Topic: Pythagoras' Theorem		Year 10	Tier F	Term 3

What do I need to know?

- Able to find long and short sides of a right angle triangle using Pythagoras' Theorem.
- Model scenarios and apply Pythagoras' Theorem to solve problems.

How do I recognise this topic?

- Look for the key work **"Pythagoras"**.
- Questions will **always** involve a right angle triangle, Pythagoras does not work for any other triangles.
- Pythagoras' Theorem deals with the **sides** of a triangle, any other angle (other than the right angle) is irrelevant. You should have the measurements of at least 2 sides of a triangle.

Step by Step Guide

1. Identify and label where the **hypotenuse** is (longest side of a right angle triangle).
2. Identify if a short or long side is required.
3. Square both numbers.
4. Add the result (if working out the longest side) or find the difference between the two numbers (if working out a short side).
5. Square root. (check units)

Worked Example

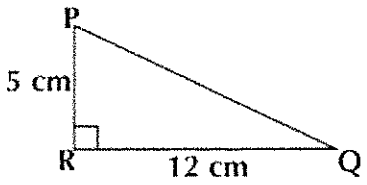
1) SQUARE THEM — SQUARE THE TWO NUMBERS that you are given, (use the x^2 button if you've got your calculator.)

2) ADD or SUBTRACT — To find the longest side, ADD the two squared numbers. $a^2 + b^2 = c^2$
To find a shorter side, SUBTRACT the smaller from the larger. $c^2 - b^2 = a^2$

3) SQUARE ROOT — Once you've got your answer, take the SQUARE ROOT (use the $\sqrt{}$ button on your calculator). $c = \sqrt{a^2 + b^2}$ $a = \sqrt{c^2 - b^2}$

EXAMPLES:

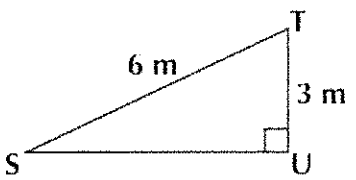
1. Find the length of side PQ in this triangle.



1) Square them: $a^2 = 5^2 = 25$, $b^2 = 12^2 = 144$
2) You want to find the longest side, so ADD: $a^2 + b^2 = c^2$
$25 + 144 = 169$
3) Square root: $c = \sqrt{169} = 13$ cm

Always check the answer's sensible — 13 cm is longer than the other two sides, but not too much longer, so it seems OK.

2. Find the length of SU to 1 decimal place.



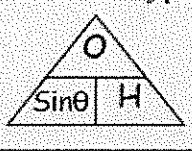
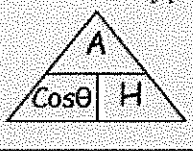
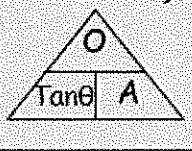
1) Square them: $b^2 = 3^2 = 9$, $c^2 = 6^2 = 36$
2) You want to find a shorter side, so SUBTRACT: $c^2 - b^2 = a^2$
$36 - 9 = 27$
3) Square root: $a = \sqrt{27} = 5.196...$
$= 5.2$ m (to 1 d.p.)

Check the answer is sensible — yes, it's a bit shorter than the longest side.

Topic: Trigonometry		Year 10	Tier F	TERM 3

What do I need to know?

- Label a right angle triangle with the key words "hypotenuse", "opposite" and "adjacent".
- Calculate unknown lengths of a right angle triangle using trigonometry.
- Calculate unknown angles of a right angle triangle using trigonometry.
- Recall and apply the exact trigonometric values.
- Learn the formula to the right.

SOH	CAH	TOA
$Sin\,\theta = \frac{Opp}{Hyp}$	$Cos\,\theta = \frac{Adj}{Hyp}$	$Tan\,\theta = \frac{Opp}{Adj}$
		

How do I recognise this topic?

- Involves a right angle triangle and another angle that is not 90°.
- Involves the maths functions "sin", "cos" and "tan".

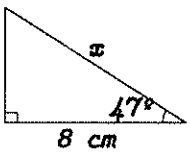
Step by Step Guide

1. Label the triangle with the key words.
2. Choose the appropriate trigonometric ratio.
3. Draw the formula triangle.
4. Cover what you need and use the triangle to work it out.
5. If working out an angle, press "shift" on the calculator before the appropriate trigonometric ratio.

Worked Example

Calculate a Length

Calculate the value of x.

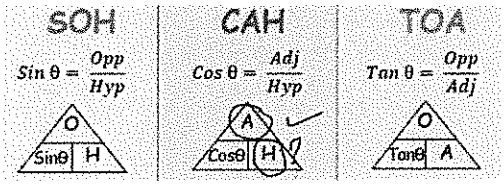


Give your answer correct to 1 decimal place.

The answer is 11.7 cm

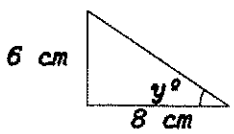
We use cos because we are involving the adjacent (8 cm) and the hypotenuse (x) of the triangle.

$$\cos 47 = \frac{8}{x}$$
$$x = \frac{8}{\cos 47}$$
$$x = 11.7$$



Calculate an Angle

Determine the value of y.

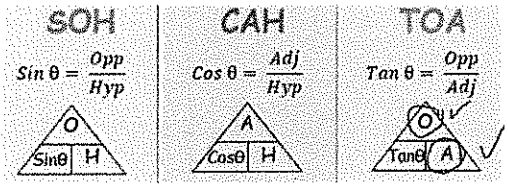


Give your answer correct to 1 decimal place.

The answer is 36.9 °

We use tan because we are involving the opposite (6 cm) and the adjacent (8) of the triangle.

$$\tan y = \frac{6}{8}$$
$$y = \tan^{-1}\left(\frac{6}{8}\right)$$
$$y = 36.9$$



Topic: Powers and Indices		Year 10	Tier F	Term 3

What do I need to know?

- Recall squares of numbers up to 15 x 15 and the cubes of 1, 2, 3, 4, 5 and 10, also knowing the corresponding roots
- Solve equations such as $x^2 = 25$, giving both the positive and negative roots.
- Use index laws for multiplication and division of integer powers.

How do I recognise this topic?

- Look for Keywords: Power; Index; Base; Root; Square; Cube.
- Look for the root symbol $\sqrt{\ }$ and cube root symbol $\sqrt[3]{\ }$
- Look for indices in the question e.g. x^2

General Tips

- When multiplying – add the powers
- When dividing – subtract the powers
- When raising to a power – multiply the powers
- Any number to the power 0 always equals 1.
- First 15 square numbers: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225
- First 5 Cube Numbers and 10 cubed: 1, 8, 27, 64, 125 and 1000

Laws of indices - summary

- $a^m \times a^n = a^{m+n}$
- $a^m \div a^n = a^{m-n}$
- $(a^m)^n = a^{mn}$
- $a^0 = 1$

Worked Example

Law 1: multiplying numbers in index form

$$a^x \times a^y = a^{(x+y)}$$

- Example 1: Simplify $8^3 \times 8^4$
- $= 8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8$
- $= 8^7$

$$5^7 \times 5^4 = 5^{11}$$

Law 2: dividing numbers in index form

$$a^x \div a^y = a^{(x-y)}$$

- Example 2: Simplify $3^6 \div 3^4$
- $= \frac{3\times3\times3\times3\times3\times3}{3\times3\times3\times3}$
- $= 3^2$

$$6^5 \div 6^2 = 6^3$$

Law 3: indices in brackets

$$(a^x)^y = a^{xy}$$

- Example 1: Simplify $(3^5)^3$
- $= 3\times3\times3\times3\times3\times3\times3\times3\times3\times3\times3\times3\times3\times3\times3$
- $= 3^{15}$

$$(4^{12})^3 = 4^{36}$$

Special rules. 1

Any number to the power of 0 is equal to 1

$35^0 = 1$ $41^0 = 1$

Special rule 2:

Any number to the power of 1 is the same as the original number

$12^1 = 12$ $0.41^1 = 0.4$

Topic: Statistical Diagrams		Year 10	Tier F	Term 3

What do I need to know?

- Draw and Interpret bar charts including composite bar charts, dual bar charts and multiple bar charts
- Draw and Interpret Scatter graphs
- Draw and Interpret Pie Charts

How do I recognise this topic?

Look for Key words: Label, Composite, Title, Scale, Scatter Graph, Pie Chart, Bar Chart, Axis, Axes, Correlation, Line of best fit, Distribution, Mode.

Step by Step Guide / General Tips

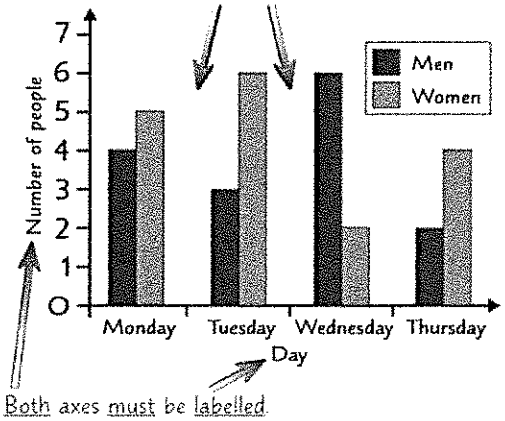
- For Bar Charts and Scatter Graphs ensure the axes go up by the same amount.
- Always put your zero line of the protractor on the vertical line for the first section, for the next section put the zero line of the protractor on the line just drawn.
- Scatter graphs that go UP from left to right are POSITIVE. (negative for going down)

Worked Example

1) Frequencies on bar charts are shown by the heights of the different bars.
2) Dual bar charts show two things at once — they're good for comparing different sets of data.

EXAMPLE: **This dual bar chart shows the number of men and women visiting a coffee shop on different days.**

Bars representing different categories are separated by equal gaps.



Both axes must be labelled.

a) **How many men visited the coffee shop altogether?**
Add up the numbers shown by the heights of the dark red bars. 4 + 3 + 6 + 2 = 15 men

b) **On which day did the most women visit the coffee shop?**
Find the tallest purple bar. Tuesday

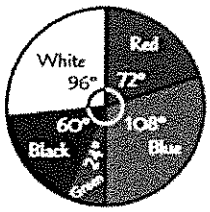
c) **On which day was there the biggest difference between the numbers of men and women?**
Count up from the smaller to the larger bar for each day to find the differences. Wednesday

The TOTAL of Everything = 360°

1) Fraction of the Total = Angle ÷ 360°

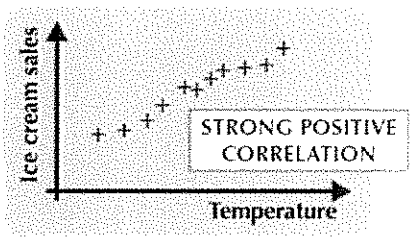
AVERAGE GRADE 3

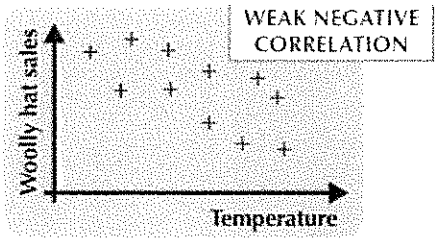
EXAMPLE:

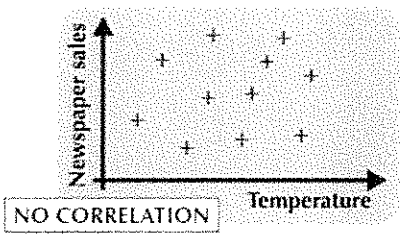


This pie chart shows the colour of all the cars sold by a dealer. What fraction of the cars were red?

$$\text{Fraction of red cars} = \frac{\text{angle of red cars}}{\text{angle of everything}} = \frac{72^\circ}{360^\circ} = \frac{1}{5}$$







Topic: Probability		Year 10	Tier H	TERM 3

What do I need to know?

- All of probability adds up to 1
- Probability is typically written as a fraction or decimal. In rare cases, it can be written as a percentage.
- How to construct a tree, venn and sample space diagram

How do I recognise this topic?

- If you see the following terms – Relative Frequency, Tree Diagrams, Venn Diagrams, Sample Space Diagrams

General Tips

Probability tends to follow the below formula:

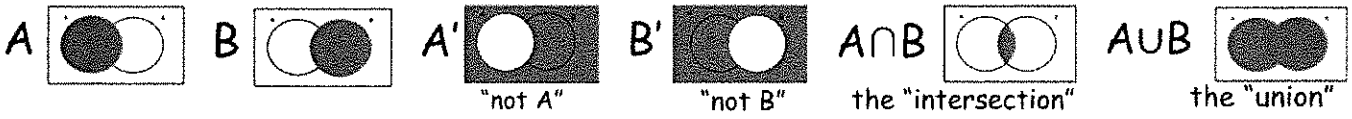
$$P(A) = \frac{\text{Number of favorable outcomes to A}}{\text{Total number of outcomes}}$$

To put this into context→
A = A number more than or equal to 8

$$P(A) = \frac{6}{24} = \frac{1}{4}$$

Score on 2nd Dice \ Score on 1st Dice	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10

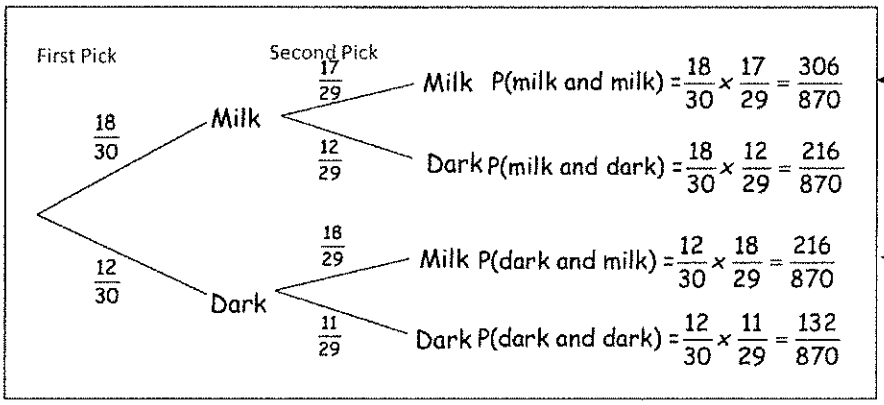
Set Notation



Worked Examples

Tree Diagrams

Lucy has a box of 30 chocolates. 18 are milk chocolate and the rest are dark chocolate. She takes a chocolate at random from the box and eats it. She then chooses a second. **(a)** Draw a tree diagram to show all the possible outcomes. **(b)** Calculate the probability that Lucy chooses: (i) 2 milk chocolates. (ii) A dark chocolate followed by a milk chocolate.

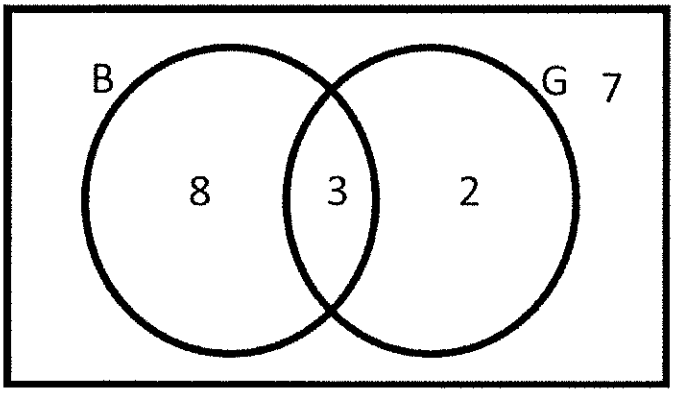


(i) 2 milk chocolates $\frac{306}{870}$

(ii) A dark chocolate followed by a milk chocolate. $\frac{216}{870}$

Venn Diagrams

In a class of 20, there are 11 boys, 5 Pupils with glasses and 3 boys that wear glasses.
Given that a boy is chosen, what is the probability that he wears glasses?



'Given that' means that you are only selecting from this source. In this case 'a boy'. Your total number of outcomes becomes the total amount of boys.
Then the Number of favourable outcomes is the part you want, in this case boys who wear glasses.

$$\frac{\textit{Boys who wear glasses}}{\textit{Total boys}} = \frac{3}{11}$$

Topic: Inequalities		Year 10	Tier H	TERM 3

What do I need to know?

- Able to solve linear inequalities and display the solutions on a number line.
- Able to list integers that satisfy two or more inequalities.
- Able to locate regions on graphs that satisfy given inequalities.
- Able to solve quadratic inequalities.

How do I recognise this topic?

- Identify the key word "inequality".
- Look for mathematical symbols such as "<", ">", "≤" and "≥".
- Locate key words that compare quantities such as "greater than" and "less than".

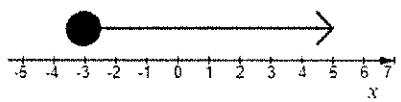
General Tips

- Treat the inequality symbols (above) as you would an equal "=" symbol, the general goal is to work out a value of x.
- When representing an inequality on a number line, a hollow circle (O) does not include the said value and a filled in circle (●) includes that value (see example below).
- For regions of linear inequalities, check where they overlap and shade that in.
- When solving quadratic inequalities, ensure you sketch the quadratic on a graph and shade in the required regions.

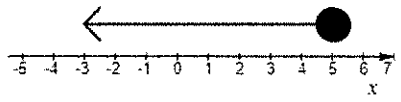
Worked Examples

Represent $x < 5$ on a number line.

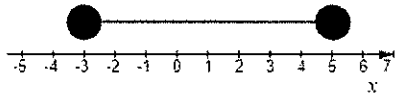
A



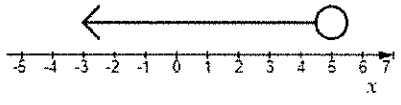
B



C



D



The answer is D

At $x = 5$ we need an empty circle to reflect the strict inequality $x < 5$

Solve

$$7x - 2 \leq 3x + 10$$

The answer is $x \leq 3$

$$7x - 2 \leq 3x + 10$$

$-3x \downarrow$ $\downarrow -3x$

$$4x - 2 \leq 10$$

$+2 \downarrow$ $\downarrow +2$

$$4x \leq 12$$

$\div 4 \downarrow$ $\downarrow \div 4$

$$x \leq 3$$

$$\boxed{x \leq 3}$$

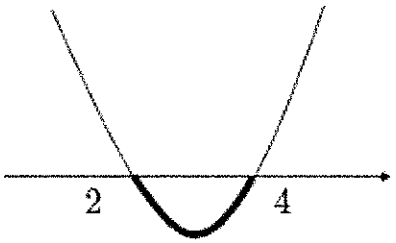
Solve $x^2 - 6x + 8 < 0$

The answer is $x > 2$ and $x < 4$

We factorise:

$$(x - 4)(x - 2) < 0$$

The critical values are $x = 2$ and $x = 4$.



$2 < x < 4$

Solve

$$4x - 1 \leq -6$$

$$\boxed{x \leq -\frac{5}{4}}$$

The answer is $x \leq -\frac{5}{4}$

$$4x - 1 \leq -6$$

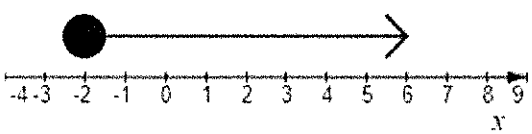
$+1 \downarrow$ $\downarrow +1$

$$4x \leq -5$$

$\div 4 \downarrow$ $\downarrow \div 4$

$$x \leq -\frac{5}{4}$$

Write down the inequality shown in the diagram.



The answer is $x \geq -2$

A filled circle represents an inclusive inequality, so $x \geq -2$

Topic: Area and surface area		Year 10	Tier H	TERM 3

What do I need to know?

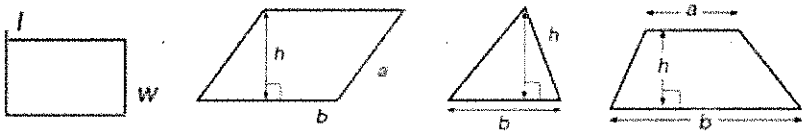
- To remember and apply the formula for the area of a rectangle, triangle, parallelogram and trapezium.
- To work out the surface area of cubes, cuboids, triangular prisms and cylinders (prisms).
- To work out the surface area of spheres and cones, given the formula.

How do I recognise this topic?

- Look for the key word "area" and "surface area".
- 2D shapes typically involve area and 3D solids deal with surface area.

General Tips

- Identify that the question is asking you to work out "area" and/or "surface area".
- *AREA*



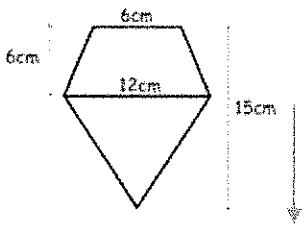
Rectangle	*Parallelogram*	*Triangle*	*Trapezium*
$= l \times w$	$= b \times h$	$= \frac{1}{2}bh$	$= \frac{1}{2}(a+b)h$

- Split any shapes into the above basic shapes and work out the area separately, then add/subtract as needed.

Worked Example

Area

Bea makes a logo for a club in school.

