance of a basketball player?

An improvement in agility for a basketball player will allow them to change direction more effectively. This will mean that they will be able to get away from their defender easier to create space and potentially a scoring opportunity.

**Tip:** If a question asks you to explain how an improvement in agility will be beneficial you need to say what an improvement will allow and the impact this will have on performance



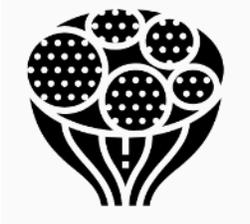
**Definition:** The work done in a unit of time. It is calculated in the following way:  $\text{Power} = \text{force (kg)} \times \text{distance (m)} / \text{time (min or s)}$ . It is measured in  $\text{kgm/s}$

<p><b>Sporting example</b> <b>Sport:</b> shot put</p> <p><b>Specific example:</b> An athlete performing shot put will require power when pushing the shot</p> <p><b>Justification:</b> By having a great amount of power the athlete will be able to push the shot with more force thus enabling the shot to travel further. This will increase their chances of winning</p> 	<p><b>Sporting example</b> <b>Sport:</b> football</p> <p><b>Specific example:</b> A footballer requires a great amount of power when shooting</p> <p><b>Justification:</b> The more power a footballer can put on the shot, the quicker the ball will be travelling, which will make it harder for the goalkeeper to save the shot</p> 	<p><b>Sporting example</b> <b>Sport:</b> volleyball</p> <p><b>Specific example:</b> A volleyball player requires power when jumping to perform a block</p> <p><b>Justification:</b> The more power the volleyball player has, the higher they will be able to jump which will increase their chances of getting a successful block</p> 
<p><b>Methods of training</b></p> <p><b>Circuit training:</b> consists of a series of exercises arranged in an order</p> <p><b>Free weights:</b> use of low load resistance and high reps to develop muscular endurance</p> <p><b>Plyometrics:</b> repeating an explosive movement such as hopping, skipping and box jumps</p>	<p><b>Improving power</b></p> <p><i>Frequency</i> - need to train at least 3-5 times a week</p> <p><i>Intensity</i> - to improve power you need to train at a minimum of 75% of 1RM</p> <p><i>Time</i> - if doing free weights you should be performing a minimum of 3 sets and around 10-12 reps</p> <p><i>Type</i> - free weights, circuit training and plyometrics</p>	<p><b>Testing power</b></p> <p><b>Test:</b> vertical jump test</p> <p><b>Equipment:</b> vertical jump test board, chalk</p> <p><b>Key advantages:</b></p> <ul style="list-style-type: none"> <li>• Quick and simple to perform</li> <li>• No cost involved</li> </ul> <p><b>Key disadvantages:</b></p> <ul style="list-style-type: none"> <li>• Only tests power of quadriceps</li> <li>• Technique plays a big part in achieving a good score</li> </ul>

**Exam question: Explain why power is an important component of fitness for a volleyball player**

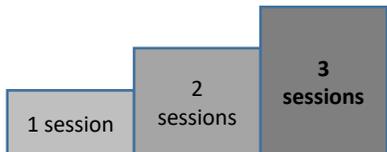
Power is needed in volleyball when performing a spike. The more power a volleyball player has the greater the chance they have of scoring the point as it will be harder for their opponent to return the ball.

**Tip:** For this type of question it is really important that you provide a specific example from within the sport as to why that component of fitness is needed. Because it is asking you to explain, you then must give reason as to why that specific example requires that component of fitness.



## FREQUENCY

The number of training sessions completed over a period of time, usually per week. It should be increased gradually over time."



## INTENSITY

"This is about how hard you train. It should be increased gradually over time."



F...

I...

T...

T...

## TIME

This is about how long you train for. It should gradually increase over time."

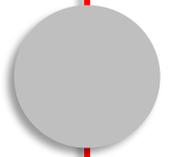
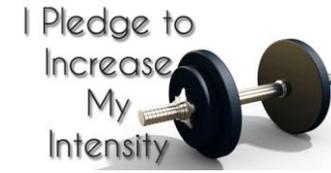


## TYPE

This is related to the principle of specificity. If a training method is selected to improve a specific component of fitness there is more likely to be a positive improvement in performance."