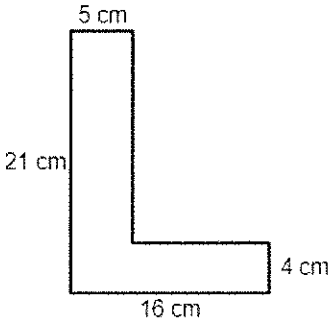


Work out the area of the logo.

Step 3
15-6 = 9cm

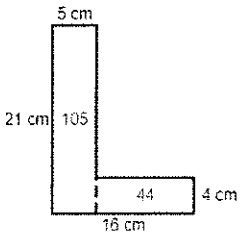
Step 1- trapezium and triangle
Step 2- ½ (a+b)h and ½bh
Step 3 – ½(6+12)x6 + ½ x 12 x 9 = 54 + 54 = 108
Step 4 – 108cm^2

Work out the area of the shape below.



The answer is Area = 149 cm^2

Split the shape into two rectangles, and find the area of each rectangle.

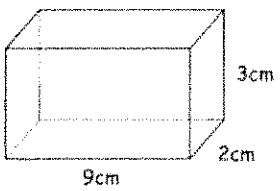


$$\text{Area} = 21 \times 5 + 4 \times 11$$
$$= 105 + 44$$
$$= 149 \text{ cm}^2$$

Surface Area

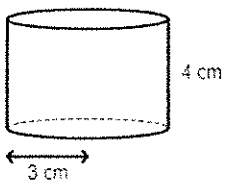
Step 1 – cuboid
Step 2 – 6 rectangular faces
formula l x w
Step 3- front 9x3 = 27
back 9x3 = 27
top 9x2 = 18
bottom 9x2 =18
side 1 = 2x3 =6
side 2 = 2x3 =6
total surface area = 102
Step 4 – 102cm^2

Shown below is solid cuboid



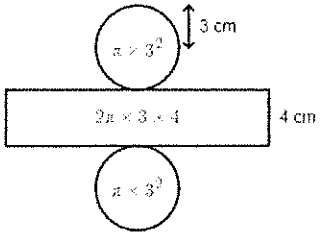
Work out the total surface area of the cuboid

Find the surface area of the cylinder with a radius of 3 cm and height of 4 cm, as shown on the diagram below.



Give your answer correct to 1 decimal place.

The surface area of a cylinder is made of 2 circles and a rectangle, where the width of the rectangle is the circumference of the circle.



$$\text{Surface area} = 2 \times \pi \times 3^2 + 2\pi \times 3 \times 4$$
$$= 131.9 \text{ cm}^2$$

Topic: Volume		Year 10	Tier H	TERM 3

What do I need to know?

- Able to work out the volume of cubes and cuboids using the formula.
- Able to work out the volume of prisms and cylinders using the formula.
- Able to work out the volume of pyramids and cones using the formula.
- Able to work out the volume of spheres (given the formula) and frustums from cones/pyramids.

How do I recognise this topic?

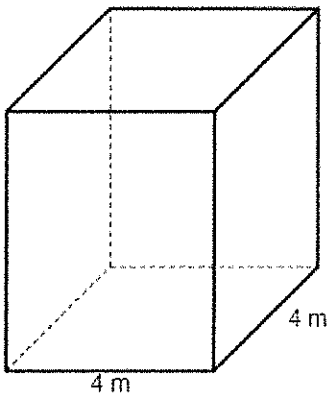
- Look for key words such as "**volume**", "**cross-section**" and "**capacity**".
- Volume is always associated with some form of 3D solid or container.
- Metric units are cubed (e.g.: m^3/cm^3)

Step by Step Guide / General Tips

Step 1 - Identify the shape or shapes in the question.
Step 2 - Select the correct formula.
Step 3 - Identify lengths of sides and substitute these measurements given into the formula.
Step 4 - Ensure that you have included correct units.

Worked Example

The diagram shows a fish tank in the shape of a cuboid.

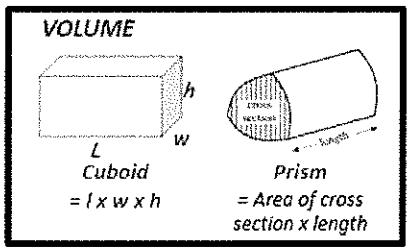


Work out the volume of the fish tank.

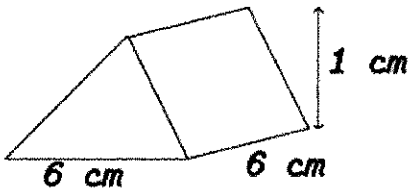
The answer is 80 m^3

The volume of a cuboid is area of cross-section × length.

$4 \times 5 \times 4 = 80\,m^3$



Work out the volume of the prism.

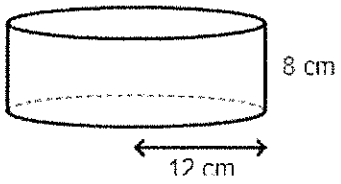


The answer is 18 cm^3

The cross-section is a triangle and its area is $\frac{1}{2} \times 6 \times 1 = 3$

The volume of a prism is cross-section × length, therefore the volume is $3 \times 6 = 18$

A cylinder has a radius of 12 cm and height of 8 cm., as shown on the diagram below.



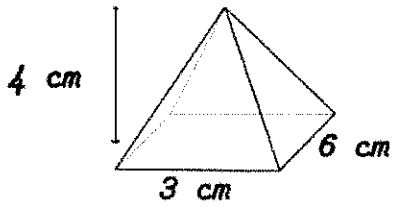
Work out the volume of the cylinder.
Give your answer correct to 1 decimal place.

The answer is 3619.1 cm^3

The volume of a cylinder is $V = \pi r^2 h$, where $r = 12$ and $h = 8$

$V = \pi \times 12^2 \times 8$
$= 3619.1$

Work out the volume of this pyramid.



The answer is 24 cm^3

The volume of a pyramid is $\frac{1}{3} \times$ base $\times$ height, therefore the volume is:

$\frac{1}{3} \times 3 \times 6 \times 4 = 24\,cm^3$

Year 10 French Half-Term 5 – Work & Future Plans

Quiz 5.1 – future plans for education

L'année prochaine, j'ai l'intention d'**étudier** au **lycée**.	Next year, I intend to **study** at **6th form.**
Je voudrais **apprendre** plus de mes sujets préférés.	I would like **to learn** more of my favourite subjects.
Puis, je vais prendre **une année sabbatique** avant d'aller à **l'université**.	Then, I will take **a year off (a gap year)** before going to **university.**
Moi, j'aimerais faire un **apprentissage** comme **maçon.**	Me, I would like to do an **apprenticeship** as a **builder.**
C'est important de faire **la formation.**	It's important to do **the training.**
Je vais faire **un stage de travail** avant **l'apprentissage.**	I will do **work experience** before **the apprenticeship.**

Quiz 5.2 – jobs vocabulary

Je **travaille** comme **médecin / pompier / comptable**	I work **as** a doctor / fireman / accountant
Quand j'étais jeune, je voulais être **coiffeur/coiffeuse (f)**	When I was young, I wanted to be **a hairdresser**
Je vais **devenir homme d'affaires.**	I will **become a business man.**
C'est difficile de **devenir un médecin**.	It is difficult to **become a doctor.**
Dans le futur, je voudrais **travailler** comme **facteur.**	In the future I would like **to work** as a **postman.**
Je suis **le patron** de **mon propre entreprise**.	I am **the boss** of **my own company**.

Quiz 5.3 – other people's jobs

Mon père **travaille** dans une boulangerie.	My dad **works** in a bakery
Ma mère **travaille** comme **professeur.**	My mum **works** as **a teacher**
Ma soeur est **serveuse** au restaurant.	My sister is **a waitress** in a restaurant.
Mon frère veut être **soldat** à l'avenir.	My brother wants to be **a soldier** in the future.
Je pense que ça serait amusant d'être **chercheur.**	I think that it would be fun to be **a researcher.**
Mon grand-père était **avocat,** mais maintenant il a **pris la rétraite**.	My grandad was a lawyer, but now he has **taken retirement.**

Key skills

1. Use the past, present and future tenses
2. Use conditional verbs (aurait / serait)
3. Steps to success
4. Recognise and use high-frequency vocabulary
5. Apply exam strategies to tackle a variety of questions on the listening and reading papers

Example 90 word task: You are writing a blog about jobs and your experiences. Discuss.

- The jobs your family members do
- What you did during work experience
- Your plans for jobs in the future.

In my family, my Dad works as a mechanic and my Mum works as a lawyer in an office. She loves the work because it's well paid. My brother wants to be a soldier in the future, but it will be dangerous. During my work experience, I talked on the phone and I worked on the computer. After having done that, I gave out the mail and prepared coffee. In my opinion, it was really fun. In the future I want to work as an accountant because I would like to help people. Equally, I intend to earn a good salary.	Dans ma famille, mon père travaille comme mécanicien et ma mère travaille comme avocate dans un bureau. Elle adore le travail vu que c'est bien payé. Mon père veut être soldat à l'avenir, mais ça serait dangéreux. Pendant mon stage, j'ai parlé au téléphone et j'ai travaillé à l'ordinateur. Après avoir fait cela, j'ai distribué le courrier et j'ai préparé du café. À mon avis, c'était vraiment amusant. A l'avenir, je veux travailler comme comptable étant donné que j'aimerais aider les gens. Également, j'ai l'intention de gagner un bon salaire.

Example 150 word task: You are writing to a French friend about work. Discuss -

- the advantages and disadvantages of having a part time job
- what you will do for a job in the future

Je pense qu'un petit emploi est important si on veut découvrir le monde du travail. Par conséquent, tous les week-ends je travaille dans un magasin de vêtements. En plus, ça me permet de développer de nouvelles compétences puisque je dois servir les clients et utiliser la caisse. Par contre, c'est une très longue journée et je suis toujours fatigué après. Je trouve que je n'ai pas assez de temps pour finir mes devoirs ce qui m'inquiète car je vais bientôt passer mes examens. A l'avenir, après avoir étudié à l'université, je voudrais devenir ingénieur parce que je crois qu'il existe pas mal de travail dans ce secteur. Je préférerais travailler dans ma région mais si ce n'est pas possible, je pourrais habiter à Leeds où il y a plein d'entreprises. J'aimerais être bien payé mais il est plus important d'être heureux. J'espère que mes collègues seront aussi enthousiastes que moi.	I think that a little job is important if one wants to discover the world of work. By consequence, all the weekends I work in a shop of clothes. On plus, it me allows to develop new skills as I must serve the customers and use the till. By contrast, it is a very long day and I am always tired after. I find that I don't have enough of time to finish my homework that which me worries as I will soon take my exams. In the future, after having studied at university, I would like to become engineer because I believe that it exists not bad work in this sector. I would prefer to work in my region but if it isn't possible, I could live in Leeds where there are full of businesses. I would like to be well paid but it is more important to be happy. I hope that my colleagues will be also enthusiastic as me.

Year 10 French Half-Term 6 – Work & Future Plans

Quiz 6.1 – advantages and disadvantages of jobs

My **colleagues** are kind.	Mes **collègues** sont sympas.
I would say that **the salary** is ideal.	Je dirais que **le salaire** est idéal.
I love **my job** because it's **well paid / enriching / varied**	J'adore **mon boulot** parce que c'est **bien payé / enrichissant / varié**
The work is **exciting** and it helps my personal **development.**	**Le travail** est **passionnant** et il aide avec mon **développement** personnel.
Unfortunately, **the customers** can be rude.	Malheureusement, **les clients** peuvent être impolis.
I am always very **tired** at the end of the day.	Je suis toujour très **fatigue(e)** à la fin de la journée.

Quiz 6.2 – jobs (conditional tense)

I would like **to work** as a **nurse.**	Je voudrais **travailler** comme **infirmier / infirmière (f).**
I would like **to become** a **lawyer.**	J'aimerais **devenir avocat.**
I would like **to earn a good salary.**	Je voudrais **gagner un bon salaire.**
I **would work** as a **policeman.**	Je **travaillerais** comme **policier/policière.**
My sister **would work** as a **business woman.**	Ma soeur **travaillerait** comme **femme d'affaires.**
The job would be **well paid** and always **interesting.**	**Le travail** serait **bien payé** et toujours **intéressant.**

Quiz 6.3 – skills and qualities

I am **organised / motivated / hard-working.**	Je suis **organisé(e) / motivé(e) / travailleur/se.**
I hope **to help people.**	J'espère **aider les gens.**
I like **contact with people.**	J'aime **le contact avec les personnes.**
I **work** well as part of **a team.**	Je **travaille** bien en **équipe.**
I have a real **passion** for **working** with children.	J'ai une vraie passion pour travailler avec les enfants.
I am **determined to progress** in this **profession.**	Je suis **determiné(e) à progresser** dans cette **profession.**

Key skills

1. Use the past, present and future tenses
2. Use conditional verbs (aurait / serait)
3. Steps to success
4. Recognise and use high-frequency vocabulary
5. Apply exam strategies to tackle a variety of questions on the listening and reading papers

Example 90 word task: You are writing a blog about jobs and your experiences. Discuss.

- The jobs your family members do
- What you did during work experience
- Your plans for jobs in the future.

In my family, my Dad works as a mechanic and my Mum works as a lawyer in an office. She loves the work because it's well paid. My brother wants to be a soldier in the future, but it will be dangerous. During my work experience, I talked on the phone and I worked on the computer. After having done that, I gave out the mail and prepared coffee. In my opinion, it was really fun. In the future I want to work as an accountant because I would like to help people. Equally, I intend to earn a good salary.	Dans ma famille, mon père travaille comme mécanicien et ma mère travaille comme avocate dans un bureau. Elle adore le travail vu que c'est bien payé. Mon père veut être soldat à l'avenir, mais ça serait dangéreux. Pendant mon stage, j'ai parlé au téléphone et j'ai travaillé à l'ordinateur. Après avoir fait cela, j'ai distribué le courrier et j'ai préparé du café. À mon avis, c'était vraiment amusant. A l'avenir, je veux travailler comme comptable étant donné que j'aimerais aider les gens. Également, j'ai l'intention de gagner un bon salaire.

Example 150 word task: You are writing to a French friend about work. Discuss -

- the advantages and disadvantages of having a part time job
- what you will do for a job in the future

Je pense qu'un petit emploi est important si on veut découvrir le monde du travail. Par conséquent, tous les week-ends je travaille dans un magasin de vêtements. En plus, ça me permet de développer de nouvelles compétences puisque je dois servir les clients et utiliser la caisse. Par contre, c'est une très longue journée et je suis toujours fatigué après. Je trouve que je n'ai pas assez de temps pour finir mes devoirs ce qui m'inquiète car je vais bientôt passer mes examens. A l'avenir, après avoir étudié à l'université, je voudrais devenir ingénieur parce que je crois qu'il existe pas mal de travail dans ce secteur. Je préférerais travailler dans ma région mais si ce n'est pas possible, je pourrais habiter à Leeds où il y a plein d'entreprises. J'aimerais être bien payé mais il est plus important d'être heureux. J'espère que mes collègues seront aussi enthousiastes que moi.	I think that a little job is important if one wants to discover the world of work. By consequence, all the weekends I work in a shop of clothes. On plus, it me allows to develop new skills as I must serve the customers and use the till. By contrast, it is a very long day and I am always tired after. I find that I don't have enough of time to finish my homework that which me worries as I will soon take my exams. In the future, after having studied at university, I would like to become engineer because I believe that it exists not bad work in this sector. I would prefer to work in my region but if it isn't possible, I could live in Leeds where there are full of businesses. I would like to be well paid but it is more important to be happy. I hope that my colleagues will be also enthusiastic as me.

All Saints Absolutes Term 3a – Future Plans and jobs

Quiz 5.1 – Future plans

Don't forget your vocab book

I will continue to study at university	Ich **werde** an der Universität **weiterstudieren**
I want to do an apprenticeship	Ich **will** eine Lehre machen
I have to earn a lot of money	Ich **muss** viel Geld **verdienen**
In 10 years I will work abroad	In 10 Jahren **werde** ich im Ausland **arbeiten**
I would like to become my own boss	Ich **möchte** mein eigener Chef **werden**
A degree is better than an apprenticeship	Ein Studium ist besser als eine Lehre

Quiz 5.2 – university or career

I want to get lots of experience	Ich will viel Erfahrung bekommen
University is expensive	Die Universität ist teuer
The training is too long	Die Ausbildung ist zu lang
I don't want to be unemployed	Ich will nicht arbeitslos sein
I can make new friends	Ich kann neue Freunde kennenlernen
I can earn more money	Ich kann mehr Geld verdienen

Quiz 5.3 – Jobs

I want to work in an office	Ich **will** in einem Büro **arbeiten**
I would like to work outside, eg as a gardner	Ich **möchte** im Freien **arbeiten**, z.B als Gärtner
I would like to **become** a plumber	Ich **möchte** Klempner **werden**
I will perhaps **work** as a nurse	Ich **werde** vielleicht als Krankenschwester **arbeiten**
I will study medicine to **become** a doctor	Ich **werde** Medizin **studieren,** um Arzt / Ärztin zu werden
I'm interested in.....there I want to.....	Ich interessiere mich für.....daher will ich....

Quiz 5.4 – other people's jobs

My dad works in a bank	Mein Vater arbeit**et** in einer Bank
My mum works **as** a teacher	Meine Mutter arbeit**et als** Lehrer**in**
My brother is **still** unemployed	Mein Bruder ist **noch** arbeitslos
My sister **has** lots of experience	Meine Schwester **hat** viel Erfahrung
We work in a hospital	Wir arbeiten in einem Krankenhaus
My best friend is a lawyer	Mein bester Freund ist Anwalt

Key Skills
1.Learning speaking questions
2.Applying exam techniques to reading and listening
3.Use speaking answers to help develop writing
4.Learning key words for jobs
5.Understand how to use werden (to become), bekommen (to get) and sein (to be)

Example 90 word task

*why you want to go to university or not
*what work experience you already have
*what kind of job you would like in the future and why

I want to the uni to go, because I to further study want however is it very expensive and I must a part-time job to find **for example** as waiter. I have not a lot work experience but last summer have I in a café **worked** **in order** money **to** earn I **found** it totally interesting and also **had** I lots of fun **have I to say** I **think, that** I doctor or **maybe** dentist become because I extremely intelligent am but **I know** **that** I hardworking study must in order good grades to get	Ich will auf die Uni gehen, **weil** ich weiterstudieren will **jedoch** ist es sehr teuer und ich **muss** ein Teilzeitjob finden **zum Beispiel** als Kellner. Ich habe nicht viel Arbeitserfahrung aber letzten Sommer habe ich in einem Café **gejobbt,** **um** Geld **zu** verdienen Ich **fand** es total interessant und **außerdem hatte** ich viel Spaß **muss ich sagen.** **Ich denke, dass** ich Arzt oder **vielleicht** Zahnarzt werde, **da** ich ganz intelligent bin aber **ich weiß,** **daß** ich fleißig studieren muss, **um** gute Noten **zu** bekommen.

150 word task

*your plans for the future, in school and beyond
*why you think the job you want is right for you.

Next year will I in the sixthform go and A levels do. **I would like** Chemistry, Biology, English and German to **study**, because I in these subjects good grades get. After the school would like I to university go and Science study. I would like vet to become, **because** I animals **love**. That is the best job for me. I hope, money **to** earn, but happiness in the workplace is **more** important for me. I have no desire, in an office **to** work. I want also a part-time job to find, **in** order money **to** earn, **because** studying lots of money **costs. I** **have** already in the holidays in a hotel **worked** and that has fun **made**. The working day was very long. **I have** every day at 8 am **begun** and until 5 pm **worked**. I was mostly in the kitchen and have washed up and drinks made. Now and then have I in the restaurant worked. That **has** me the best **pleased, because** I with the tourists spoke **have**.	Nächstes Jahr werde ich in die Oberstufe gehen und das Abitur machen. **Ich möchte** Chemie, Biologie, Englisch und Deutsch **studieren, weil ich** in diesen Fächern gute Noten **bekomme**. Nach der Schule möchte ich auf die Universität gehen und Naturwissenschaften studieren. Ich möchte Tierarzt werden, **da** ich Tiere **liebe**. Das ist die perfekte Arbeit für mich! Ich hoffe, Geld **zu** verdienen, aber Zufriedenheit am Arbeitsplatz ist wichtiger für mich. Ich habe keine Lust, in einem Büro **zu** arbeiten. Ich will auch einen Nebenjob finden, **um** Geld **zu** verdienen, **weil** das Studium viel Geld **kostet. Ich** **habe** schon in den Ferien in einem Hotel **gearbeitet** und das **hat** Spaß **gemacht**. Der Arbeitstag war sehr lang. **Ich habe** jeden Tag um acht Uhr angefangen und bis fünf Uhr **gearbeitet**. Ich war meistens in der Küche und **habe** **abgewaschen** und Getränke **gemacht**. Ab und zu **habe ich** im Restaurant **gearbeitet**. Das **hat** mir am besten **gefallen, weil** ich mit den Touristen gesprochen **habe.**

All Saints Absolutes Term 3b – opinions, skills and reasons for doing jobs

Quiz 5.1 – opinions on jobs

Don't forget your vocab book

My work is well paid	Meine Arbeit ist gut bezahlt
I have interest in this job	Ich habe Interesse an diesem Job
The team is helpful and successful	Die Mannschaft ist hilfsbereit und erfolgreich
There are lots of opportunities	Es gibt viele Gelegenheiten
Unfortunately there is too much pressure	Leider gibt es zu viel Druck
I want to change my job	Ich will meine Stelle wechseln

Quiz 5.2 – personal skills and qualities

I arrive early/late	Ich komme früh/spät an
I am always on time/punctual	Ich bin immer pünktlich
I think that I am very polite	Ich denke, dass ich sehr höflich bin
My boss is really strict	Mein Chef ist wirklich streng
I am rarely ill	Ich bin selten krank
I am free on Saturdays	Ich bin Samstags frei

Quiz 5.3 – working abroad

You can improve your knowledge	Man kann seine Kenntnis verbessern
The wage is better	Der Lohn ist besser
You can get a good salary	Man kann einen guten Lohn bekommen
There are new laws	Es gibt neue Gesetze
You can work in industry	Man kann in Industrie arbeiten
I would like to work abroad	Ich möchte im Ausland arbeiten

Quiz 5.4 – ideal boss & job

My ideal job is a (waiter)	Mein idealer Job ist (Kellner)
My dream job **would be** as a (sales assistant)	Mein Traumjob **wäre** (Verkäuferin)
Because of the working hours I want to become (a teacher)	**Wegen der Arbeitsstunden** will ich (Lehrer) werden
Because of the salary I want to become (a vet)	**Wegen des Lohns** will ich (Tierarzt) werden
I **absolutely** want to work independently	Ich will **unbedingt** selbsständig arbeiten
(a policeman) is the right **career/job** for me	(Polizist) ist der richtige **Beruf** für mich

Key Skills
1. learning how to talk about an demonstrate respect towards jobs
2.Applying exam techniques to reading and listening
3.Use vocab book and absolutes to develop writing
4.Learning key words for jobs
5.Understand how to use werden (to become), bekommen (to get) and sein (to be)

Example 90 word task

- the jobs done by people you know (family or friends)
- what you have done recently to earn money
- what job you would like in the future.

My dad works in an office. His working day is Quite long, but he finds the work interesting. My mum is a police officer. She likes this work, **because** She nice colleagues **has**, but it is difficult. In the holidays **have I** in a supermarket in town **worked** and was on the till. In my opinion **was it** very boring, but I have enough money **earned, in order** a new computer **to** buy. Great! In the future **would like I** mechanic **to become, because** I interest in cars **have. I want** also something practical **to do**.	Mein Vater arbeitet in einem Büro. Sein Arbeitstag ist ziemlich lang, aber er findet die Arbeit interessant. Meine Mutter ist Polizistin. Sie mag diese Arbeit, **weil** sie nette Kollegen **hat**, aber es ist schwierig. In den Ferien **habe ich** in einem Supermarkt in der Stadt **gearbeitet** und war an der Kasse. Meiner Meinung nach **war es** sehr langweilig, aber ich habe genug Geld **verdient, um** einen neuen Computer **zu** kaufen. Prima! In der Zukunft **möchte ich** Mechanikerin **werden, weil** ich Interesse an Autos **habe. Ich will** auch etwas Praktisches **machen**.

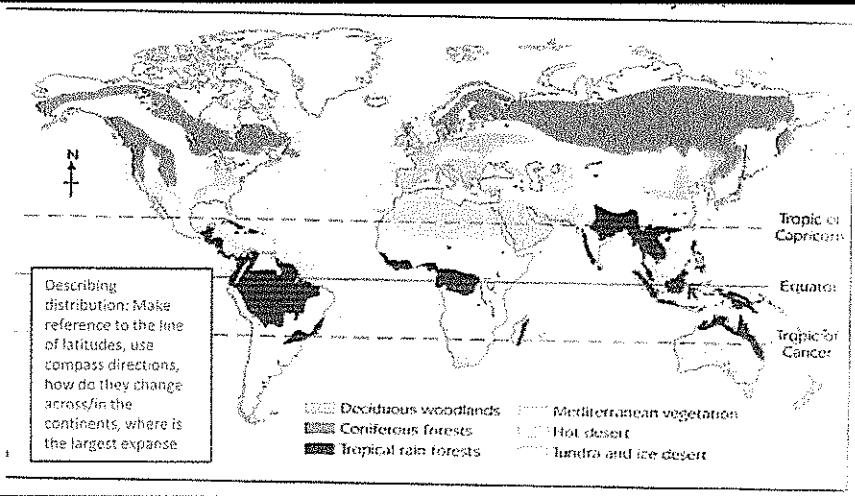
150 word task

D – daher	**D - da**
I – ich denke/glaube, dass	**U – um..zu**
V – vielleicht	**M – meiner Meinung/Ansicht nach**
W – weil / wenn	**J - jedoch**
A – außerdem	**O - obwohl**
Z – zum Beispiel	**T - trotzdem**

Geography - Ecosystems

Keywords

1.	Producers	Convert energy from the environment into sugars – plants that convert energy from the Sun by photosynthesis
2.	Consumers	Consumers get energy from the sugars produced by the producers e.g. animals that eat plants
3.	Decomposers	Decomposers break down plant and animal material and return the nutrients to the soil e.g. fungi
4.	Food chain	A food chain shows direct links between producers and consumers
5.	Food Web	A food web shows all the complex connections between producers and consumers
6.	Nutrient Cycling	When plants and animals die, decomposers help to recycle the nutrients, making them available once again for the growth of plants or animals.
7.	Abiotic	Non-living environmental factors
8.	Biotic	Living features of an ecosystems
9.	Biomes	Large-scale ecosystems/ global ecosystems
10.	Biodiversity	The variety of life in the world or a particular ecosystem
11.	Deforestation	The cutting down or removal of forest
12.	Selective Logging	Only carefully selected trees are cut down
13.	Soil Erosion	Removal of topsoil faster than it can be replaced
14.	Indigenous	Originating or occurring naturally in a particular place; native.
15.	Ecotourism	Nature tourism usually involving small groups with minimal impact on the environment
16.	Natural threats	Climate change, droughts and floods can cause changes to ecosystems like the sea ice melting in the Arctic and coasts flooding in the Bahamas
17.	Human threats	People can damage ecosystems through deforestation, mining, urbanisation, overgrazing and irrigation.



Describing distribution: Make reference to the line of latitudes, use compass directions, how do they change across/in the continents, where is the largest expanse

Biomes

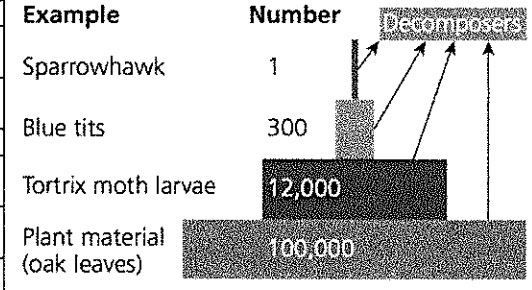
Tropical rainforest: hot all year round between 27-30. Wet all year, annual precipitation 2000, 3000mm.

Hot desert: very hot most of the year, above 30. Low annual rainfall, below 250mm.

Deciduous woodland: Warm summers around 18. Mid/cool winters around 5. Precipitation all year around 1000mm.

Coniferous woodland: warm summers between 16-20. Very cold winters, well below freezing point. Precipitation mainly in summer, low annual total less than 500mm.

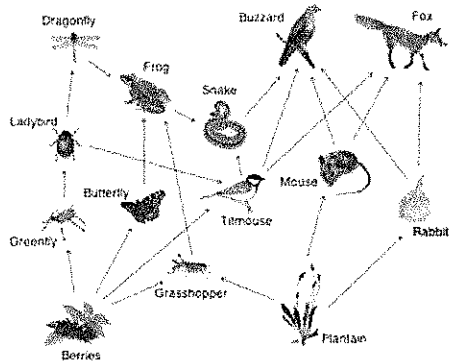
Trophic Pyramid



Every ecosystem has flora (plants) and fauna (animals). Energy flows through the ecosystem from the producer to the tertiary consumers by:

- The producers which are flora (plants) photosynthesise using sun, water and nutrients in the soil
- Primary consumers (fauna, animals) which are herbivores eat the producers (flora, plants)
- Secondary consumers (fauna, animals) which are carnivores eat the primary consumers
- Tertiary consumers are fauna which are the top predators, meaning they each secondary consumers and primary consumers and no animals eat the tertiary consumers

Food webs and chains



All flora and fauna in an ecosystem can be drawn onto a food web to show exactly which species are at which tropic level and which species they consumer. By showing what the fauna (animals), you can see how energy flows through the ecosystem.

You can make food chains from food webs, where you follow one chain within the web for example:

Berries > greenfly > ladybird > dragonfly

Practice Exam Questions

1. Describe the pattern of biomes globally.
2. Explain why different biomes form at different latitudes.
3. Explain why biomes change within the tropics.
4. What influence does climate have on biomes globally?
5. What are trophic levels?
6. Describe how the number of species changes throughout trophic pyramids.
7. Explain how energy is transferred through an ecosystem.
8. To what extent is photosynthesis vital for food webs?
9. What is the difference between a food web and a food chain?
10. What would happen to the food web if the tertiary predators became extinct?
11. What would happen to the food web in the producers became extinct?
12. How might climate change impact biomes globally?

Geography – Ecosystems – Monteverde Cloud Forest

1.	Location	In western Costa Rica 100Km from the Pacific coast north of the Tropic of Cancer with 23.4% of the land protected
2.	Climate	Hot temps all year – above 25ºC. High humidity, rain or cloud all year due to convection and orographic rainfall (relief) from the moist air blowing off the Pacific Ocean onto the mountains
3.	Water	Rainfall is high. There is a lot of interception so it is stored and then evaporated off in the morning to form new clouds. Drip and stem flow take water down to the forest floor where it infiltrates into the soil. Tree roots take up vast amounts of water from the soil which travels up the tree and is then lost through transpiration.
4.	Nutrients	High temps and humidity speed up chemical reactions and lead to rapid nutrient cycling. There is a lot of biomass (store) and leaves falling off the trees (flow), there is little leaf litter on the floor (store) because it rots down (decomposes) to humus quickly. The humus is then washed down into the soil (flow) by the rain and then the roots take up the nutrients from the humus (flow) to help them grow new leaves. Some nutrients enter soil from the bedrock.
5.	Food web and adaptations	It is a biodiversity hotspot, plenty of water, sunshine and nutrients so that plants and animals can grow all year long, overhead sunlight means trees grow tall and straight, emergent trees can be 60m, the canopy is up to 40m, the under canopy is 20m and the shrub layer is short and the area is dark. Lianas: have their roots in the ground but climb up other trees into the canopy to reach available sunlight. Many start growing in the canopy and send roots down to the forest floor. Drip tips: Leave have a waxy coating and grow into a point so rainwater flows off the leaf and onto the forest floor. This stops mould and algae growing on the leaf which would reduce photosynthesis. Buttress roots: Rainforest soils are very thin because of the rapid nutrient cycle so wide and tall roots grow above the soil to stabilise the tree, especially the emergent trees. Howler monkey: In the thick, dense canopy, communication is key so Howler Monkeys have adapted to be very loud, hence their name. The communicate about threats, food and mating. Sloth: Live in the canopy away from main predators and eat the leaves in the canopy. They rest during the day and are camouflaged by the green algae that grows on them and move very slowly at night so they are difficult for predators to spot. Macaw: Dense canopies are difficult to navigate so the macaw has streamlined bodies and tails and wings that do not flap deeply. They also use their wings as brakes to slow down and land on branches. Example of food chains include: Orchid > Macaw > Python. Coconut tree > Howler monkey > Jaguar. Banana tree > Insect > Vampire bats.
6.	People	Water Supply: It provides a fresh water supply – interception and therefore there is more water evaporated for more rain the next day 27% is intercepted. The canopy prevents soil erosion as it stops the heavy rain-washing soil away as only drip and stem flow get to the forest floor. The canopy holds vast amounts of water as interception storage so this does not get into the rivers. The lack of soil erosion also means that little soil is washed into the rivers to choke them and cause floods. Energy: Wood can be used for building and the huge biodiversity of plants provides a range of medicines e.g. quinine for cramp and malaria Food: Plants and animals provide food e.g. honey, fruit and nuts
7.	Threats	Deforestation has been widespread Fragmentation: larger clearings mean wildlife is restricted to isolated fragments of forest separated by farmland so animals are trapped in islands of forests Extinction: Animals hunted or isolated to extinction e.g. golden toad Nutrient cycle broken: if the canopy of trees is removed, no new leaf litter will reach the forest floor. Existing nutrients will be washed away by the rain and not replaced Soil Erosion: Protective canopy removed so gentle drip and stem flow is replaced with harsh, heavy rainfall which washes away the topsoil Increased flooding: soil erosion means soil is washed into the rivers, silting them up and choking them Changes to the climate: removal of canopy means no interception storage and less rain available for evaporation the next day. Fewer clouds form and climate becomes drier. Any rains run into the rivers and flows out of the drainage basin. In Monteverde, this means the Lake Arenal HEP project is not getting as much water
8.	Management	Ecotourism: small scale tourist projects create money for conservation Protected reserves: 70% CR's tourists visit protected reserves. In 2000, CR earned $1.25billion from tourism, e.g. canopy walkway at Monteverde reserve, $45 to climb up into the canopy and walk along a rope bridge Visitor numbers limited: rules to have not more than 160 people visiting Monteverde at one time Guided trails: these are set up in the forest to keep tourists away from fragile areas Limited accommodation: Lodges in Monteverde reserve are limited and are linked to educational conservation projects. Volunteers visit the lodge to help carry out conservation work Wild Life corridors: Monteverde is part of wildlife corridor the length of Central America. Strips of land are planted to connect remaining fragments of forest together (CBM – Mesoamerican Biological Corridor) Debt-for-nature swap: In 2007, CR spent $26million on conservation and the US government paid off $26 million of CR's debt

Practice Exam Questions

1. Describe the location of an ecosystem you have studied.
2. Describe the climate of an ecosystem you have studied.
3. Explain how an ecosystem can have surplus water supply.
4. Using an example you have studied, explain how flora and fauna may be adapted to its ecosystem.
5. Using an example you have studied, explain how energy can be transferred through a food chain.
6. Why do tropical rainforests have shallow soils?
7. What role do decomposers play in tropical rainforests?
8. How is the hydrological cycle influenced by tropical climates?
9. Explain how people can benefit from an ecosystem.
10. Explain how an ecosystem is naturally under threat.
11. Explain how an ecosystem is under threat due to human actions.
12. How can soil erosion cause issues for people?
13. Explain how an ecosystem may be managed by people.
14. How sustainable is the management at Monteverde cloud forest?
15. Why might some countries rely on international aid to protect an ecosystem?
16. Why might the protection of ecosystems become more common and crucial in the future?
17. What is ecotourism?
18. Why might ecotourism not be a sustainable management strategy?

Geography – Ecosystems – Sahel Semi-Arid	
1. Location	Semi-arid biomes are found 10 °N and 10 °S of the equator, between tropical rainforests and deserts. The Sahel lies in northern Africa south of the tropic of Cancer and North of the Equator. It is found in countries such as Mali and Chad and stretches from Senegal to Eritrea.
2. Climate	The climate of the Sahel is arid and hot, with strong seasonal variations in rainfall and temperature. The Sahel receives about 200-600mm of rainfall a year, which falls mostly in the May to September monsoon season. Average daily high temperature of 37 °C.
3. Water	Most rainfall falls between May and September, when the thermal equator moves towards the Tropic of Cancer. Non-profit organizations have worked in the region for more than fifty years and their strategy has been to dig wells and construct pumps, focusing on water supply. However, digging more wells or providing taps are not by themselves the answer because the groundwater in the Sahel may not sustain increasing demands
4. Nutrients	Soils become fertile during the wet season as soils are able to retain water and decompose fallen leaves and branches. Dry season cracks the soil and leads to soil erosion which loses minerals and dead materials decompose very slowly so nutrients are not returned to the soil.
5. Food web and adaptations	▪ Baobab trees: Wide and tall trunk stores lots of water, very long roots go deep into the soil and bedrock for water. ▪ Acacia trees: Very long roots go deep into the soil and bedrock for water, small leaves to reduce evapotranspiration losses. ▪ Elephant grass: Becomes straw like in the dry season to survive the lack of water. Roots have adapted to rapidly absorb water from the surface during the wet season. Sharp edges deter predators. ▪ Giraffe: Their tall necks mean they can reach the leaves at the top of trees that are left by other animals. Their spots/shapes on their fur also break up the shape of their outline, so it is hard to see against leaves on trees. ▪ Lion: Sleep and rest for the majority of the day to conserve energy as hunting requires chasing impala and zebra. Hunt in packs to increase success.
6. People	Population: The population is growing very quickly in the Sahel. There will be 100 million people in the region by 2020 and 200 million by 2050 – almost four times the current population. GNI (gross national income) of some countries: a. Mali: 36.77 billion PPP dollars (2016) b. Niger: 20.02 billion PPP dollars (2016) c. Burkina Faso: 31.28 billion PPP dollars (2016) d. Eritrea: 6.698 billion PPP dollars (2011) Employment: Main forms of employment and agriculture and informal work.
7. Threats	▪ Overgrazing: Ideally, farmers only let animals graze the top of the grass and then move them to another place, so they do not damage the grass. When there is less grass growing, farmers allow their cattle and goats to eat too much of the grass, even down to the roots. Goats will also climb trees and strip all the leaves. This will kill the plants and they will not re-grow. There are no roots t bind the soil together so when it is windy or rainy, the topsoil gets removed, leaving bare earth which is no good for plants. An increase in the number of people has led to overgrazing as there is less land for each person to use for their animals. ▪ ITCZ: The Inter tropical convergence zone is the area of low pressure created by the zone of most intense heating by the sun. Low pressure causes rising air and if there is water there, this will evaporate and rise as well, causing clouds and the rainy season. The ITCZ moves N and S of the Equator during the year as the sun moves. In recent years the ITCZ has not moved as far N as usual due to a large area of high pressure over the Sahara Desert. This means the rains have not moved as far N either and some areas have turned into desert. ▪ Deforestation: Cutting trees down for more farmland or for firewood means there are no roots to bind the soil together as with overgrazing. There is also less shade or interception as there are no leaves. This means the soil is washed away by rain splash and no clouds form as there is no evapotranspiration.
8. Impacts of drought	▪ Low and erratic rainfall the area experienced in 2011 led to a poor harvest in 2011 and 2012 (the harvest season starts in October). ▪ Grain production in many areas of the Sahel region was 36 per cent down on the previous year and 20 per cent lower than the average for the past five years. In Senegal, the production of ground nuts, one of the area's main crops, was down 59 per cent on the previous year. ▪ In May, there were multiple outbreaks of locust swarms along the Libya/Algerian borders but due to the insecurity of the area, there simply wasn't anyone to deal with the infestations. As vegetation dried out, the swarms of locusts were left untreated to move south toward Chad, Niger and Mali. ▪ One theory is that due to climate change, the land is heating up more quickly that the part of the Atlantic Ocean where the Azores high pressure system is centred. This means the low-pressure areas have lower air pressure and the high-pressure areas are heavier and 2011-2012 saw large blocking anticyclones.
9. Management	▪ Bunds: Sometimes called magic stones. Lines of stones built up across a slope to catch any rain water an topsoil that washed down after a rainstorm. ▪ Planting trees: Tree roots bind the topsoil together to stop it being washed or blown away. The leaves will store water and evapotranspiration will occur, making the atmosphere more humid, possible causing clouds and rainfall. ▪ The Great Green Wall: An ambitious plan to plant trees across the 8,000km width of the Sahel and up to 15km at its widest point. This would retain water in the ecosystem and reduce the risk of drought, restoring the semi-arid ecosystem. The GGW would provide fertile farmland and food and sustainable rubber tapping so would also increase economic sustainability. ▪ Terracing: Cutting steps into a slope creates flat areas. This means that when there is a rainstorm, the water does not run down the slope, washing soil away with it – it sits on the flat steps of land like a puddle. This gives it time to infiltrate into the baked soil and then be available for crops. ▪ OXFAM funding of girl's education: Women collect all the firewood and do most of the farming. If girls are educated, they will know how to do this more sustainably. They might also get a job in a town, meaning there are fewer people needing land to produce food in the countryside. ▪ Upesi stoves: These stoves can be made easily out of clay and their design means far less firewood is needed so there is less deforestation near villages. They also produce far less smoke so cut pollution and chest and eye problems in homes.