# THE BASIC PRINCIPLES OF TRAINING– WHAT YOU NEED TO KNOW



## Specificity

Training should be specific to or should match the individual's sport or activity.

## Progressive Overload

Training must be demanding enough to cause the body to adapt. In order to make fitness gains training must get harder over time.

## Adaptation

The way your body increases its ability to cope with training loads

## Reversibility

Fitness can be lost if training is stopped, for example due to injury or if the intensity of training is not sufficient to cause adaptation.

## Rest and Recovery

Rest is the period of time provided for Recovery to take place. Recovery allows damage to be repaired and energy to be replenished.

## Individual Needs

Training needs to be different depending on and individuals needs, such as age, fitness levels, availability of time, injury, health etc.

## Variation

It's important to vary training routines to avoid boredom and maintain enjoyment

(acronyms)



SIR RAP V

### Basic Principles of Training

**Frequency** - the number of training sessions you complete over a period of time. Aim for 3-5 sessions per week.

**Intensity** - how hard you train. Intensity can be prescribed using HR or RPE.

**Time** - how long you train for. Aim for 15 to 60 minutes of activity, depending on the intensity. If you have low levels of fitness, then reduce intensity and increase time.

**Type** - how you train. The appropriate method(s) of training should be selected according to your needs and goals. For example, to train for muscular strength, endurance and power, you could do circuit training, or use free weights in the gym.

### Applying the Principles of Training - Example

An athlete who is looking to develop their aerobic endurance will apply the principles of training to their training programme.

**F** - initially they will start with 3 sessions a week and this will gradually increase to at least 5 sessions over the course of the training programme

**I** - the athlete will initially begin training at 60% of their MHR and this will gradually increase to 85% of MHR over the course of the training programme

**T** - the athlete may initially begin at 15 minutes per session and this will gradually increase to 60 minutes of continuous exercise over the course of the training programme

**T** - as they are looking to develop their aerobic endurance they will use continuous, fartlek and interval training.

### Additional Principles of Training

**Specificity** - training should be specific to your preferred sport or activity, or developing physical/skill related fitness goals

**Individual differences/needs** - the programme should be designed to meet your training goals, needs, ability, level of fitness, skill level and exercise likes/dislikes.

**Reversibility** - if you stop training, or the intensity of training is not sufficient to cause adaptation, training effects are reversed. Reversibility is also known as de-training.

**Rest and recovery** - these are essential to allow the body to repair and adapt, and for renewal of body tissues. If your body doesn't get a chance to recover then the rate of progression can be reduced.

**Adaptation** - this occurs during the recovery period after the training session is complete. Adaptation is how your body increases its ability to cope with training loads.

**Progressive overload** - in order to progress, training needs to be demanding enough to cause your body to adapt, improving performance.

**Variation** - it is important to maintain interest; this helps an individual to keep to their training schedule. Vary your training programme to avoid boredom and maintain enjoyment.

### Applying the Principles of Training - Example

An athlete who is looking to develop their aerobic endurance will apply the principles of training to their training programme.

**Specificity** - continuous (long distance runners, beginners), interval training (long distance runners, games players), fartlek training (cross country, games players)

**Individual differences/needs** - the athlete finds continuous training boring as it does not relate to their sport. This would mean that their training programme would focus on other methods as it is more suited to the athlete

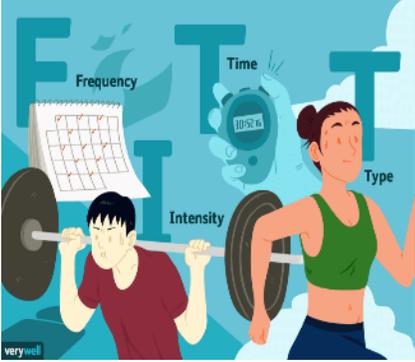
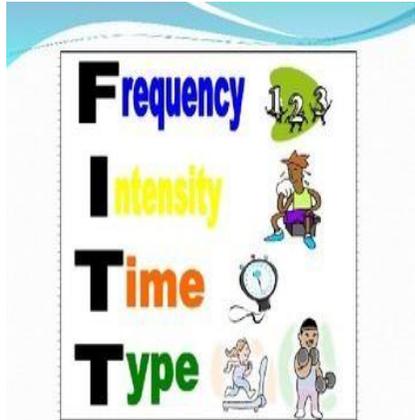
**Variation** - throughout the course of the week/training programme the athlete should use a range of methods to prevent boredom

**Progressive overload** - see FITT

# FITT Principle

The FITT principle makes up the basic principles of training.



<p><b>Frequency</b> Frequency is the number of training sessions you complete over a period of time. You should aim to complete 3-5 sessions per week.</p>	<p><b>Intensity</b> Intensity is how hard you train. Intensity can be prescribed using heart rate (HR) or rated perceived exertion (RPE)</p>	<p><b>Time</b> Time is how long you train for. Aim for 15-60 minutes depending on the intensity. If you have low levels of fitness, reduce intensity and increase time</p>	<p><b>Type</b> Type refers to how you train. The appropriate method of training should be selected e.g. for speed you could use acceleration or hollow sprints or interval training.</p>
<p><b>Scenario</b> Kelly has designed a training session which she is going to deliver to her classmates. The aim of her circuit is to improve muscular endurance. She has 8 stations in the circuit and participants will work for 30 seconds at each station.</p> <p><i>Frequency</i> - this would gradually increase from 3 sessions per week to 5 sessions per week.</p> <p><i>Intensity</i> - Kelly could increase the intensity of the circuit by increasing the work period or increasing the number of stations/circuits</p> <p><i>Time</i> - Kelly could increase the length of the session by increasing the time spent at each station. She could also reduce the rest period.</p>	<p><b>Scenario</b> Rudi has joined his local gym with the aim of improving his strength. Rudi has chosen to use free weights as his method of training.</p> <p><i>Frequency</i> - Rudi would gradually increase the number of times he goes to the gym from 3-5 times per week</p> <p><i>Intensity</i> - as Rudi is aiming to improve his strength he should be working at a high intensity and with low repetitions. He would begin at around 75% of 1RM and gradually build to 90% 1RM. Initially he may increase the reps and keep the weight the same. When the weight increases he may reduce the reps.</p> <p><i>Time</i> - Initially he may increase the reps and keep the weight the same. When the weight increases he may reduce the reps. Over time the number of sets will increase</p>	<p><b>Scenario</b> Sam is training to run in his first half marathon later on in the year. He has chosen to use interval training as one of his training methods to improve his aerobic endurance. He initially begins training 3 times a week, running for 2 minutes (60% HRmax) and walking/jogging for 1 minute. He repeats this until he has completed 30 minutes.</p> <p><i>Frequency</i> - Sam would gradually increase the number of training sessions from 3 to 5</p> <p><i>Intensity</i> - Sam would gradually increase his working intensity from 60% HRmax to 85% HRmax. He could also increase the intensity by reducing the rest period</p> <p><i>Time</i> - Sam would gradually increase the time of the work periods, decrease the time of the rest periods and increase the number of intervals per session</p>	 

# Additional Principles of Training



<p><b>Specificity</b> Specificity means that training should be specific to your preferred sport, activity or developing physical/skill-related fitness goals</p> <p>For example, a distance runner who is training for a cross country event is more likely to undertake fartlek training than continuous training.</p>	<p><b>Individual differences/needs</b> Individual differences/needs means that the programme should be designed to meet your training goals, needs, ability, level of fitness, skill level and exercise likes/dislikes.</p> <p>For example, a person with a low level of fitness will start with lower intensity and gradually build up.</p>	<p><b>Reversibility</b> Reversibility means that if you stop training, or the intensity of training is not sufficient to cause adaptation, training effects are reversed. Reversibility is also known as de-training.</p> <p>For example, if someone was to get injured and miss a prolonged period of time their fitness levels would decrease.</p>	<p><b>Rest and recovery</b> Rest and recovery are essential to allow the body to repair and adapt, and for the renewal of body tissues. If your body doesn't get a chance to recover then the rate of progression can be reduced.</p> <p>For example, if you train 7 days a week there is a chance injury could be caused from over-training.</p>
<p><b>Adaptation</b> Adaptation occurs during the recovery period after the training session is complete. Adaptation is how your body increases its ability to cope with training loads.</p> <p>For example, if you are taking part in strength training the adaptation over a period of time will be hypertrophy of the muscles.</p>	<p><b>Progressive overload</b> In order to progress, training needs to be demanding enough to cause your body to adapt, improving performance. Increase your training workload gradually. This can be done by increasing frequency, intensity or time, or by reducing recovery times. Do not use all of these methods at once, as the increase in workload may lead to over training resulting in injury or illness</p>	<p><b>Variation</b> It is important to maintain interest; this helps an individual keep to their training schedule. Vary your training programme to avoid boredom and maintain enjoyment.</p> <p>For example, if you are training 3 times a week to improve aerobic endurance, you could use the 3 different methods of training (fartlek, continuous, interval)</p>	<p><b>Memory acronym</b></p>  <p><b>SIR RAP V</b></p>