Geography – Ecosystems – Ynyslas (small scale ecosystem)

1.	Where is Ynyslas small scale ecosystem?	Ynyslas is an area of sand dunes 10km north of Aberystwyth on the west coast of Wales. The dunes are at the north end of the Borth spit. The dunes are 3km south of the Dyfi Estuary. Ynyslas Dunes are within Cardigan Bay. It is a small-scale ecosystem.
2.	What species and adaptations are found at Ynyslas?	Marram grass: rolled leaf with waxy to protect from harsh winds and salt water. Stomata sunk into pits on inside of rolled leaf so photosynthesis can still take place. ▪ Primary consumers: snails, Rabbits, Lizard, Butterfly ▪ Secondary consumers: Hedgehog ▪ Tertiary consumers: Fox, Buzzard, Gull, Dragonfly, Stonechat.
3.	How was Ynyslas developed in 1969?	Conservation began, Posts were sunk into the beach to prevent cars driving into the dunes. Wooden boardwalks were built across the dunes in 2 places to prevent further trampling and erosion.
4.	How was Ynyslas developed in the 1980s?	Areas were fenced off to prevent trampling. Sand traps called brashings (branches and wire) were constructed and Marram Grass was planted to encourage layers of sand to be deposited – to help stabilise the dunes. Signs were put up around the reserve to inform the public of the management taking place.
5.	How was Ynyslas developed in the 1990s?	Fences were removed as visitors were walking around them anyway. It was accepted that sand erosion was a natural process in the dunes. The blowing sand creates habitats for rare plants. Bins were installed.
6.	How was Ynyslas developed in the 2000s?	Bins were removed as they were overflowing with rubbish. Areas were re-fenced off as rare birds such as linnet, stonechat and ring plovers were living and nesting amongst the dunes. Rabbits live in the dunes and they keep the grass short. The rabbit dung makes the soil more fertile which encourages plants to grow. The golf course isn't happy about the rabbits. A rabbit proof fence was built to prevent the rabbits entering. The fence is costly to maintain.
7.	How was Ynyslas developed in the 2005s?	The visitor centre has been enlarged and improved. The boardwalks have also been improved. There is now wheelchair access.
8.	How was Ynyslas developed in the 2016s?	The biggest problem is dog fouling. People are banned from walking their dogs in the summer months along Borth Beach to the south. Dog owners come to Ynyslas instead. The dog excrement doesn't decompose so it lies around for ages and it is a nuisance for other visitors.
9.	What are the pressures at Ynyslas Dunes?	▪ Popular with tourists. ▪ Tourists park their car close to the sand dunes. ▪ Intensive trampling can damage the vegetation – leaving the dunes vulnerable to wind erosion and the formation of blowouts. ▪ Litter – harms wildlife ▪ Land is in demand who wish to develop the sand dunes for tourist developments such as caravan parks and golf courses. ▪ Conservation groups such as the RSPB are keen to ensure that sand dunes are protected and conserved.
10.	How were Ynyslas dunes formed?	Embryo Dunes: Formed when flotsam and jetsam are dropped at the strand line. Small dunes can form on this obstacle as it traps sand. Only halophytes can grow here Foredunes: Sand has become more stable and bigger dunes can form. Marram grass grows and binds the sand. Yellow dunes: Tall steep sided dunes form due to the colonisation of marram grass. These dunes are mobile due to the changing wind direction and build-up of sand. Grey Dunes/Fixed Dunes: The organic content of the dunes increases therefore the soil colour becomes darker. Increased biodiversity – gorse, brambles, butterflies, insects, birds such as the Ringed Plover, animals such as rabbits and stoats.
11.	What are the benefits for the local community?	Recreation, education, increased income from tourism, protects nearby homes from coastal flooding, increased biodiversity
12.	Who are stakeholders?	Tourists, Local Residents, RSPB and conservation groups, Local council, Golf course owners
13.	What do the following words mean?	Halophytes: Salt tolerant plants such as sea rocket. Colonisation: A plant establishing itself in an area. Conservation: The action of protecting something. Biodiversity: The variety of living things in an area. Ecosystem: A community of plants and animals and the environment in which they live. Includes both the living and no living parts. Flotsam & Jetsam: Pile of discarded objects – driftwood, seaweed, plastic, rubbish, Stakeholders: A person with an interest or concern in something.

Practice Exam Questions

1. Compare the climate of a semi-arid biome with another biome you have studied.
2. Compare the location of a semi-arid biome with another biome you have studied.
3. Compare the nutrient cycle of a semi-arid biome with another biome you have studied.
4. Compare the adaptations of a semi-arid biome with another biome you have studied.
5. Compare the threats of a semi-arid biome with another biome you have studied.
6. Compare the management of a semi-arid biome with another biome you have studied.
7. Compare the stakeholders of a semi-arid biome with another biome you have studied.
8. Compare the impact of climate change on the semi-arid biome with another biome you have studied.
9. Describe the location of one small-scale ecosystem you have studied.
10. Why can it be difficult to manage small-scale ecosystems?
11. How are sand dunes formed?
12. Why are sand dunes beneficial for different stakeholders?
13. Explain how UK ecosystems may be under threat in the future.

GCSE History Paper 2: Superpower Relations KT1: Origins of the Cold War

Key Terms			
What was the Cold War?		12. Cominform	Organisation encouraging cooperation between communist countries
1. Capitalism	an economic and political system in which a country's trade and industry are controlled by private owners for profit, rather than by the state.	13. Blockade	Preventing access to a location or region
2. Communism	a theory or system of social organization in which all property is owned by the community and each person contributes and receives according to their ability and needs.	14. Bizonia	The merging of the German regions controlled by the US and Britain
3. USSR	A group of countries led by Russia, AKA the **Soviet Union**	15. Airlift	Bringing needed goods into a region by air
The Conferences		16. NATO	Military alliance of America and its allies
4. Grand Alliance	Wartime alliance between USA, Britain and USSR	17. Warsaw Pact	Military alliance of the USSR and its allies
5. Sphere of Influence	The region over which a country has influence/control	**The Arms Race**	
6. Demilitarisation	The removal of army and other military from a region	18. Arms race	Competitive military spending between countries
Soviet Expansion		19. ICBM	Missiles than can be fired huge distances – across continents
7. Satellite states	Countries controlled by a larger, more powerful nation	20. H-Bomb	Hydrogen bomb – a very powerful and destructive weapon
8. Containment	The US plan to prevent the spread of Communism	21. B-52	The type of bomber aircraft used by the USA
9. Iron Curtain	The name given to the 'border' of Western/Eastern Europe	22. Sputnik	A Soviet satellite, the first man made satellite in space
US Actions – The Truman Doctrine and Marshall Plan		**Hungarian Uprising**	
10. Doctrine	A key message that you are committed to enforcing	23. Destalinisation	Khrushchev's policy of moving away from Stalin's methods
Soviet Actions – The Berlin Blockade		24. Secret Police	Organisations that enforce the law but are not accountable or public
11. Comecon	Organisation to increase Soviet economic control in Europe	25. Guerrilla	A type of fighting that relies on ambushes or unconventional warfare

Roosevelt 1933-1945

Truman 1945-1953

Eisenhower 1953-1961

Kennedy 1961-1963

1943 Tehran Conference
1944
1945 Yalta Conference / Potsdam Conference / A-Bomb / Soviet expansion (until 1947)
1946
1947 Truman Doctrine / Marshall Plan / Cominform
1948 Berlin Crisis / Airlift
1949 Comecon / NATO / USSR tests A-Bomb
1950
1951
1952
1953 Successful H-Bomb tests / Khrushchev new leader
1954
1955 Warsaw Pact
1956 Hungarian Uprising
1957 Launch of Sputnik – first key moment of space race
1958
1959
1960 U-2 spy plane crisis
1961 Second Berlin Crisis
1962 Cuban Missile Crisis

Timeline of the arms race 1945-1962	
1945	The USA tests its first atomic bomb. It is used twice, against Japan. Joseph Stalin demands the USSR develop its own nuclear capability, and triples the pay of scientists working on the project.
1949	The USSR carries out its first successful nuclear test. In the US, Truman massively increases defence spending and work commences on a new, more powerful 'hydrogen bomb' (H-bomb)
1953	The US and USSR both conduct their first successful H-Bomb tests. Both sides are now in possession of powerful nuclear weapons.
1954	The US explodes its largest ever H-Bomb – the equivalent of 15 million tons of TNT, and capable of wiping out Moscow, the Soviet capital. The USSR had similar capability to wipe out American cities.
1957	The Soviet Union launches the first satellite into space. The US fears that this could eventually lead to a military threat, and diverts resources to its own space program.
1962	The Cuban Missile Crisis – the US discovers Soviet nuclear missiles in Cuba, 90 miles off the coast of Florida. The USA has 63 inter-continental missiles, 21 nuclear submarines, 24 aircraft carriers and 96 missiles capable of being launched from submarines. The USSR had more than 50 inter-continental missiles, and no aircraft carriers, no sub-launched missiles and only 2 nuclear submarines. The USA had started to pull ahead in the arms race, but both sides possessed enough nuclear weapons to wipe the other side out many times over.

Capitalism	Communism
Politics: Favours democracy – people choose their leaders from several different parties. 	Politics: Only one party allowed, the Communist Party, which represents the people. There are no elections and you cannot change your government. 
Economy: Businesses are privately owned, and there are opportunities to become very wealthy for some people. If you work hard and are good at your job, you will be promoted and earn more money – this gives people an incentive to work.	Businesses are all owned publidy – by the government. All profits and products are shared amongst the people. Nobody becomes hugely wealthy, but nobody is much poorer than anyone else.
Beliefs: Freedom is good and is necessary for a successful society. Some people will be wealthier than others but mostly this should reflect their ability, ingenuity and hard work. It would be unfair for everyone to be equal if some work harder than others. Capitalism should be the system used by the rest of the world because it encourages prosperity and development.	Beliefs: Freedoms such as a free media and freedom to hold different political views is harmful to the unity and success of the country. Everyone should be equal, and it is the government's job to ensure that this happens, as capitalism will exploit the poor and the workers to benefit the elite. Communism should be the system used by the rest of the world, and the USSR should encourage revolutions in other countries to ensure this happens.
Problems: Capitalism leads to inequality – some people become very rich, but others become very poor. Power is concentrated in the hands of a minority of rich and powerful individuals, whilst the poor are vulnerable to being exploited.	Problems: Communism leads to a lack of productivity – why work hard with no opportunity for financial reward? It also stifles creativity – people are less likely to have the freedom and incentive to develop ideas if they won't personally benefit from them. Lack of democracy leads to the suppression of other basic rights.

History

Year 11

Topic 3: Nazi control and dictatorship, 1933-39

Timeline		
1.	1925	The SS (Schutzstaffel or Protection Squad) was formed as a military bodyguard for Hitler.
2.	1931	The SD (Sicherheitsdienst or Security Force) was formed by Himmler.
3.	30/01/1933	Hitler became the Chancellor of Germany.
4.	27/02/1933	The Reichstag Fire.
5.	March 1933	Election in Germany, the Nazi Party increased to 288 members in the Reichstag.
6.	24/03/1933	The Enabling Act was passed by 444 votes to 94.
7.	May 1933	Nazi's clamped down on trade union opposition by arresting officials and making strikes illegal.
8.	May 1933	Nazi's attacked rival political parties; the Social Democratic Party and Communist Party.
9.	May 1933	Students burned 20,000 books in Berlin that were written by Jews, Communists or anti-Nazi authors.
10.	July 1933	Hitler issued a decree making all parties except NSDAP illegal in Germany.
11.	July 1933	Hitler reached a Concordat (agreement) with the Pope.
12.	September 1933	Reich Chamber of Culture established. This covered architecture, literature, music, theatre and film.
13.	1933	The Gestapo (Hitler's secret police) was formed by Herman Goering.
14.	1933	The first Nazi concentration camp—Dachau—opened.
15.	1933	Joseph Goebbels was made the Minister of People's Enlightenment and Propaganda.
16.	1933	Radio stations were censored and used to broadcast Nazi propaganda.
17.	1933	Pastors' Emergency League (PEL) set up by Protestant pastors to campaign against Nazi actions.
18.	January 1934	Hitler abolished the 18 Lander parliaments (local government).
19.	30/06/1934	The Night of the Long Knives.
20.	02/08/1934	President Hindenburg died. Hitler assumed supreme power.
21.	19/08/1934	A plebiscite (public vote) was held to confirm Hitler as Fuhrer. 90% voted in favour of him.
22.	August 1936	The Berlin Summer Olympics.
23.	1936	The Reich Church was formed from Protestant churches that favoured working with the Nazi Party.
24.	1937	Pope Pius XI realised the concordat was worthless. He issued criticism of the Nazi regime in a statement *'Mit Brennender Sorge' ('With Burning Anxiety')*.

Key People		
1.	Adolf Hitler	Chancellor of Nazi Germany from 1933, and Fuhrer from 1934 until 1945.
2.	Marinus van der Lubbe	Confessed to starting the Reichstag fire, he was found guilty and executed.
3.	Joseph Goebbles	Minister of People's Enlightenment and Propaganda in Nazi Germany.
4.	Paul von Hindenburg	President of Germany between 1925 and his death in 1934.
5.	Ernst Rohm	The leader of the SA, until the Night of the Long Knives.
6.	Franz von Papen	Vice-chancellor of Germany between January 1933 and August 1934.
7.	Hermann Goering	Leading Nazi Party member, he was tasked with creating the Gestapo in 1933, and later became leader of the Luftwaffe.
8.	Heinrich Himmler	Head of the SS (Schutzstaffel or Protection Squad).
9.	Reinhard Heydrich	Leader of the SD (Sicherheitsdienst or Security Force) and the Gestapo.
10.	Carl Von Ossietzky	A German journalist who spoke out against the Nazi regime. In 1933 he was arrested and sent to Esterwegen concentration camp. He received a Nobel Peace Prize for his journalism.
11.	Pastor Martin Niemoller	One of the Protestants pastor who set up the PEL.
12.	Albert Speer	Hitler's personal favourite architect, used to design the parade ground at Nuremberg and the new Chancellery.
13.	The Edelweiss Pirates	Teenagers who resented the military discipline of the Nazi youth groups. Emerged in working-class districts of large German cities.
14.	The Swing Youth	Mainly teenagers from wealthy and middle-class families. They admired Amerian culture, and arranged illegal dances.

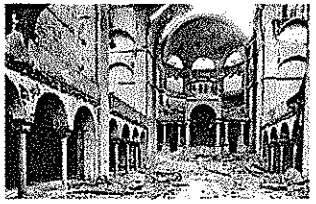
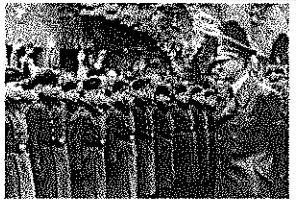
Key Terms		
1.	Censorship	Banning information or ideas. This controls attitudes, as certain information or opinions are banned.
2.	Propaganda	Controls attitudes by sharing information, especially of a biased or misleading nature, used to promote a political cause or point of view.

History Year 11 Topic: Life in Nazi Germany, 1933-39

Timeline		
1.	1933.	Hitler became Chancellor.
2.	1933	Boycott of Jewish shops and businesses.
3.	1933	Law for the Encouragement of Marriage passed.
4.	1933	Sterilisation Law passed.
5.	1933	First concentration camp for women opened at Moringen.
6.	1933	First Napola schools set up.
7.	1933	Women were banned from working as teachers, doctors and civil servants.
8.	1933	Reichs Arbeits Dienst (RAD) - the National Labour Service established.
9.	1933	Construction of the autobahn (motorway) began.
10.	1933	Trade unions were banned in Nazi Germany.
11.	1933	Strength through Joy (Kraft durch Freude—KdF) established.
12.	1935	Nuremburg Laws passed [formalized racial laws such as removing citizenship from German Jews].
13.	1935	Conscription introduced.
14.	1936	Women could not become a judge or lawyer, or sit on a jury.
15.	1936	Young people had to join the Hitler Youth in order to use any sports facilities.
16.	1937	Grammar schools for girls were banned.
17.	1938	Jewish children banned from German schools.
18.	1938	Lebensborn (Fountain of Life) programme introduced.
19.	1938	Nazis changed the divorce laws so that if a wife would or could not have children, or had an abortion, this could be used as grounds for divorce by the husband.
20.	1938	Kristallnacht [night of broken glass] –waves of attacks on Jews.
21.	1939	Euthanasia campaign began.
22.	1939	Designated Jewish ghettos established.
23.	1939	Compulsory for all yound German's to join Nazi youth programmes from the age of 10 (excluding minority 'unwanted' groups).

	Key Concepts
1.	Anti-Semitism–Persecution of the Jews grew continuously after 1933.
2.	Young–The Nazis placed much emphasis on controlling the young as only then could they secure a 'thousand year Reich'. Youth organisations and education indoctrinated the German youth.
3.	Women –The Nazis had traditional family values but even these were tested by the needs of war and the desire to ensure a growing Aryan population.
4.	Living Standards –The Nazis did reduce unemployment but they did this by banning Jews and women from the workplace and by putting Germany on a war footing. Workers had limited rights.
5.	Persecution of minority groups—the Nazis did not only persecute Jews between 1933 and 1945, but also Slavs, 'Gypsies', homosexuals and those with disabilities.

Key words		
1.	Kinder, Kuche, Kirche	Children, Kitchen, Church. This summed up the Nazi ideal of womanhood
2.	The Motherhood Cross Award	Given to women for large families.
3.	Lebensborn	Where unmarried women were impregnated by SS men.
4.	Napola	Schools intended to train the future leaders of Germany.
5.	Nazi Teachers League	All teachers had to swear an oath of loyalty to the Nazis.
6.	Reich Labour Service (RAD)	A scheme to provide young men with manual labour jobs.
7.	Invisible unemployment	The Nazi unemployment figures did not include women, Jews, opponent and unmarried men under 25.
8.	Autobahn	Motorway.
9.	Rearmament	Building up the armed forces in readiness for war.
10.	Volksgemeinshaft	The Nazi community.
11.	Strength Through Joy	An attempt to improve the leisure time of German workers.
12.	Beauty of Labour	Tried to improve working conditions of German workers.
13.	Volkswagon	People's car.
14.	Eintopf	A one pot dish.
15.	Herrenvolk	The master race or the Aryans.
16.	League of German Maidens	Youth organisation of Girls 14-18 –prepared them for motherhood.
17.	Emigration	Leaving your country to settle in another.
18.	Ghettos	Densely populated areas of a city inhabited by a particular ethnic group—such as Jews.
19.	Slavs	Ancient tribes of people who migrated into Europe from the east—their descendants were found in large areas across Eastern Europe.
20.	'Gypsies'	The name used by Nazi's for the Roma people. They typically lived a nomadic lifestyle.


2.1.1 Computational Thinking

Principles of computational thinking:

- ❑ Abstraction
- ❑ Decomposition
- ❑ Algorithmic thinking

Abstraction
Removing any unnecessary detail from a problem in order to solve it. Identifies the information that can be removed from the problem without changing it.
Using symbols, variables etc. to represent a 'real world' problem in a computer program...
...and removing/hiding unnecessary elements

Decomposition
Breaking a large problem down with no known solution into smaller steps and stages.
smaller problems are easier to solve:

- they can be solved independently of the other problems
- they can be tested independently
- then combined to produce the full problem

Algorithmic Thinking
Algorithmic thinking is a way of getting to a solution through the clear definition of the steps needed – nothing happens by magic.

2.1.2 Designing, creating and refining algorithms

Identify the inputs, processes, and outputs for a problem
Structure diagrams
Create, interpret, correct, complete, and refine algorithms using:

- ❑ Pseudocode
- ❑ Flowcharts
- ❑ Reference language/high-level programming language

Pseudocode – simplified, not language specific style used to design algorithms.

- Pseudocode uses short English words/statements to describe an algorithm.
- It would generally look a little more structured than just writing English sentences.
- However it is very flexible.
- It is less precise than using a reference language, or a programming language.

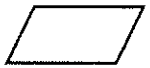
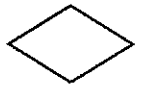
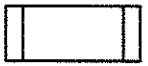
Example Pseudocode:

```
IF Age is equal to 14 THEN
  Stand up
ELSE Age is equal to 15 THEN
  Clap
ELSE Age is equal to 16 THEN
  Sing a song
ELSE
  Sit on the floor
END
```

```
mark = input("Input mark")
if mark < 50 then
      print("Fail")
elseif mark < 70 then
      print("Pass")
elseif mark < 90 then
      print("Merit")
else
      print("Distinction")
endif
```

Algorithm – the series of steps to solve a problem or perform an action. Can be represented using a **flowchart** or **Pseudocode**.

Flowchart – a diagram that shows the inputs, outputs and processes in an algorithms.

	**Terminal** Start/Stop		**Input/output** Requires input from the user or outputs on screen
	Line Show flow of data		**Decision** Often a yes or no question
	**Process** Goes on behind the scenes		**Sub Program** Reusable code, can be called at any time.

Exam Reference Language – a more formal 'code like' way of writing algorithms that is used within the examination.

- This looks like pretend code.
- It's defined in a more formal way to represent an algorithm.
- It looks much more like a programming language – but will not "compile".
- It can be read more easily by programmers.
- It can be easier to then write the program in a chosen language, e.g. Java, Python, VB.

2.2.1 Programming Fundamentals

The use of variables, constants, operators, inputs, outputs and assignments
The use of the three basic programming constructs used to control the flow of a program:

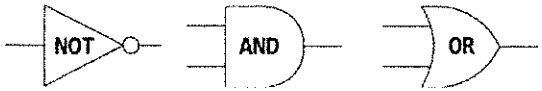
- Sequence
- Selection
- Iteration (count- and condition-controlled loops)

The common arithmetic operators
The common Boolean operators AND, OR and NOT

Variable – A value which may change while the program is running.
Variables can be local or global.