**Exam tip:** If you are asked a question about the additional principles of training, you should explain what the principle of training is, why it should be applied to a training programme and the effect this will have on the performer. 131

# THE BASIC PRINCIPLES OF TRAINING– WHAT YOU NEED TO KNOW



## Continuous Training

Training without a rest period, where the work rate is between 60-80% of the maximum heart rate.



## Fartlek Training

Training where the intensity changes and also the speed changes, e.g. walk, jog, run, sprint.



## Speed Training

Acceleration Sprints  
Hollow Sprints  
Interval training

## Plyometric Training

Is used to develop power and strength, involves explosive movements.

# THE BASIC PRINCIPLES OF TRAINING– WHAT YOU NEED TO KNOW



## KNOW



### Interval Training

Training where there is a burst of high intensity work, followed by a rest or low intensity work.



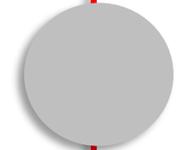
### Weight Training

Training that increases the muscle size and strength, and is when weights are lifted in repetitions and sets.



### Circuit Training

Training can be adapted to be health related, skill related or sport specific, and involves short periods of work at a variety of stations.



### Flexibility Training

Static Stretching  
Ballistic Stretching  
PNF



# Business Studies and ICT/Computer Science





## Dynamic Nature

New businesses evolve due to:

- Products or services becoming obsolete  
Due to technology and the changes in customer needs, more and more products are being introduced, which means the older alternatives are being replaced.
- Introduction of new technology  
Customers now want convenience and technology is the easiest and best way of them getting this. Also technology allows production methods to change, altering products.
- Changes in customer wants and needs  
People want and need different products and services constantly, meaning businesses have to provide these to ensure they do not fail and fulfil those needs/wants

## Adding Value

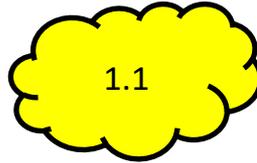
- Adding value is making a product worth more than the cost the business purchased it for.  
A business can add value through the following methods;
- Convenience  
Making the product/service quicker than any others to access.
  - Branding  
Giving the product a name/identity
  - Quality  
Making the quality stand out against competitors
  - Design  
Adding features that attract customers and meet their needs and wants
  - Unique selling points.  
Making the product different to competition

## Risk

A risk is a possibility of something going wrong.

- Business failure
- Financial loss
- lack of security

Calculated risks are those that have been statistically analysed, so strategies can be put into place to reduce the impact/level of risk.



## Reward

A reward is the gain/benefit from taking a risk.

The correlation between risk and the reward is that the larger the risk the larger the reward.

Rewards when starting up include

- Business success (Financial)
- Profit (Financial)
- Independence (Non Financial)



## Enterprise

Enterprise simply means business

- The 3 purposes of business are
1. To meet customer wants and needs
  2. To provide and produce goods /services
  3. To add value



These are provided by the person who starts the business, who is called the entrepreneur. The role of an entrepreneur is to

1. Organise resources,
2. makes business decisions,
3. takes risks.

Characteristics are the traits that successful business people have, allowing them to start and build a growing business.

## Wants and Needs

The most successful businesses are the ones who adapt to the changes of customer wants and needs the quickest.

Wants are often luxuries and items/services customers desire to have.

Needs are necessities, products or services that you cannot live/survive without.

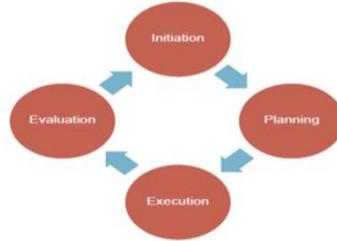
businesses can meet customer wants and needs by focussing on specific factors such as quality or design (see 1.2)



## 1.1 The phases of the project life cycle and the tasks carried out in each phase.

The four phases are;

- Initiation
- Planning
- Execution
- Evaluation



There are many advantages of following a project life cycle, for example;

- Provides a structured approach
- There are defined inputs and outputs for each phase
- Allows project manager to monitor the progress of the project

## 1.3 The inputs and outputs of each phase

An advantage of following the project life cycle is that each phase has clearly defined inputs and output:

- User requirements
- User constraints
- Feasibility report
- Legislation implications
- Phase review
- Project plan
- Test plan
- Final evaluation report



## 1.2 The interaction and iteration between the phases of the project life cycle.

Each phase of the project life cycle interacts with the phases before and after it.

If a phase is not completed it is not possible to move onto the next phase.

## 1.4 Initial project considerations.

One of the tasks to complete during the initiation phase is to set objectives for the project. The m are:

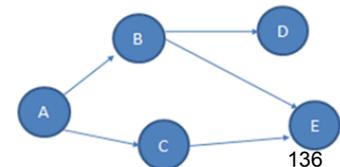
- SMART goals
- User requirements
- Success Criteria
- Constraints and limitations
- Mitigation of risks



## 1.5 Planning tools and the software types used to develop project plans

During the planning phase, the project manager will use planning tools to create documentation to help during the creation of the project. Planning tools include:

- Gantt charts
- PERT (Project Evaluation and review Technique)
- Critical path
- Visualisation diagram
- Flow charts, Mind map
- Task lists





Pre-production Documents	
Storyboard	An effective way to share the vision for a design. The product follows a clear sequence and idea for what each shot would include.
Visualisation Diagram	Used to show the layout of a web page, multimedia display, game scene, comic book, etc. It will show the position and content of different elements, e.g. images, graphics, text and navigation.
Mind maps	Often used for planning and creating ideas. Considers the main point and the branches out with different nodes.
Mood board	A type of collage consisting of images, text and samples of objects. This can be physical or digital. This visualisation tool can show the theme, colour schemes, font, textures and general appearance of the product.
Scripts	A document that outlines the aural (speaking), visual (what you can see), behavioral (body language) and lingual elements required.

Legislation	Key points
Copyright	<p>Copyright, Designs and Patents Act 1988</p> <p>It is illegal to use created material without permission. People can copyright protect their literacy, dramatic, musical, artistic work, films and sound recording</p> <p>You could face legal action -</p> <p>Fine of up to £325,000</p> <p>Imprisonment of up to five years for a first offence.</p> <p>Subsequent offences, fine of up to £0.6 million</p> <p>Imprisonment of up to 10 years.</p>
Trademarks	<p>A word, symbol, or phrase, used to identify a particular manufacturer or seller's products and distinguish them from the products of another.</p> <p>Once registered a trademark cannot be used without permission (diluted). Injunctions and damages can be granted</p>
Creative Commons	<p>A Creative Commons (CC) license is one of several public copyright licenses that enable the free distribution of an otherwise copyrighted work.</p> <p>A CC license is used when an author wants to give people the right to share, use, and build upon a work that they have created.</p> <p>CC provides an author flexibility (for example, they might choose to allow only non-commercial uses of their own work) and protects the people who use or redistribute an author's work from concerns of copyright infringement as long as they abide by the conditions that are specified in the license by which the author distributes the work.</p> <p>Works are governed by Copyright Law.</p>
Patent	<p>Patents Act 1977</p> <p>Patents protect inventions stop anyone from making or using the invention without the owner's permission. Last up to 20 years. Only exists in the country for which a patent has been granted. Generally speaking patents are used to protect the markets in which an invention is to be exploited.</p>

### What are work plans?

- Work plans are created to organise the sequence of steps that need to be performed to complete a project.
- They show the order the steps should be performed
- They show the time allocated to complete each step
- They may include information about required resources
- They may include information about the location for each step (eg different filming locations to record a video)
- They should include a contingency plan
- They can be displayed as a table or graphically in a Gantt chart.