- **Local Variable** – a variable which can only be used within the structure they are declared in.
- **Global Variable** – a variable which can be used in any part of the code after they are declared

Constant – A value which cannot be altered as the program is running.
Operator – A character that represents an action. E.g. '+' is a mathematical operator
Assignment – Giving a variable or constant and value.
Input – This is a value that is entered into the program while it is running
Output – A result that is displayed when the program is run or has completed.



A Sequence is when there are programming steps that are carried out one after another.

Selection is where there are different paths in your code eg: IF, ELIF, ELSE

Iteration is when there is repetition (loops) in code.
This could be a WHILE loop (do something WHILE a condition is met) or a FOR loop (do something for a set number of times)

This count-controlled loop would print "Hello World" 8 times.:

```
for i=0 to 7
   print ("Hello")
next i
```

These condition controlled loops would check if a password's correct:

```
while answer != "letmein123"
   answer=input("Enter password")
Endwhile

do
   answer=input("Enter password")
until answer=="letmein123"
```

Common Boolean Operators:
AND – takes two inputs, gives one output, both inputs need 1s to get an output of 1 otherwise its 0
OR – Takes two inputs, gives one output, if one or more input is 1 then it outputs 1 otherwise it outputs 0
NOT – Takes 1 input, give one out, the output is the opposite of the input.

Operators
Arithmetic Operators

+	Addition
-	Subtraction
*	Multiplication
/	Division
^ or **	Exponentiation
DIV	Quotient
MOD or %	Remainder (Modulus)

Comparison Operators

==	Equal To
!=	Not Equal To
<	Less Than
<=	Less Than or Equal To
>	Greater Than
>=	Greater Than or Equal to

2.2.2 Data Types

The use of data types:

- Integer
- Real
- Boolean
- Character and string
- Casting

Its important to ensure that the correct data type is used when assigning them to a variable or constant.
By choosing the wrong data type it could cause an error in you program

Integer	Int	Whole numbers e.g. 1 or -1
Real/Float	Float	Numbers with decimal points e.g. 12.99
Character	Char	A single character e.g. a or A
String	Str	A group of characters together e.g. a full sentence
Boolean	bool	True or False

Casting is a process of converting data types.
Some languages do not allow you to multiply different data types together.
Some may allow it, but automatically 'cast' your type for you.

Example of casting:

```
if bool(valid) == True then
    result = int(num1) + float(num2) - int(num3)
else
    result = int(num1) - float(num2) + int(num3)
endif
print( region + " achieved " + str(result) )
```

2.2.3 Additional Programming Techniques

The use of basic string manipulation
The use of basic file handling operations:

- Open
- Read
- Write
- Close

Strings (or text) are used a great deal in computer programs It is important to be able to **manipulate strings** e.g.

- find out how long a string is
- work with part of a string (a substring)
- change a string to all UPPER or LOWER case

Basic String Manipulation	
String.length	Obtains the length of the string in character
String.upper	Converts the string to all upper case
String.lower	Converts the string to all lower case
String.left[n]	Gets the left-most [n] characters of the string
String.right[n]	Gets the right-most [n] characters of the string

Text files are used to store a variety of data:

- books and business documents
- logs of events
- lists of names
- tables of data with various numbers of columns and rows.

These text files can be manipulated using the programming techniques in the table below.

Basic File Handling Operations	
myFile=open("....")	Opens the file
myFile.close()	Closes the file that is open
myFile.readLine()	Read a line from the file
myFile.writeLine()	Write a line to a file
myFile=("....")	Create a new file

It is often necessary to join text strings together in a program to make a new text string. This is called **concatenation.**

fname = 'walter'
sname = 'white'
name = fname + ' ' + sname

Python provides the ability to slice strings.
Slicing characters from a string allows programmers to select any characters that they want from a string.
You can set the element you want to start the slice at, which element you want to finish at, and the increments or decrements you want. For example:

fname[0:5:2] = wle

2.2.3 Additional Programming Techniques

- **The use of records to store data**
- **The use of SQL to search for data**

There are three main ways that records are stored in computer systems

In text files	Stored on the secondary storage (hard disk/SSD/flash). Used to store data when the application is closed. Useful for small volumes of data. E.g. configuration files. Each entry is stored on a new line or separated with an identifier such as a comma or tab. Can require a linear search to find/read data which is slow (if there is no order to the data or record structure). Structured text files E.g. CSV, XML & JSON are popular for storing and exchanging data between applications
In Arrays	Stored in RAM. Used to store data when a program is running. Useful for small volumes of data an algorithm is using. Can be single or multi dimensional allowing for tables of data to be stored. Uses indexes to refer to data items. Efficient algorithms or linear searches can be used to find data
In databases	Often stored on remote servers. Often used to store data shared by many users, e.g. ticket booking system

Record Structure

When storing multiple bits of data about multiple objects of a similar type, we end up with **tables** or **2D arrays**.

Responses to questions about an object are stored are known as its "**property**" or "**attribute**" and stored in a "**field**"

A collection of fields forms a "**record**" which roughly corresponds to a row in a table.

A record can be created like this:

```
record students
    int student_number
    string student_name
    bool passed_test
endrecord
```

Data can be assigned using variables:

```
Student1=students(1,"Bob Jones", True)
Student2=students(2,"Steve Smith", False)
Student3=students(3,"Sally Roberts", True)
```

The whole record can be accessed using the variable name:

```
print(Student1)
```

```
(1, "Bob Jones", True)
```

or part of a record can be accessed:

```
print(Student3.student_name)
```

```
Sally Roberts
```

SQL is the language used to manage and search databases. It uses particular commands to search the data.

Command	Example	What is does
SELECT FROM	SELECT name, age FROM students	Displays the name and age of everyone in the students table
WHERE	SELECT name FROM students WHERE gender=male	Displays the name of everyone ion the students table who's gender is male
LIKE	SELECT name FROM students WHERE name LIKE "%Smith"	Displays the students' names that end with Smith.
AND	SELECT name FROM students WHERE gender=male AND attendance >90	Displays the students who are male and have an attendance of more than 90.
*	SELECT * FROM students	Selects all the fields from the students table

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Factual Knowledge:

Moral Evil: This is suffering which is a result of human actions e.g. terrorism, rape, theft. This is easier to explain as it can be blamed by humans.

Natural Evil: This is suffering which has nothing to do with human actions but with the way the world works e.g. floods, volcanos and disease.

Original Sin: Genesis and the fall of humanity Genesis 3 – Adam and Eve. Suffering was introduced into a perfect world. Original sin is a reminder that we all share some responsibility for the evil and suffering in the world as we all have a tendency to go against God.

St. Augustine & privation of Good (Enchiridion 3:11): The Bible shows that God is wholly good and that according to Genesis 1, created a world perfectly good and free from defect, evil& suffering: Augustine believed evil is the PRIVATION of good, just as darkness is the absence of light. Augustine believed that evil is not from God but from those entities which had free will – angels and humans who turned their backs on God, the Supreme Good and settled for lesser goods.

Attitudes towards Suffering

Catholics: believe that suffering brings the closer to God and a way to bring about a greater good, just like Jesus suffered and died on the cross so that we can achieve salvation. Suffering is a mystery however evil can never become a good.

Jews: Suffering often arises through humans misusing free will, it is a consequence of the wrong choices humans make. God is the source of all life and the sole creator. He is the judge and is merciful. Jews have several solutions to the problem of suffering and evil. The book of Job suggests that humans should not try to figure out why God lets people suffer, it's a mystery but we should remain faithful.

Non-Religious attitudes towards Evil:

David Hume created the Inconsistent Triad. The triad is inconsistent because it appears that not all three of them can be true at the same time. Hume concluded that either God does not exist or he is not worthy of worship.

John Mackie took Hume's idea further and rejected some of the usual answers to the problem of evil given by Christians:

1. Evil is necessary as an opposite of good – Mackie argues that there is far more and far worse suffering than is needed to contrast with the good in the world.
2. Evil helps us to become better people – Mackie asks why would God need to make us better through suffering? Why not just make us perfect to start with? Also suffering often makes people worse.
3. Evil is a consequence of free will – Mackie asks why would an omnipotent God simply make free human beings who always choose good. He also believes that suffering is too high a price to pay for having free will.

Humanists and Evil: Humanists avoid using the word "evil" because they link it with religious texts and rules. Humanists don't believe that suffering is punishment or test, because they don't think there is a god to punish or test us.

Jewish Views on Evil: Jews do not believe that people are born evil and do not share the Christian concept of original sin. For Jews evil and suffering can be seen as a consequence of human beings making wrong choices. Jews believe they are born free with the inclination to do good or do evil, but that God has given human beings choices and they must struggle against the inclination to do evil actions and follow God.

Key Quotes:

"God saw all that he had made and it was good." (Genesis 1)

"For what is that which we call evil, but the absence of good?" (Enchiridion 3:11)

"For God so loved the world that he gave his one and only Son" (John 3:16)

Factual Knowledge

Importance of the Trinity: The Holy Trinity is made up of the Father, Son and Holy Spirit.

Biblical Teaching on Trinity: The word "trinity" does not appear in the Bible. The doctrine of the Trinity developed over several hundred years. The theological concept of One God consisting of three divine Persons is found many times in the New Testament. In the Baptism of Jesus all three are present. There is the voice of the Father, the presence of the Son (Jesus) and the descent of the Holy Spirit. Jesus Christ as the divine word, the light and life of the world, the ***"only begotten Son"*** of the Father John 1:1-18

Catholics and the Trinity: The importance of the Trinity is demonstrated by its central role within religious practice. The sign of the cross reflects the trinity. Many prayers are said to or in the name of the Trinity. The Nicene Creed is recited by Catholics during prayer and worship and at baptisms. The worshippers declare publicly that they believe in the Trinity it is said by everyone as a sign of unity it binds them together as a community who share common beliefs.

The Jewish view on the Trinity Jewish belief states there is one God. This belief is stated in the Shema ***"You shall love the L-rd your G-d with all your heart, with all your soul, and with all your might."*** Jews would reject totality the idea of the Trinity

Jews do not believe that Jesus was the Messiah.

Key Quotes

"Go forth,, make disciples of all nations, baptise them in the name of the Father, the Son and of the Holy Spirit" (Matthew 28:19)

"There are 3 things in love, as it were a trace of the Trinity...love is of someone who loves, and with love something is loved. Behold, then, there are 3 things: he that loves, and that which is loved, and love" **Augustine De Trinitate**

"The word became flesh and made its dwelling among us" (John 1:1)

Importance of Jesus as Incarnation for Catholics

The Incarnation means becoming flesh, taking human form. God becoming flesh as Jesus Christ. The Incarnation took place when Jesus was conceived. Jesus was born as a human, took on a human body, a full human nature and lived among mankind as one of them. The incarnation shows Gods love for us as he took on human form, suffered and sacrificed himself for us.

Jewish Teaching on the Incarnation: Jewish people do not accept that Jesus was God, as this challenges their basic belief that God is one. This belief is stated in the Shema, which is a very important prayer for Jewish people. It is also stated in the Ten Commandments.

Catholics and Salvifici Doloris: Salvifici Doloris is a document written by Pope John Paul II.

The title is Latin meaning ***"The saving power of*** *suffering".* He says that the problem of evil is not easy to understand. The only way for humans to get an idea about it is to try and understand the depth of God's love for humans which Jesus showed through his willingness to die on the cross for us. He writes that Christians willingly ***"offer up"*** their own suffering in prayer for the sake of others, that they can share in the saving suffering of Jesus.

Key concept	Meaning
Conscience	An inner feeling of right and wrong that comes from God.
Evil	The absence of good which often results in suffering.
Free Will	The ability to choose right from wrong freely and without being controlled.
Goodness	The quality of being like God; putting the needs of others first.
Incarnation	Meaning 'made flesh'. The Christian belief that God became man in the person of Jesus.
Natural Law	The belief that there are universal laws of what is right and what is wrong.
Privation	The absence of a quality that is normally present. St Augustine said that evil is a privation of good.
Suffering	Pain or loss which harms human beings.

Factual Knowledge: **Jesus and Moral Authority**

Moral Authority of Jesus: Jesus gives clear teachings on how people should live their lives. The clearest collection of these teachings is in chapters 5 -7 of Matthews Gospel that is often called the Sermon on the Mount. It begins with a list of blessings, which are often called the Beatitudes (Latin for "blessings"). The key message is that those who are closest to God are often those that that the world does not recognise or value.

Other Sources of Authority for Catholics: Natural Law

This is the idea that there is a discoverable moral law which applies to all humans, was put forward by Thomas Aquinas. It says that all humans have some purposes in common: Preserving life, Reproduction, Educating the Young, Ordered Society and worshipping God. These are known as the 5 Primary Precepts. This means that there are some laws which we must all obey. Laws against murder, child abuse, theft and lying. All humans must do good and avoid evil.

Other Sources of Authority for Catholics: The Conscience

Catholics believe that the conscience is a gift given only to humans, created in the image and likeness of God. Some people believe that our conscience comes from God. Augustine taught that it was the voice of God telling us what to do (like Jiminy Cricket). **Aquinas** taught that God gives us a conscience but we must also use our reason to decide how to behave. **Freud** believed that the conscience had nothing to do with God. He said that it was a moral code given to us by outside influences (e.g. the law, rules from parents) which people develop through life. **Catholics** believe that Natural Law teaches us the principles of the moral life and that Conscience applies the natural law to particular circumstances, enabling us to choose what is good and avoid what is evil **(CCC).**

Sculpture and Statues

Catholic Attitude to Sculptures and statues

Statues are common features in Catholic churches. There will be a crucifix, a statue of Mary and a statue of the saint that the church is named after. The crucifix is the most common focus for Catholic prayer and it reminds Catholics of the Incarnation, but also the suffering of Jesus. These statues will have places to kneel in front of them and to light candles, the candles are called votive candles. They are symbols of the prayers the worshippers are offering. Catholics will ask the saints to intercede on their behalf and pray to God for them For Catholics statues are just another sign of the reality of the incarnation.

The Protestant Attitude to Statues

For some Christians, especially those who belong to the Protestant Church, the making of religious statues goes against the second commandment that forbids the making of any image as an object of worship. They might use just a simple cross with no image of Jesus on it.

Jewish Attitude to Statues

Jews do not use statues as a focus of prayer. It goes against the Ten Commandments ***"You shall have no other gods before me"*** Synagogues do not have any representation of God as he is above human understanding

Michelangelo's La Pieta

Statues help Catholics to reflect the meaning of suffering. One of the most famous statues that does this is **Michelangelo's La Pieta**. It is a statue of Mary holding the body of her son after his crucifixion. The word pieta comes from the Latin word for ***'holiness'.***

Key Quotes:

Blessed are the poor and spirit for theirs is the Kingdom of Heaven. (Matthew 5)

You have heard it said 'An eye for an eye' but I say to you...if anyone slaps you on the right cheek, turn to them the other cheek also. (Matthew 5:38-39)

Conscience is the voice of God within every human being (Augustine)

I am the Lord your God, you shall have no other Gods before me. (Exodus 20:2)

Knowledge Organiser Two

Importance of Pilgrimage

A pilgrimage is a journey to a holy place. **Reasons for Pilgrimage**: Catholics may go on pilgrimage for many reasons, including: To help strengthen faith, To share the experience and their faith with other believers, To pray for the sick, To thank God, To seek physical, spiritual or emotional healing, To ask for forgiveness, Pilgrimage allows pilgrims to reflect on their life journey and is an opportunity to take time out and focus on their journey with God. It is often a journey of self-discovery, most noticeably for those who are sick. Very few people who are sick come back cured however they may feel at peace and be able to accept and cope with the problems they face.

The Importance of Lourdes as a place of Pilgrimage for Catholics

Lourdes is a place of pilgrimage dedicated to Mary in the south west of France. In 1858 a young girl called Bernadette Soubirous had visions of Mary. Mary told her to dig for a spring, this spring is believed to have healing properties and many pilgrims bathe there. Thousands of pilgrims also pray in the grotto. Large numbers of people volunteer as helpers for the sick and disabled pilgrims, which can be a life changing experience.

Jewish Pilgrimage: Pilgrimage is not considered an obligation in Judaism. However, in practice, something like Pilgrimage is an important feature of life of many Jews.
The Torah refers to the traditional importance of all Jews going to Jerusalem for the festivals of Pesach, Shauvot and Sukkot. For some Jews it is important to visit Israel, particularly to visit or hold celebrations at the Western Wall.

Key Quotes:

"The Rosary is the most rich and beautiful of all prayers... (Pope Pius X)

"For God so loved the world that he gave his one and only Son" (John 3:16)

Popular Piety: The Rosary

The Rosary is a devotion in honour of our Mother, the Blessed Virgin Mary and contemplates the life of Christ through the eyes of Mary. The rosary is a popular form of prayer for Catholics. By praying it Catholics remember important events both happy and sad from the life of Jesus and Mary, his mother. The Sorrowful Mysteries in particular help Catholics to reflect upon the suffering if Jesus and the incarnation. Each bead represents a prayer and the beads are arranged in a sequence of one ***"Our Father"***, ten ***"Hail Mary's"*** and one ***"Glory Be"***. Most Catholics can recite the prayers from memory which means they can think more deeply about the meaning of the prayer. Each sequence of beads is called a decade and a set of rosary beads usually has five decades.

How and when do Catholics pray the Rosary?

Each of the Rosaries parts has a prayer to accompany it and the Rosary is divided into different sets of mysteries which are prayed on different days. There are three traditional sets of mysteries **The Joyful, The Sorrowful, The Glorious** Pope John Paul II added an additional set of mysteries: **The Luminous Mysteries.**

The Sorrowful Mysteries: These are the 5 that encourage Catholics to think about the meaning and importance of Jesus' suffering and death.
1.The Agony in the Garden, 2. The Scourging at the Pillar, 3. The Crowning of Thorns, 4. Jesus is made to carry his Cross and 5. Jesus dies on the Cross.

Key concept	Meaning
Conscience	An inner feeling of right and wrong that comes from God.
Evil	The absence of good which often results in suffering.
Free Will	The ability to choose right from wrong freely and without being controlled.
Goodness	The quality of being like God; putting the needs of others first.

All Saints' Drama Department: **KS4 – Set text study Blood Brothers – CONTEXT- Y10**

Key themes of the play:

- **Superstition** - People at this period of time were very superstitious and truly believed that there would be a consequence to actions such as breaking mirrors etc. The narrator appears as a constant reminder to Mrs Johnstone that giving away her baby will have a consequence later on.
- **Nurture v's nature -** A constant debate is raging about whether behaviour is innate or learnt through influence. Overall nurture seems to slightly over-ride nature through Edward's opportunities. This theme is epitomised by Mickey's exasperated cry, 'I could have been him!'
- **Class** – a clear divide is made between all classes in the play and it could be argued that the people who attempt to cross the class divide (Edward and Linda) are who cause the deaths of Mickey and Edward.
- **Friendship -** Friendship is explored through Many characters: Mr Johnstone, Mrs Lyons, Eddie, Linda and Mickey. Often however, friendships are broken and manipulated throughout the text and the depth of the brotherly friendship not only heightens the irony but deepens the tragedy of the ultimate betrayal.
- **Fate, bad luck and destiny** - Destiny is often explored through the narrator who is the voice of judgement in the play. It is indicated that the death of the twins is fated from the beginning because of Mrs Johnstone's choice to give Eddie away. The song 'Shoes upon the table' is full of key metaphors related to the theme.
- **Growing up** - Growing up is a key theme throughout the novel but also a source of great tension. The early years of childhood are portrayed as idyllic, teenage years awkward and adulthood ruinous. Growing up is also a source of tension for Mickey and Edward as Edward's delayed adulthood and immaturity at university initially causes the rift between them.
- **Money and power -** Money and power go hand in hand in Blood Brothers. We see Eddie get his position at his Father's factory whilst Mickey works putting together boxes. Eddie uses his position as the Chairman of the housing committee to get Linda and Micky their house. Mickey is very aware he is different to Eddie "I'm in these shoes..."
- **Love** - At the time when Blood Brothers was set sex outside of marriage was unacceptable and women who found themselves pregnant had to marry, like Mrs Johnstone Linda marries Mickey despite being in love with Eddie her marriage is important and divorce was uncommon at that period of time.

The plot:

Blood Brothers is a musical with book, lyrics, and music by Willy Russell. The story is a contemporary nature versus nurture plot, revolving around fraternal twins Mickey and Eddie, who were separated at birth, one subsequently being raised in a wealthy family, the other in a poor family. The different environments take the twins to opposite ends of the social spectrum, one becoming a councillor, and the other unemployed and in prison. They both fall in love with the same girl, causing a rift in their friendship and leading to the tragic death of both brothers.

The playwright:

Blood Brothers was written by Willy Russell.

Liverpool was set between the 1950's and 1970's.

Characters:

Mrs Johnstone
Mickey Johnstone
Mrs Lyons
Mr Lyons
Edward Lyons
Linda
Narrator
Sammy
Minor roles: Donna Marie, policeman, milkman, doctor

Margaret Thatcher:

She is alluded to throughout the play and subtly blamed for the difficulties of the working classes in the play, due to her political decisions to privatise and reduce public spending. She was known as 'Margaret Thatcher milk snatcher' for removing children's milk funding.

Marilyn Monroe:

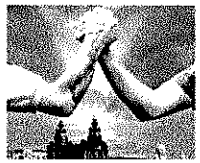
- Born in 1926 and died in 1962 from an overdose of sleeping pills
- Referenced throughout Blood Brothers – women at that period of time wanted to look like her, she was a cultural icon and a symbol of beauty and indulgence.
- Used as an iconic motif by Russell
- Parallels to Mickey – never knew her father, addiction to pills, both died
- Mrs Johnstone sings about Marilyn when Mickey is depressed "treats his ills with daily pills like poor Marilyn Monroe."

Liverpool and the docks

Liverpool is the setting of the play and at the time was seeing a lot of decline as many workers were being made redundant due to the economic decline and privatisation of manufacturing. It I also a perfect area as, like in the play, there were many affluent and poor areas in the city.

Image:

This image is very important in the play. This signifies the boys 'pretending' to be blood brothers which is dramatic irony because the audience know they are indeed 'blood brothers.'



Education

- Although the 1945 Education act had made grammar schools free, working class children had to pass the 11+ to gain entry to the grammar schools. The pass mark was kept deliberately high. Few children were allowed the privilege of a grammar school education, and even if they gained a place, there was no guarantee that they would leave with qualifications, as the school leaving age was 15.
- Pupils at grammar schools studied academic subjects and took O levels. Some went on to take A levels, while others were under pressure from parents to leave school, get a job and bring money into the household.
- There were far fewer university places then, so most would go into employment after school.
- Children who failed the 11+ would go to a secondary modern school to be prepared for life in the trades. Boys would study practical skills like bricklaying, alongside academic work, and girls would learn how to cook. Many of these schools were under-funded.

Social Context

- Set in Liverpool which was a prosperous seaport in the 19th Century however by the 20th century it was a place of financial depression, high unemployment and strikes
- People disapproved of sex before marriage which is why Mrs Johnstone has to marry
- Divorce was uncommon
- Council houses were the homes of most working class people in the 1950s and 1960s. The terraced houses had a lot to recommend them, but they were also cramped and lacked inside toilets and bathrooms. They did not have central heating and were heated mostly by coal fires. Their inner city locations were often dirty and there was nowhere for children to play as they rarely had gardens.

All Saints' Drama Department: **KS4 – Blood Brothers exam paper overview and design aspects – 4 marker**

Blood Brothers Exam Overview:

- Given an extract from the play
- Part of the extract will include a highlighted section of text
- 4 questions
- First question on design aspect – sound, props, costume, lights, set,
- Second question on one specific line of the extract asking if YOU were the character how would you play that line vocally and physically and be able to say why
- Third question asking how you would play one character from the extract with specific reference to the shaded part to create a specific effect, e.g. tension, comedy
- Fourth question on how you would play a character from the extract vocally and physically. Must make reference to the extract, play as a whole, social context, playwrights intentions.

Timings and marks:

Q1. Design – 4 marks – **5 minutes**
Q2. Specific line – 8 marks – **10 minutes**
Q3. Shaded part of extract – 12 marks – **15 minutes**
Q4 Whole extract and reference to play as a whole – **20 marks – 25 minutes**

Sound types

Diegetic
These are effects that are called for in the text as part of the performance. They are also known as 'spot' cues as they have to arrive precisely on time. Any sounds a character can hear on stage are diegetic, e.g a ringing phone which a character answers.

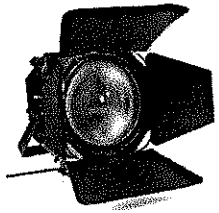
Non-Diegetic
Sound effects which are used to enhance a scene but are not realistically necessary to it. They are used to produce an effect on the audience.

Incidental sound
This is usually introductory pre-show or play-out music to create a mood or atmosphere. This can also be interval or scene change music

Soundscape
This refers to a soundtrack that runs continuously throughout a scene. It is designed to suggest and maintain a mood, atmosphere or place – often not noticed consciously by the audience but its effect is felt.

Lighting types:


Follow spot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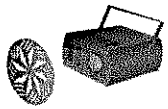
Par Can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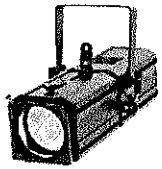

Profile spot

Example lighting question: "You are designing the lighting for the scene where Mickey is in jail. Consider what lighting types you would use and why."

Sound tools:
Volume -The volume of sound (soft or loud) is a basic effect.
Direction (speaker placement) - This is especially important for diegetic sounds – the noise needs to appear to come from the source
Sound quality -Sound may be manipulated to create specific effects, e.g distortion could be used
Sound selection and creation - Sounds need to be very carefully selected to enhance the play's atmosphere

All Saints' Drama Department: **KS4 – Blood Brothers exam paper – 8, 12, 20 markers**

Blood Brothers Exam Overview:

- Given an extract from the play
- Part of the extract will include a highlighted section of text
- 4 questions
- First question on design aspect – sound, props, costume, lights, set,
- Second question on one specific line of the extract asking if YOU were the character how would you play that line vocally and physically and be able to say why
- Third question asking how you would play one character from the extract with specific reference to the shaded part to create a specific effect, e.g. tension, comedy
- Fourth question on how you would play a character from the extract vocally and physically. Must make reference to the extract, play as a whole, social context, playwrights intentions.

Timings and marks:

Q1. Design – 4 marks – **5 minutes**
Q2. Specific line – 8 marks – **10 minutes**
Q3. Shaded part of extract – 12 marks – **15 minutes**
Q4 Whole extract and reference to play as a whole – **20 marks – 25 minutes**

Understanding of vocal and physical skills: Using the mouldy parmesan criteria

Mouldy (**movement**), parmesan (**posture**), grates (**gesture** – use of hand movement to signal thoughts and feelings), itself (**interaction** between other characters), very (**vocal expressions** – the way you use your voice) **pitch** (low pitch or high pitch) **pause** (stops between speech) **projection** (use of how you project your voice loudly or softly), **pace** (speed of speech), flipping easily (**facial expressions**).

8 marker:

The 8 mark question will give you one line from the extract in your examination paper and ask you how you would perform that line vocally and physically.

For example: *You are playing the role of Mrs Lyons. How would you use vocal and physical skills to perform the line below and explain the effects you want to create "Are you always going to follow me?"*

You must include **WHAT** you would do, **WHY** you would do it, **HOW** you would do it, have a good balance of vocal and physical skills and link points together, e.g a vocal point and physical point

"If I was playing the role of Mrs Lyons on the line "Are you always going to follow me?" I would walk quickly and purposefully (movement) towards Mrs Johnstone, then point sharply and directly (gesture) towards her whilst clenching my jaw (face) and speaking in an aggressive tone of voice (pitch) to show my anger at Mrs Johnstone being in my life. I would project the words (projection) "follow me" very loudly to show my frustration and worry that Mrs Johnstone being around us provides a big risk that Edward might find out I am not his birth mother. I would say the line quickly (pace) to emphasise my growing paranoia that Mrs Johnstone is following us."

12 Marker:

Using the same extract as the one used for the 8 mark question, you will be asked to perform a SPECIFIC character and create a **SPECIFIC** effect – e.g comedy, tension, frustration etc

Again you must refer to a good balance of vocal and physical skills and **WHAT** would you do, **WHY** you would do it and **HOW** you would do it.

Key themes / concepts:

- Superstition
- Nurture v's nature
- Class
- Friendship
- Fate, bad luck and destiny
- Money and power
- Love
- Education
- Marilyn Monroe
- Liverpool docks
- Recession

20 marker:

The 20 marker requires you to comment on both the extract and the play as a whole. It is usually focused on a different character to that answered for the 8 and 12 marker.

*"You are performing the role of Mickey. Describe how you would use your acting skills to **interpret Mickey's character** in this extract **and** explain why your ideas are appropriate both for this extract and the play as a whole."*

20 Marker Blood Brothers

Paragraph 1

Explain what is happening in this extract - BRIEFLY
In this extract the character of _____ is_____ (explain what the character does in this extract)
At this point in the play I would want the audience to _____
Character's relationship with others in the selected extract (In this extract _____ relationship with _____ is _____ because_____. This is reinforced by _____

Paragraph 2

Choose a specific moment from the extract (in chronological order)
What you would do – choose 2 from this list – Movement, posture, gestures, interaction, vocal – pitch, pause, projection, pace, facial expressions
I would (explain what you would do) _____ Then explain HOW and WHY you would do it.
Comparison with another moment in the play as a whole (write briefly about another moment from the whole play NOT the extract where we see SIMILAR behaviour)
This is similar to when _____ where I would _____

Paragraph 3

Choose another specific moment from the extract (in chronological order)
What you would do – choose 2 from this list – DIFFERENT SKILLS FROM LAST PARAGRAPH - Movement, posture, gestures, interaction, vocal – pitch, pause, projection, pace, facial expressions
I would (explain what you would do) _____ Then explain HOW and WHY you would do it.
Why you would do it:
Comparison with another moment in the play as a whole : (write briefly about another moment from the whole play NOT the extract where we see DIFFERENT behaviour)
This is different to when _____ where I would _____

Paragraph 4

Choose another specific moment from the extract (in chronological order)
What you would do – choose 2 from this list – DIFFERENT SKILLS FROM LAST TWO PARAGRAPHS - Movement, posture, gestures, interaction, vocal – pitch, pause, projection, pace, facial expressions
I would (explain what you would do) _____ Then explain HOW and WHY you would do it.
Why you would do it:

Paragraph 5

Choose another specific moment from the extract (in chronological order)
What you would do – choose 2 from this list DIFFERENT ONES TO LAST PARAGRAPH - Movement, posture, gestures, interaction, vocal – pitch, pause, projection, pace, facial expressions
I would (explain what you would do) _____ Then explain HOW and WHY you would do it.
Why you would do it:

Paragraph 6

Summary of character and significance in the play as a whole
Overall in this extract the character of _____ is significant because _____

All Saints' Drama Department: **Key Stage 4 Theatre Review**

Excellent band mark scheme for <u>Description</u>	**Opening paragraph** * Name of the play * Name of playwright * When you saw it and where you saw it * Summary of the plot in brief * Your opinion of the performance **Conclusion** * Summarise the question * Give an opinion on how successful each actor was/wasn't	**Structure** * Opening paragraph * Minimum of 2 WHAT, HOW, WHY, GOOD PARAGRAPHS for Actor 1 * Minimum of 2 WHAT, HOW, WHY, GOOD PARAGRAPHS for Actor 2 * Conclusion
Excellent band mark scheme for Analysis & Evaluation • Picks interesting moments • Writes about links to characters and whole play • Writes about **impact** for an audience • Evaluates well • Well rounded argument (not all positive or negative) • Writes in detail • Uses specific examples	**Each paragraph** **WHAT** did they do? **HOW** did they do it? **WHY** did they do it? **WAS** IT ANY GOOD?	**Don't forget to evaluate!** Try to avoid 'good' Use these instead- Effective successful clear engaging skilful convincing thought-provoking

Understanding of vocal and physical skills: Using the mouldy parmesan criteria – remembering the mnemonic and showing these skills in writing-

Mouldy (**movement**), parmesan (**posture**), grates (**gesture** – use of hand movement to signal thoughts and feelings), itself (**interaction** between other characters), very (**vocal expressions** – the way you use your voice) **pitch** (low pitch or high pitch) **pause** (stops between speech) **projection** (use of how you project your voice loudly or softly), **pace** (speed of speech), flipping easily (**facial expressions**).

All Saints' Drama Department: **KS4 – Devised Unit – Practical and log**

Choose **one** practitioner from the ones you have studied. You **must** then include **key techniques** from that practitioner throughout your piece. Re-cap on the techniques from your chosen practitioner using your previous knowledge organisers.

Look at a range of stimuli consider the following:

- What ideas initially come to mind when you look at this stimulus?
- What does it make you think of?
- How does it make you feel?
- What themes do you associate with your stimulus?
- What characters do you associate with your stimulus?
- What setting do you associate with your stimulus?
- How will you link your stimuli together?
- How did you and your group brainstorm ideas from the stimuli? Give examples about what you discussed

Research:

- What research will you undertake?
- What sources will you use for your research
- What did you find out once you had completed your research?

Intentions:

- What are you trying to show the audience about your character?
- What are your intentions for the piece as a group?
- What are your intentions for the piece as an individual?

Understanding of vocal and physical skills: Using the mouldy parmesan criteria – remembering the mnemonic and showing these skills in practice

Mouldy (**movement**), parmesan (**posture**), grates (**gesture** – use of hand movement to signal thoughts and feelings), itself (**interaction** between other characters), very (**vocal expressions** – the way you use your voice) **pitch** (low pitch or high pitch) **pause** (stops between speech) **projection** (use of how you project your voice loudly or softly), **pace** (speed of speech), flipping easily (**facial expressions**).

Devised log Section 1 – 600 – 700 words for section MAXIMUM

Section One – Paragraph by paragraph checklist: PARAGRAPHS 1 and 2

- What was your stimulus?
- What are your thoughts on your stimulus, explain more about the stimulus and what it is
- Explain how your group brainstormed ideas from the stimulus and give examples for what you discussed
- What themes and setting were you interested in?
- Explain a range of research that you did
- Explain what you discovered from your research and how this was applied in rehearsal, how did the research impact on your development of ideas?
- What were your individual and group aims?

- **Section One - Paragraph by paragraph checklist: PARAGRAPH** 3
- What practitioner did you choose and why?
- How do the practitioners' ideas link to your stimulus?
- What are the key techniques from this practitioner that you will be using and why?
- Give two examples of where the practitioners techniques will be effective

Section One - Paragraph by paragraph checklist: PARAGRAPH 4

- What is the main aim for your group and why?
- Describe the role that you will play
- What is the main aim for yourself and why?
- How are you going to use vocal and physical skills to portray this character effectively?
- Link to the audience

Section One - Paragraph by paragraph checklist: PARAGRAPH 5 • How did you contribute to the piece? • Describe an idea of yours that was used and how it was constructed	**Section Two: 1100 words for section MAXIMUM** **Section Two - Paragraph by paragraph checklist: PARAGRAPH 1** • What was your most influential scene and why? • What were you wanting to show the audience here? • Did you achieve this? **Section Two - Paragraph by paragraph checklist: PARAGRAPH 2** • Give two examples of how you developed an idea during rehearsals • Explain what changes and improvements you made to these following feedback
Section Two - Paragraph by paragraph checklist: PARAGRAPH 3 • Describe a practitioner concept you struggled to achieve – how did you originally show this? • Why didn't it work? • Explain how you used an explorative strategy to overcome this • What did you change and why? How did you help? • Why was this more effective?	**Section Two - Paragraph by paragraph checklist: PARAGRAPH 4** • Explain the role that you played • Why was this role important? • What was your aim? • HOW did you play this role? – vocally, physically, facially • What were the main challenges for you as a performer? How did you develop your role? **Section Two - Paragraph by paragraph checklist: PARAGRAPH 5** • Explain the role that set, costume, props, sound and light had in your piece • Why were these important?
Section Three – 600 words for section MAXIMUM **Section Three - Paragraph by paragraph checklist: PARAGRAPH 1** • Give a description of a moment you thought went well • What was your aim in this scene? Did you achieve it? • How did you do it? Voice, face, body, include quotations • What did you do with your face, voice, body on this quote? **Section Three - Paragraph by paragraph checklist: PARAGRAPH 2** • Give a description of another moment you thought went well • What was your aim in this scene? Did you achieve it? • How did you do it? Voice, face, body, include quotations • What did you do with your face, voice, body on this quote?	**Section Three - Paragraph by paragraph checklist: PARAGRAPH 3** • Did the practitioner you chose work well with the stimulus? • How did your contribution benefit the group? • How did the piece go overall? Did you meet your overall aim? • What was the audience response to your piece?

ABSOLUTE Component 3: Developing Fitness to Improve Other Participants Performance in Sport and Physical Activity

1) Components of Fitness

Physical Components

- **Aerobic endurance** – events/sports lasting more 30 minutes
- **Muscular endurance** – events/sports lasting more 30 minutes
- **Muscular strength** – activities requiring force, e.g. throwing events
- **Speed** – activities requiring fast movement, e.g. sprinting
- **Flexibility** – activities requiring a wide range of movement around a joint, e.g. gymnastics, martial arts
- **Body composition** – low body fat, e.g. gymnastics, high muscle mass, e.g. sprinters

Skill-related Components

- **Power** – activities requiring explosive movement e.g. gymnastics, basketball
- **Agility** – activities requiring quick changes of direction, e.g. dodging the opposition in a team game, freestyle skiing
- **Reaction time** – any activity where a quick decision or response to a stimulus is needed
- **Balance** – an activity requiring the control of the distribution of weight or to remain upright and steady
- **Coordination** – any activity requiring the movement of two or more body parts and can include the use of sporting equipment, e.g. hand, eyes and tennis racquet to connect with the tennis ball.

2) Fitness Training Principles

- Frequency – the number of training sessions completed over a period of time, usually per week
- Intensity – how hard an individual will train
- Time – how long an individual will train for
- Type – how an individual will train by selecting a training method to improve a specific component of fitness.

Additional principles of training:

- Progressive overload – in order to progress, training needs to be demanding enough to cause the body to adapt, improving performance
- Specificity – training should meet the needs of the sport, or physical/skill-related fitness goals to be developed
- Individual differences – training should meet the needs of an individual
- Adaptation – changes to the body due to increased training loads
- Reversibility – if training stops, or the intensity of training is lowered, fitness gains from training are lost
- Variation – altering types of training to avoid boredom and maintain motivation to train
- Rest and recovery – to allow the body to recover and adapt.

3) Exercise intensity

Intensity:

- Measure heart rate (HR)
- HR intensity to fitness training methods.

Target zones and training thresholds:

- Calculate training zones
- Apply HR max to training **50% Max HR – 50/100 x Max HR**
- Warm up and cool down zone **60% Max HR – 60/100 x Max HR**
- Fat burning zone **70% Max HR – 70/100 x Max HR**
- Aerobic training zone **80% Max HR – 80/100 x Max HR**
- Anaerobic training zone. **100 % - Max HR**

The Borg (6–20) Rating of Perceived Exertion (RPE) Scale

- RPE x 10 = Heart Rate (HR).

The relationship between RPE and heart rate where: RPE x 10 = HR (bpm).
Calculate 1RM for strength and 15RM for muscular endurance.

Technology to measure exercise intensity:

- Heart rate monitors
- Smart watches
- Apps.

Max HR in bpm = 220 – age
E.g. 16-year-old female's MHR is 220-16= 204 beats per minute (bmp)

4) Fitness testing

Reasons for fitness testing:

- Gives baseline data for monitoring/improving performance
- Can design training programmes
- determines if training programmes working
- Provide goal setting aims.

Pre-test procedures:

- Calibration of equipment
- Complete informed consent
- Complete Physical Activity Readiness Questionnaire (PAR-Q)
- Participant pre-fitness test check e.g. prior exercise participation.

Accurate measurement and recording of test results.
Basic processing of test results for interpretation
Reliability of test:

- Consistency of results
- Factors affecting reliability:

– calibration of equipment
– motivation of the participant
– conditions of the testing environment (inside versus outside conditions)
– experience of the person administering the test
– compliance with standardised test procedure.

Validity of results.
Practicality:

- Cost
- Time taken to perform the test
- Time taken to set up the test
- Time taken to analyse data
- Number of participants that can take part in the test at any time.

5) Fitness Test for components of physical fitness

Aerobic endurance:

- Multi-stage fitness test, also known as the bleep test (20 metre distance)
- Yo-Yo test
- Harvard step test
- 12-minute Cooper run or swim.

Muscular endurance:

- One-minute press-up
- One-minute sit-up
- Timed plank test.

Flexibility:

- Sit and reach test
- Calf muscle flexibility test
- Shoulder flexibility test.

Speed:

- 30 metre sprint test
- 30 metre flying sprint.

Muscular strength:

- Grip dynamometer
- 1 Rep Max.

Body composition:

- Body Mass Index (BMI)
- Bioelectrical Impedance Analysis (BIA)
- Waist to hip ratio.

6)Fitness Test for components skill-related fitness

Agility:

- Illinois agility run test
- T Test.

Balance:

- Stork stand test
- Y balance test.

Coordination:

- Alternate-Hand Wall-Toss test
- Stick flip coordination test.

Power:

- Vertical jump test
- Standing long/broad jump
- Margaria-Kalamen power test.

Reaction time:

- Ruler drop test
- Online reaction time test (reaction test timer).

7)Fitness training methods

Warm-up prior to taking part in the fitness training method – pulse raiser, mobility and stretch; reduce the risk of injury, prepare the body for exercise.
Cool down after taking part in the fitness training method – gradually lower pulse and breathing rate to resting levels; remove lactic acid; stretch to help return muscles to pre-exercise length.

1.Aerobic endurance:

- Continuous training – steady pace and moderate intensity for a minimum period of 30 minutes
- Fartlek training – the intensity of training is varied by running at different speeds and/or over different terrain
- Interval training – work period followed by a rest or recovery period
- for aerobic endurance decrease the number/length of rest periods and decrease work intensity (compared to speed training)
- Circuit training – use of a number of stations/exercises completed in succession with minimal rest periods in between to develop aerobic endurance.

2.Flexibility:

- Static active – the performer applies internal force to stretch and lengthen the muscle
- Static passive – requires the help of another person or an object, e.g. a wall to apply external force causing the muscle to stretch
- Proprioceptive Neuromuscular Facilitation (PNF) technique – the technique involves the use of a partner or immovable object, isometric muscle contractions to inhibit the stretch reflex.

8) Fitness training methods

3.Agility:

- Speed Agility and Quickness training (SAQ) – drills used to develop physical ability and motor skills. E,g, ladders, hurdle jumps.

4.Power:

- Plyometrics – lunging, bounding, incline press-ups, barrier hopping and jumping.

5.Balance:

- Use of specific training exercises that require balancing on a reduced size base of support.

6.Coordination:

- Use of specific training exercises using two or more body parts together. e.g. Alternate hand throw.

7.Reaction time:

- Use of specific training exercises to practise quick responses to an external stimulus e.g. 1,2,3 GO

8.Muscular endurance:

- Free weights and fixed resistance machines – high repetitions and low loads
- Circuit training – using body resistance exercises or weights with low loads and high repetitions.

9.Muscular strength training:

- Free weights and fixed resistance machines – high loads and low repetitions.

10.Speed:

- Acceleration sprints – pace is gradually increased from a standing or rolling start to jogging, then to striding, and then to a maximal sprint
- Interval training – work period followed by a rest or recovery period. For speed short, high intensity work periods, increasing the number of rest periods and increasing work intensity (compared to aerobic endurance training)
- Resistance drills – hill runs, parachutes, sleds, bungee ropes, resistance bands

9)Effects of long-term fitness training

Aerobic endurance training:

Adaptations to the cardiovascular systems

- Cardiac hypertrophy- Increase size of the Heart
- Decreased resting heart rate
  - Increase cardiac output
  - Cardiac output=HR X stroke volume (SV)

Adaptations to the respiratory systems

- Increased strength of respiratory muscles e.g. intercostal muscles
- Capillarisation around alveoli.

Flexibility training:

- Adaptations to the muscular and skeletal systems
- Increased range of movement permitted at a joint
- Increased flexibility of ligament and tendons
- Increased muscle length.

Muscular endurance training:

- Adaptations to the muscular system
- Increased capillarisation around muscle tissues
- Increased muscle tone.

Increased tolerance to Lactic acid – this causes fatigue and will stop a person from being able to run/ train.

Muscular strength and power training:

- Adaptations to the muscular and skeletal systems
- Muscle hypertrophy
- Increased tendon and ligament strength
- Increased bone density.

Speed training:

- Adaptations to the muscular system
- Increased tolerance to lactic acid.

10) Public, Private and Voluntary sectors

Provision: to supply something for use

1. Public- Funded by the government. Money is raised by charging the general public tax which is then invested into sport and facilities.

+ Large so can have many members
+ Low prices
+ Funded by the local council
-Facilities can be basic
-Out of date equipment
e.g. Water Meadows

2. Private sector- Exists to make a profit.

+ Offer specialist services, classes, massage.
+ Luxurious high quality equipment
-Expensive to join
-many have to be members and pay monthly
- Aims at certain groups rather than everyone
e.g. DW fitness

3. Voluntary- Run by people who work for free.

+Coaches have a lot of experience and focus on developing specific sport fitness.
+Low cost to use
-Sport Specific
Facilities and equipment can be basic.
e.g. Mansfield Harriers Athletics Club

11.Fitness programming to improve fitness and sports performance

Personal information to aid training fitness programme design

- Aims – details of what they would like to achieve for the selected sport.
- Objectives – how they intend to meet their aims using an appropriate component of fitness and method of training.
- Lifestyle and physical activity history.
- Attitudes, the mind and personal motivation for training.

Fitness programme design

-Use personal information to aid training programme design.
-Selection of appropriate training method/activity for improving/maintaining the selected components of physical and/or skill-related fitness.
-Application of the FITT principles and additional principles of training.

12.Motivational techniques for fitness programming

Definition of motivation – the internal mechanisms and external stimuli that arouse and direct behaviour.

Types of motivation:

- Intrinsic-
- Extrinsic.

-Principles of setting goals to increase and direct motivation.

Personal goals – specific, measurable, achievable, realistic, time-related, exciting, recorded (SMARTER):

- Short-term goals (set over a short period of time, between one day and one month)
- Long-term goals (what they want to achieve in the long term, and the best way of doing this).

Influence of goal setting on motivation:

- Provide direction for behaviour
- Maintain focus on the task in hand.

Benefits of motivation on the sports performer:

- Increase participation
- Maintain training and intensity
- Increased fitness
- Improved performance.

Exam Techniques:

1 mark model answer: Name **one** test that is used to test flexibility.

- Sit and reach test. (1)

2 mark model answer: Explain **one** component of a warm-up.

- One component of a warm up is a pulse raiser (1) this is used to increase the heart rate/breathing rate/body temperature (1)

4 mark model answer: definition and expansion

Explain **two** different types of goal.

- One type of goal is a short-term goal (1) this is set over a short period of time, this can either be one day to one month. (1) Another type of goal is a long-term goal (1) this is what is wanted to be achieved in the future or in the long term (1)

6 mark model answer: Link and apply to practical example

Assess how Samantha's coach could use 'Specific', 'Measurable' and 'Recorded' goals to improve her performance.

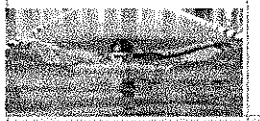
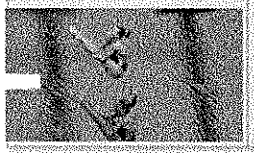
Her coach could use specific goals, by setting goals individual to the performer to state exactly what is wanted to be achieved (1) and to increase Samantha's speed over 100m. (1) Also, she can use measurable goals, this is to show what measure is used to monitor progress (1) and to reduce time/mins/seconds.(1)Additionally, she can use recorded by writing down her progress(1) and Samantha will keep a diary of her results to track her progress.(1)

PAPER 2 ALL SAINTS ABSOLUTE 4.1 & 4.2 Sports psychology

1.Characteristic of skill movement

Skills are learnt predetermined movement

Motor Skill – A coordinated pattern of movements using voluntary body movement

Characteristics of skilful performance	
	**Pre-determined** – A player will practice skills with an aim in mind e.g. Improving shooting skills in order to score more goals.
	**Aesthetics** – The skills look good. E.g. A high quality dance or gymnastics routine is pleasing to watch this will give them a higher score.
	**Coordination** – The skilful performer is in charge, controlling the rate and timing of the skill. E.g. serving in tennis, throwing the ball up and timing when to hit the ball.
	**Efficiency** – A skilled player is able to perform the task to the same high-level repeatedly without wasted energy. E.g. having a larger reach in swimming to not waste energy.
	**Fluency- Performed in a smooth movement e.g. A gymnastic routine flowing.**

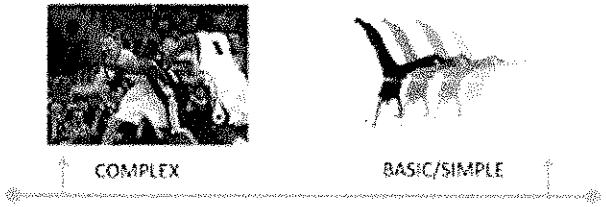
2. Classification of skills

It is useful to classify skills because it makes it clearer about what is required to learn and perform a particular skill.

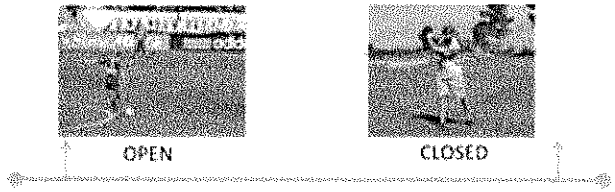
Every skill can be placed on a continua (scale). There are two continua:

Every skill can be placed on a continua (scale).
There are two continua:

Difficulty Continuum - Simple/Complex



Environmental Continuum - Open/Closed



Difficulty Continuum
Simple = Straightforward, with very few decisions to be made. Can be taught as a whole in a repetitive way. E.g. Sprint start in athletics, a goal kick/pass in football, swimming stroke.
Complex = Many decisions or judgements/ many linked sub routines. May have to be learned in stages. E.g. dribbling in Basketball, Somersault, Trampolining routine.
Environmental Continuum
Open = the skill is effected by the environment and requires the performer to make perceptual decisions. E.g. passing in football
Closed = the skill is not effected by the environment. E.g. Long Jump, golf swing.

Goal Setting

Why do we set goals?

1. For exercise/**training adherence** – goal setting can help people to stick to a training plan
2. To **motivate** performers – goal setting can inspire and drive performers to achieve their best
3. To improve and/**or optimise performance** – goal setting can often lead to higher levels of performance

Why do some athletes not reach their goals?

1. The goals were unrealistic
2. The athlete did not try hard enough
3. The athlete used poor technique

SMART Targets – Bobby is a 100m sprinter and has used the SMART principle to his targets to optimise his performance on the track.

Specific	Measurable	Achievable/ realistic	Recorded	Time-phased
Targets must be concise. ***"To take a 0.5 second off my time personal best time"*** ***"To increase the number of training sessions attended by the end of the season"***	Must be measured and compared, performances should be measured after each training session. ***"I will time my runs every training session for the next five weeks of training"***	Target must be challenging but yet reachable. ***"My coach and I devised the training programme around improving leg power for my start"*** ***"We agreed that a 0.5 seconds off my personal best is realistic for my current ability and status"***	You must ensure you write down you results in response to your goal. ***I will monitor my performance by writing down how many first serves are aces in Tennis, to see an improvement"***	Set for a particular time to be completed. ***"We agreed to do the training programme four times per week for the next five weeks"***

1. **Mental Preparation:** Mental preparation helps athletes to achieve a focused, confident and trusting mind set to allow them to compete at their highest level.

There a 4 types of mental preparation:

1. **Imagery** - A technique involving a performer practising a skill in their head/mind before physically executing it. . The imagery should have the athlete performing successfully and feeling satisfied. E.g. Owen Farrell imagining the set up for his kick.

2. **Mental Rehearsal** – Going over an event/ skills time and time again. This is similar to imagery but can be used to:
   - Familiarise the athlete with the competitive environment
   - Motivate the athlete by recalling images previous success
   - Perfect skills or skill patterns by refining the skill
   - Set the stage for the performance with a complete mental run through

3. **Selective Attention** – This is the process of focusing on a particular object in the environment for a certain period of time and blocking out the distractions. ***e.g. free throw in basketball; whereby you focus on the basket and your performance and block out the crowd.***

4. **Positive Thinking** - This involves recognising that the athlete has started worrying about a performance and refocusing by using positive inner thoughts. E.g. A netball player tells herself "focus" or a footballer telling themselves that they can score a penalty kick.

2. Types of Guidance: Needed for learning new skills

Type of Guidance	Advantages	Disadvantages	Example
1.Visual Guidance: Showing a skills/ demonstration.	Provides a mental image. Draws attention to key points beginners to interpret new skills	Can demotivate and overload learner if it's a complex skill.	Providing a demonstration how to perform a Tennis serve/ watching a lay up on an I pad.
2.Verbal Guidance: Terminology and phrases used to make skills simple	Explain tactics and technical info Immediate feedback	Players can be confused easily Lose concentration	Explaining the correct technique for a Handball Jump Shot.
3.Manual Guidance: Physically moving a limb into place.	Builds confidence Eliminates danger Gives feel for whole skill	Learner becomes dependent on support	A coach supporting a shoulder when performing a handspring on a vault.
4.Mechanical Guidance: Involves the use of equipment	Promotes confidence Ensures safety	Learner becomes dependent on support	Using a float in Swimming to help stay a-float. Trampoline belt for somersaults.

4. Feedback: There are 6 Types of Feedback

Feedback	Description/ Evaluation	Application
Negative Feedback	Information about an unsuccessful performance/ weaknesses / what went wrong/ EBI +ve can result in a higher leveled performance -ve This might result in a lowering of confidence.	E.g. A coach telling a Badminton player that his last serve showed poor technique
Positive feedback	Information about successful performance/ What Went Well. +ve Good for beginners to help them gain confidence. -ve Does not correct errors in performance.	e.g. A Coach telling the diver that their handstand to back tuck was fluent,
Internal/ Intrinsic Feedback	This type of feedback happens within the performer. Information is received as a direct result of producing movement.	After taking a corner in football, the player will know straight away if it is the desired ball intended to take.
External/ Extrinsic Feedback	This feedback comes from results of match analysis. Examples include watching a performance back from a video or listening to a coaches comments.	Watching a Hockey hit pass replay on an I pad to gain an understanding of what technical points need improving.
Knowledge of results	Feedback that relates to the outcome of the performance/ skill.	e,g, Looking at the Shot Put distance to gain an understanding of were they are at in their training.
Knowledge of performance	Feedback that relates to the quality of the performance/ skill/ technique.	e.g. A coach telling the high Jumper to drive their knee higher on their next jump.

PAPER 2 – ALL SAINTS' ABSOLUTE 5.1 & 5.2 – Health, fitness and well-being

1.Health- Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease.
2.Wellbeing - this refers to a feeling or mental state of being contented, happy, prosperous and healthy
3. Fitness - A persons ability to carry out daily life activities without becoming overly tired. ability to meet physical demands placed on them by the environment
4. Lifestyle- Daily habits
5. Obesity- Very overweight and a body Mass index of 30 and above.

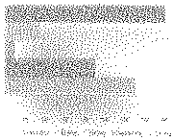
1. Effects of exercise on health

Physical Health	Emotional Health	Social Health
• Increased bone density • Lower cholesterol / reduced obesity • Reduce risk of type 2 diabetes • Increase posture • Development of components of fitness e.g. strength and CV endurance.	• To increase self esteem/confidence – increased endorphins released • Controlling anxiety / managing stress • Relieve stress and tension • Increase happiness • Better self image *e.g. Going to a gym will release endorphins which will help reduce stress levels.*	• To meet new people/friends • Reduce loneliness • Feeling of belonging to a group • May alienate other friends/ acquaintances • May result in rejection from other groups or jealousy • Might result in rejecting other who do not participate in sport *e.g. If I join a Netball team, I will make new friends and socialise more. This will make me happier.*

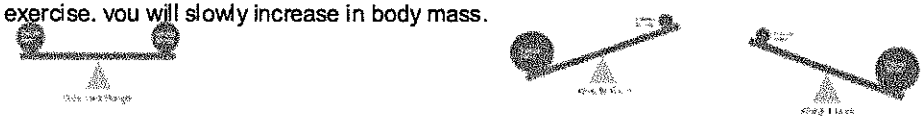
2. Sedentary lifestyle – a way of lifestyle with no/ little physical activity. This includes sitting, reading, watching television & playing video games, sitting at a desk.
Consequence- A lack of energy or feeling lethargic or lack of fitness; More likely to be obese/overweight or negative body image; Lack of interest / motivation/ more stressed; Less likely to benefit from social interaction.

Data
Data is used to gain national information about health, fitness and wellbeing. When studying graphs, look at the X and Y axis to know what the variable area and then comment on the general trend.

3. Health risks associated are:
- Heart disease
- Type 2 diabetes
- **Obesity (result in stroke or CHD)**
- Osteoporosis
- Depression
- Muscular Atrophy
- Poor posture



4. Energy balance – This is where the energy in through food/ calories must match the energy expenditure through exercise/ daily activity. If you eat too many calories and do little exercise. you will slowly increase in body mass.



Diet

5. **Balanced Diet –** Taking in the right amount of energy/nutrient in the right proportions to maintain a healthy body weight.
6. Eat well plate- This must include 55% of Carbohydrates, 30% of fat and 15% Protein. Plenty of fruit and vegetables; Water is essential.

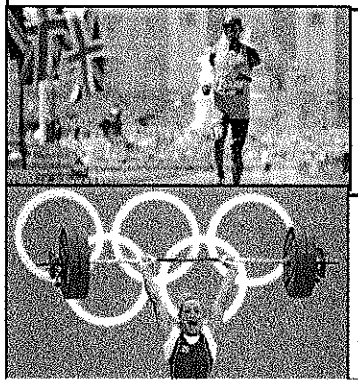
Macronutrients	Micronutrients
Carbohydrates – Main energy source. i.e. Complex starch (pasta, potatoes, cereals, breads) & simple sugars (glucose, chocolate, sweets, fruit)	**Minerals** – Maintains healthy bodily functioning. i.e. iron and calcium e.g. Protects against heart disease.
Fats – Secondary energy source & provides insulation. i.e. Saturated fats (butter) & unsaturated fats (vegetable oil)	**Vitamins -** 1. Prevents disease / illness / maintain health 2. (Helps) produce energy 3. Essential for metabolism or helps for growth/repair/development Maintains a healthy immune system. i.e. vitamin A, C, D
Proteins – Help growth and repair of muscles e.g. hamstrings, cardiac muscle. i.e. eggs, meat, fish, nuts and oats	Vitamins- e.g. Fruit, vegetables

Fibre – Aids digestion of food/large intestine function, helps reduce cholesterol, limit obesity/diabetes and limit certain cancers or help prevent disease. *i.e.* Fruit vegetables, wholemeal bread, beans, lentils, cereals , brown bread

Water – Carries nutrients in the body, Helps with digestion/waste removal, Regulates body temperature,Avoid dehydration and help replaces lost fluid (from urine and sweat),To quench thirst, To offset fatigue or to prevent heat exhaustion

e.g. *After a hard training session, it is vital that Carbohydrates are consumed after to replenish the energy expired and aid the recovery process.*

7. How do the nutritional requirements change for different athletes?



- Long Distance Runner
- Will need a high Carbohydrate Diet **(Carbo-Loading)**
- Increase stores of glycogen / energy
- Ability to work at a higher intensity for longer

- Weight lifter
- High Protein Diet
- Aid in the repair and growth of muscles
- Recover quicker leading to training more and becoming stronger.

Homeostasis and Response B5

1. HOMEOSTASIS

Homeostasis is the regulation of the internal conditions of a cell or organism to maintain **optimum** conditions for cell/enzyme function in response to internal and external changes.

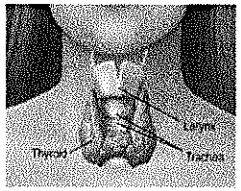
Processes controlled by homeostasis include:

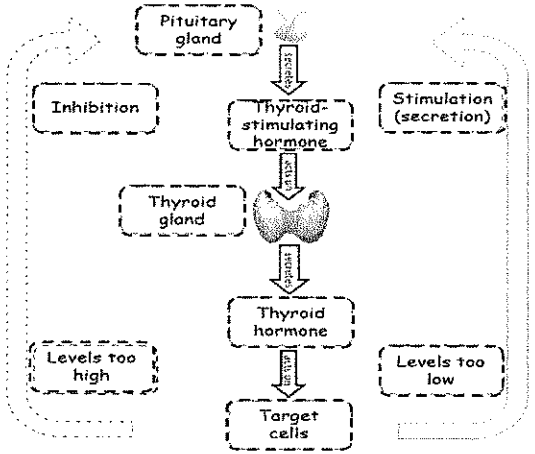
- Blood glucose concentration
- Body temperature
- Water levels

3. NEGATIVE FEEDBACK (HT)

Thyroxine is controlled by **negative feedback.**

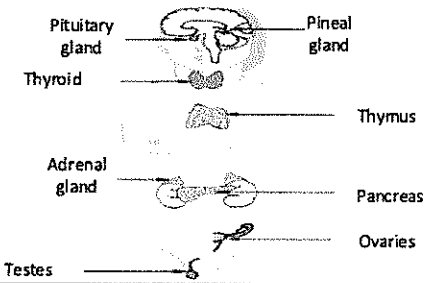
It is released from the pituitary gland and stimulates basal metabolic rate, therefore plays an important role in growth and development.





2. ENDOCRINE SYSTEM AND HORMONES

Composed of **glands** which secrete chemicals messengers called **hormones** directly into the bloodstream.



Name of gland	Hormone released	Function of hormone
Pituitary	'master gland'- several hormones	Stimulate other hormones to be released
Pancreas	Insulin	Control blood glucose concentration
Thyroid	Thyroxine	Control metabolism
Adrenal	Adrenaline	Fight or flight/ coping with stress
Ovaries	Oestrogen	Controls female sexual characteristics
Testes	Testosterone	Controls male sexual characteristics

4. NERVOUS SYSTEM

The nervous system enables humans to react to their surroundings and to coordinate their behaviour. Messages are passed through neurones as **electrical impulses.** Actions can be conscious (involving the brain) or reflex actions, which do not involve the conscious part of the brain. Reflex actions are automatic and rapid, to protect you from harm.

CONSCIOUS ACTION	REFLEX ACTION
Stimulus -> receptor cells -> sensory neurone -> **coordinator** -> motor neurone -> effector -> response.	Stimulus -> receptor cells -> sensory neurone -> **relay neurone** -> motor neurone -> effector -> response

Keyword	Definition
Stimulus	Change in environment
Receptor	Cells which detect the stimulus
Sensory neurone	Carries the electrical impulse from the receptor to the CNS (brain/spinal cord)
Relay neurone	Allows electrical impulse to travel between the sensory and motor neurone
Motor neurone	Carries the electrical impulse from the coordinator to the effector
Effector	Muscle or gland which carries out the response

SYNAPSE

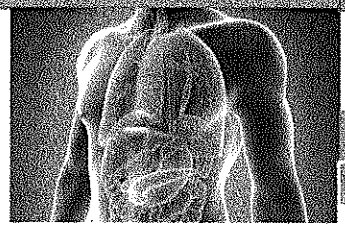
1. An electrical impulse travels along
2. This triggers the nerve-ending of a neuron to release chemicals called **neurotransmitters**.
3. These chemicals **diffuse** across the synapse and bind with **receptor molecules** on the membrane of the next neuron.
4. The chemicals bind to the specific receptors on the next neuron. This **stimulates** the second neuron to transmit the electrical impulse.

5. NERVOUS VS ENDOCRINE SYSTEM

System:	Nervous system	Endocrine system
How are the messages carried?	Nerve impulses which are electrical signals	Hormones which are chemical signals
Target	Carried by nerves to specific locations, e.g. muscle.	Carried in blood to all organs but affects the target organ only.
Response	Rapid and precise	Slower but acts for longer

Homeostasis and Response B5

6. CONTROLLING BLOOD GLUCOSE CONCENTRATION



Blood glucose concentration goes too high:

- Pancreas detects high glucose concentration
- Pancreas releases insulin
- Insulin converts glucose into glycogen, in the liver
- Blood glucose concentration decreases back to normal

Blood glucose concentration goes too low (HT):

- Pancreas detects low glucose concentration
- Pancreas releases glucagon
- Glucagon converts glycogen back into glucose, in the liver
- Blood glucose concentration increases back to normal

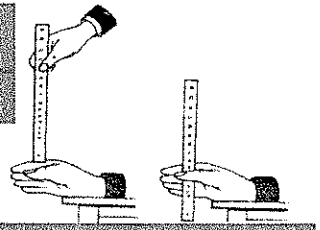
7. DIABETES: unable to regulate blood glucose concentration

	Type 1 diabetes	Type 2 diabetes
Cause	Pancreas fails to produce sufficient insulin, leading to high blood glucose levels.	The body cells no longer respond to insulin produced by the pancreas.
Treatment	Insulin injections	A carbohydrate controlled diet and an exercise regime are common treatments.

8. HORMONES IN THE MENSTRUAL CYCLE

Menstrual cycle	***Follicle stimulating hormone (FSH)***	Causes maturation of an egg in the ovary.	**(HT)** FSH stimulates ovaries to produce oestrogen.
	Luteinising hormone (LH)	Stimulates release of an egg (ovulation)	**(HT)** Oestrogen stops FSH production and stimulates LH production in pituitary gland.
	Oestrogen and progesterone	Maintain uterus lining, for implantation	

9. REACTION TIMES



An increased reaction time means that it will take you longer to react to a situation.

Reaction times can be measured using the ruler drop test.

10. METHODS OF CONTRACEPTION

Contraception	Hormonal?	How it works
Oral contraceptives	Hormonal	Contain hormones to inhibit FSH production so that no eggs mature.
Injection, implant	Hormonal	For slow release of progesterone to inhibit the maturation and release of eggs for months or years.
Barrier methods	Non-hormonal	Prevent the sperm coming into contact with the egg
Intrauterine devices	Hormonal	Prevent implantation of an embryo or release a hormone.
Spermicidal agents	Non-hormonal	Kill/disable sperm
Abstaining	Non-hormonal	Avoiding intercourse during the ovulation period
Surgery	Non-hormonal	Male or female sterilisation

11. TREATMENT OF INFERTILITY (HT)

FSH and LH can be given as a fertility drug to woman, so she is able to naturally conceive (become pregnant). If this method is unsuccessful, a couple may choose to have **IVF (in vitro fertilisation).**

IVF process

1. FSH and LH are given to the woman, to stimulate egg maturation
2. The eggs are collected from the mother and fertilised by the fathers sperm, in the laboratory
3. The fertilised eggs develop into embryos
4. One or two embryos are inserted into the mother's uterus

Disadvantages of IVF: it is emotionally and physically stressful, the success rates are not high and decrease with age, it can lead to multiple births which are a risk to both the babies and mother

B7 Ecology

1. Definitions

Habitat	The place where an organism or a community of organisms live
Population	A group of organisms of a species that interbreed and live in the same habitat at a same time
Community	Two or more **populations** of organisms.
Ecosystem	The interaction of a community of living organisms (biotic) with the non-living (abiotic) parts of their environment.
Interdependence	How species depend on each other. Removing a species can affect the whole community.
Stable community	A community where all the species and environmental factors are in balance so that population sizes remain fairly constant.
Extremophile	Organisms living in environments that are very extreme, such as at high temperature, pressure, or salt concentration.
Consumer	Eats other organisms
Biodiversity	The variety of all the different species of organisms on earth, or within an ecosystem.
Global warming	An increase in the overall temperature of the earth's atmosphere

2. Competition

To survive and reproduce, organisms require a supply of materials from their surroundings and from the other living organisms there; this can lead to **competition.** The best **adapted** organisms are more likely to outcompete.
Two animals might compete for: a mate, food and territory
Two plants might compete for: space, light, nutrients and water

3. Biotic and abiotic factors

Biotic (living factors) which can affect a community:	Abiotic (non-living factors) which can affect a community:
Food availability	Light intensity
Predators	Temperature
Pathogens	Moisture levels
One species outcompeting another so that numbers are no longer sufficient to breed	Soil PH/mineral content
	Wind intensity/direction
	Carbon dioxide levels
	Oxygen levels

4. Adaptation

Organisms have features (adaptations) that enable them to survive in the conditions in which they normally live.

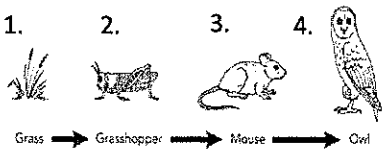
Types of adaptation

- Behavioural
- Structural
- Functional

Plants	Animals	Extremophiles
Cactus in dry, hot desert	Polar bear in extreme cold artic	Deep sea vent bacteria
		
• No leaves to reduce water loss • wide deep roots for absorbing water.	• Hollow hairs to trap layer of heat. • Thick layer of fat for insulation.	• Populations form in thick layers to protect outer layers from extreme heat of vent.

5. Food chains

Feeding relationships within a community can be represented by food chains. A set of linked food chains is a **food web.**



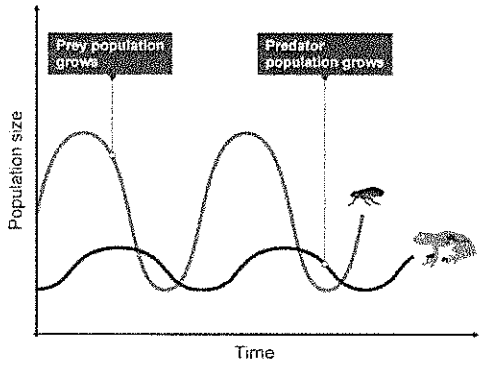
The arrow represents the transfer of energy

1. All food chains begin with a **producer,** which synthesises molecules by photosynthesis
2. The producer is eaten by a **primary consumer**
3. The primary consumer is eaten by a **secondary consumer**
4. The secondary consumer is eaten by the **tertiary consumer**

Consumers that kill and eat other animals are **predators**, and those eaten are **prey**.

B7 Ecology

6. Predator prey cycle

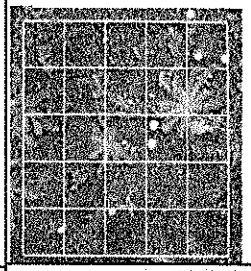


1. The number of predators increases because there is more prey
2. The number of prey reduces because there are more predators
3. The number of predators reduces because there is less prey

7. Sampling distribution

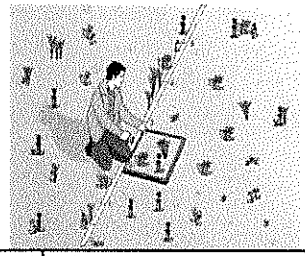
Experimental methods are used to determine the distribution and abundance of a species.

Quadrat



1. Place the quadrat **randomly**
2. Count the number/percentage cover of organisms in the quadrat
3. Repeat
4. Calculate a **mean**
5. Multiply to the size of the field to **estimate** the total amount

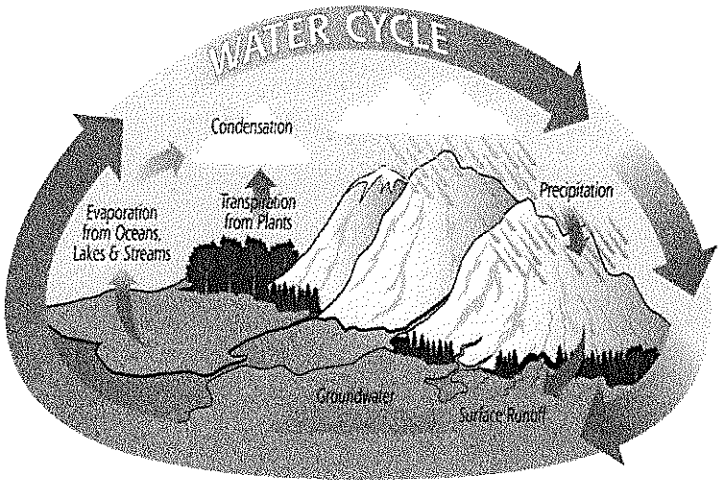
Transect



1. Place a tape measure along the ground
2. Every 1m place down a quadrat and count the number/percentage cover
3. Repeat and calculate a mean

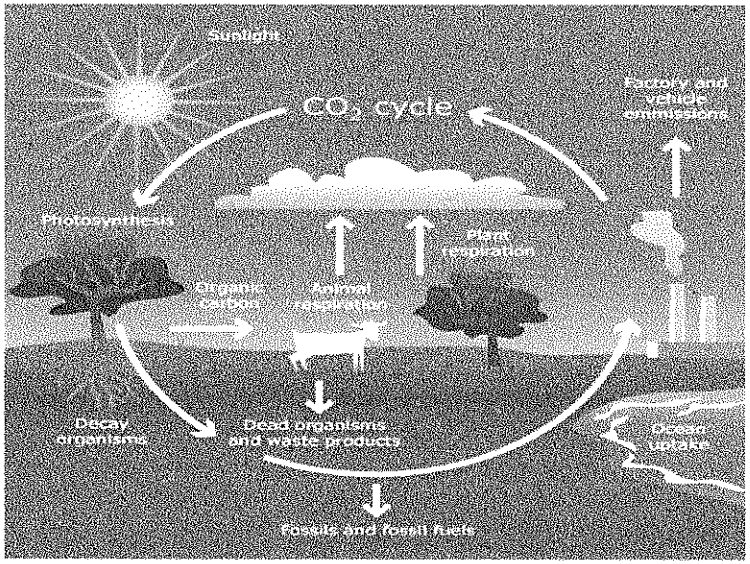
8. Water cycle

The water cycle provides fresh water for plants and animals on land before draining into the seas. Water is continuously evaporated and precipitated.



9. Carbon cycle

The carbon cycle returns carbon from organisms to the atmosphere as carbon dioxide to be used by plants in photosynthesis.



10. Biodiversity

A great biodiversity ensures the stability of ecosystems by reducing the dependence of one species on another for food, shelter and the maintenance of the physical environment.

Threats to biodiversity

1. Deforestation of habitats (to provide land for cattle and rice fields and grow crops for biofuels)
2. Building, quarrying, farming and dumping waste
3. Destruction of peat bogs, to produce garden compost
4. Burning fossil fuels, which releases carbon dioxide and leads to global warming
5. Human population growth
6. Production of waste from: sewage, fertilisers, landfill, toxic chemicals and acidic gases

Maintaining biodiversity

1. Breeding programmes for endangered species
2. Protection and regeneration of rare habitats
3. Reintroduction of field margins and hedgerows in agricultural areas where farmers grow only one type of crop
4. Reduction of deforestation and carbon dioxide emissions by some governments
5. Recycling resources rather than dumping waste in landfill.

C10 Using Resources Absolutes

1. Life cycle assessments:
Carried out to assess the environmental impacts of products from their creation to their disposal.
They are assessed at these stages:
- Extraction and processing raw materials
- Manufacturing and packaging
- Use and operation during lifetime
- Disposal

Value judgments are allocated to the effects of pollutants so LCA is not a purely objective process.

2. Potable water: Water that is safe to drink. it has low levels of dissolved salts and no microbes.
Ground water: rain has low levels of dissolved substances. Collects in the ground/lakes/rivers.
To make potable water an appropriate source is chosen, which is then passed through filter beds and then sterilised.
Desalination: achieved by distillation or by using large membranes e.g. reverse osmosis. These processes require large amounts of energy.
Waste water: requires treatment before used in the environment. Sewage needs the organic matter and harmful microbes removed.
Sewage treatment: Screening and grit removal
- Sedimentation to produce sludge and effluent (liquid waste or sewage).
- Anaerobic digestion of sludge
- Aerobic biological treatment of effluent.

Sterilising- chlorine, ozone or UV light is used to kill bacteria.
Fluoridation- fluorine is added to prevent tooth decay.
Required practical 8: analysis and purification of water samples from different sources.

3. Earths resources:
Used to provide warmth, shelter, food and transport for humans
Natural resources and resources from agriculture provide: timber, food, clothing and fuels.
Finite resources from the Earth, oceans and atmosphere are processed to provide energy and materials.
Plastics:
Normally made from ethene from crude oil, but ethene can also be obtained from ethanol, which can be produced during fermentation. Industries are now starting to use a renewable crop for this process

4. Reducing the use of resources:
Limited raw materials- used for glass, metals, building materials, plastics and ceramics- Most of the energy required for these processes comes from limited resources. Obtaining raw materials from the Earth by quarrying and mining causes environmental impacts.

Reduce, reuse and recycle- reduces the use of limited resources- reduces energy sources being used, reduces waste (landfill) and reduces environmental impacts.

Reusing and recycling- metals can be recycled by metals and recasting/ reforming- Glass bottles can be reused. They are crushed and melted to make different glass products. Products that cannot be reused are recycled.

5. Extracting metals:
Metal ores are limited- especially copper ores. New ways of extracting from low grade ores are being developed.
Phytomining- plants absorb metal compounds, are then burned and the metal compounds removed from the ash by making a solution then electrolysis is carried out on the solution.
Bioleaching- bacteria are used to produce leachate solutions that contain metal compounds. They are then processed to obtain the copper from it- copper is displaced from the compound and purified by electrolysis.

Scalar quantities have magnitude only. Speed does not involve direction. Speed is a scalar quantity.
Vector quantities have magnitude and an associated direction. Force is a vector quantity. The velocity of an object is its speed in a given direction. Velocity is a vector quantity.
A vector quantity may be represented by an arrow. The length of the arrow represents the magnitude, and the direction of the arrow the direction of the vector quantity.
A **force** is a push or pull that acts on an object due to the interaction with another object. All forces between objects are either:
Contact forces – the objects are physically touching. E.g friction, air resistance, tension and normal contact force.
Non-contact forces – the objects are physically separated. E.g gravitational force, electrostatic force and magnetic force.
Resultant force is the single force that has the same effect as all the original forces acting together. **Speed** at which a person can walk, run or cycle depends on many factors including: age, terrain, fitness and distance travelled.
Typical values may be taken as:
walking- 1.5 m/s
running- 3 m/s
cycling- 6 m/s.
A typical value for the speed of sound in air is 330 m/s.

Higher Tier

Circular motion - When an object moves in a circle at a constant speed , its direction constantly changes. A change in velocity results in acceleration , so an object moving in a circle is accelerating even though its speed may be constant.

Weight is the force acting on an object due to gravity.
Weight (N) = mass (kg) × gravitational field strength (g)
Weight is measured using a calibrated spring-balance (a newton meter).

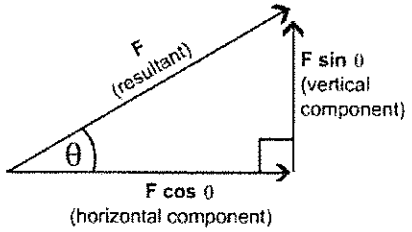
Work done - a force causes an object to move through a distance work is done on the object. The work done by a force on an object can be calculated using the equation:
Work done (J) = force (N) × distance moved (m)
One joule of work is done when a force of one newton causes a displacement of one metre.

Elasticity - the extension of an elastic object, such as a spring, is directly proportional to the force applied, provided that the limit of proportionality is not exceeded.
Force (N) = spring constant (N/m) × extension (m)
F=ke

Elastic potential energy - a force that stretches (or compresses) a spring does work and elastic potential energy is stored in the spring.
Elastic potential energy = 0.5 × spring constant × extension^2

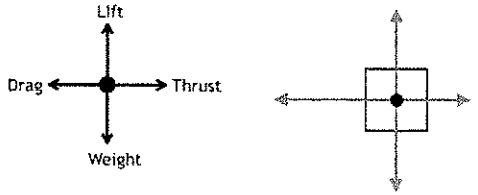
Speed - for an object moving at constant speed the distance travelled in a specific time can be calculated using the equation:
Distance travelled (m) = speed (m/s) × time (s)

Finding forces on a vector diagram (Higher Tier) – resolving the force into components



Free body force diagrams (Higher Tier)
A free body force diagram shows the magnitude and direction of the forces acting on an object.

Balanced Forces **Unbalanced Forces**



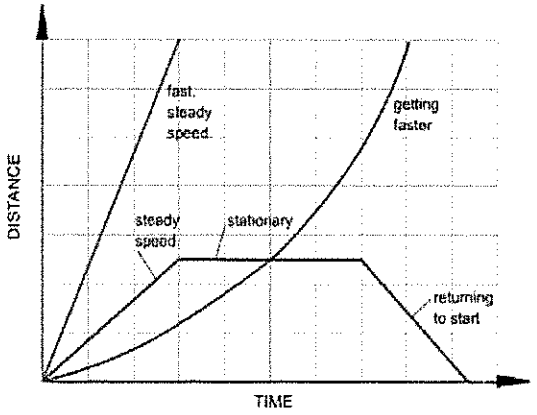
Acceleration - near the Earth's surface any object falling freely under gravity has an acceleration of about 9.8 m/s^2.
An object falling through a fluid initially accelerates due to the force of gravity. Eventually the resultant force will be zero and the object will move at its **terminal velocity**. The average acceleration of an object can be calculated using the equation:
Acceleration (m/s^2) = change in velocity (m/s) / time taken (s)

Distance – Time Graphs

Gradient = Speed

Higher Tier

The speed AT a particular time can be calculated by drawing a tangent to a curve and finding the gradient.



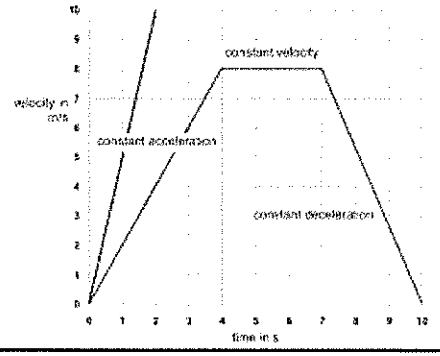
Velocity – Time Graphs

Gradient = Acceleration

Higher Tier

Area under the line = Displacement

The acceleration AT a particular time can be calculated by drawing a tangent to a curve and finding the gradient.



Stopping Distance

stopping distance = thinking distance + braking distance

thinking distance - distance the vehicle travels during the driver's reaction time

braking distance - distance it travels under the braking force

The greater the speed of the vehicle, the greater the stopping distance.

Greater breaking force = greater deceleration

If deceleration is too high, brakes can overheat and vehicles can skid.

Reaction times vary from person to person.

Typical values range from 0.2 s to 0.9 s.

A driver's reaction time can be affected by:

- Tiredness, drugs, alcohol
- Distractions may also affect a driver's ability to react.

Momentum (Higher Tier)

Momentum (kgm/s) = mass (kg) × velocity (m/s)

Conservation of Momentum

In a closed system, the total momentum before an event is equal to the total momentum after the event.

For objects travelling in opposite directions, momentum will be negative for one of them.

Newton's First Law:

If the resultant force acting on an object is zero, the object will either remain stationary or travel at a constant velocity.

Newton's Second Law:

The acceleration of an object is proportional to the resultant force acting on the object, and inversely proportional to the mass of the object.

As an equation:

Resultant force (N)= mass (kg) × acceleration(m/s^2)

Inertia (Higher Tier)

Inertia is The tendency of objects to continue in their state of rest or uniform motion

Inertial Mass is a measure of how difficult it is to change the velocity of an object. It is the ratio of force over acceleration.

Newton's Third Law:

Whenever two objects interact, the forces they exert on each other are:

Equal in magnitude

Opposite in Direction

The same type of force