

Y9

Knowledge Organiser

SPRING 2022

STUDENT NAME:

HOW TO SELF TEST

WITH KNOWLEDGE ORGANISERS



Mind Mapping

Mind mapping is simply a diagram used to visually represent or outline information.

It is a graphic technique you can use to translate what is in your mind into a visual picture. Since mind mapping works like the brain does it allows you to organise information faster and more efficiently.

Use information gathered from your knowledge organiser to create mind maps, make sure to use colours and images, keeping writing to a bare minimum. Using this technique will help to embed key information into your long-term memory.



HOW TO MIND MAP VIDEO



Flash Cards

Use your knowledge organiser to make flash cards. Write the question on one side and on the other record the answer. Test yourself or work with a friend to make sure you know all the key information for each topic. You could also use flash cards to test yourself on the definitions of key terminology.

Remember you need to revisit information 10 times for it to be embedded in your long-term memory.



HOW TO MAKE FLASH CARDS VIDEO



Revision Clocks

Start by drawing a basic clock. Break your knowledge organiser down into 12 sub-categories. Make notes in each chunk of the clock. Revise each slot for 5 minutes, turn the clock over and then try to write out as much information as you can from one of the segments. E.g. all the information in the 2-3pm segment.

Your brain will retain more information if you include images as well as key words.

HOW TO MAKE A REVISION CLOCK

| Word of the Week | Definition |
|------------------|--|
| Notorious | Famous or well known, typically for some bad quality or deed. |
| To ascend | To go up or climb. |
| To prohibit | To formally forbid (something) by law, rule, or other authority. |
| To culminate | To reach a climax or point of highest development. |
| To collapse | To (of a structure) suddenly fall down or give way. |
| Circumspect | To be wary and unwilling to take risks. |
| Cataclysmic | (Of a natural event) large-scale and violent. |
| Magnanimous | Generous or forgiving, especially towards a rival or less powerful person. |
| To cajole | To persuade (someone) to do something by sustained coaxing or flattery. |
| Fortuitous | Happening by chance rather than intention. |

Seven Deadly Sin focus: Apostrophe for possession

Use an apostrophe + S ('s) to show that one person/thing owns or is a member of something.

The dog's collar (The collar of the dog.) The writer's desk (The desk of the writer.) The planet's atmosphere (The atmosphere of the planet.)

Use an apostrophe after the 's' at the end of a plural noun to show possession.

The dogs' collars (The collars of the dogs.) The writers' desks (The desks of the writers.) The planets' atmospheres (The atmospheres of the planets.)

If a plural noun doesn't end in 's,' add an apostrophe + 's' to create the possessive form.

The children's toys (The toys of the children.) The geese's migration route (The migration route of the geese.)

Now you try:

1. The coat of the boy was left on the back of his chair.
2. The pen of the writer stopped working.
3. The books of the children were left on their desks.
4. The parents of the children were asked to ensure the children learned their spellings.
5. The fur of the cat was wet from the rain.

Remember last term, we focused on apostrophe with contraction

A contraction is a shortened form of a word/group of words that removes certain letters or sounds.

Here are the most common contractions:

| | |
|--------------------------|--------------------------|
| He would = He'd | I have = I've |
| They are = They're | You cannot = You can't |
| He does not = He doesn't | She did not = She didn't |

Reading Term 2:

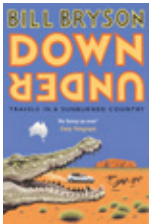
Down Under by Bill Bryson

Context

Down Under is travelogue book about Australia written by travel writer Bill Bryson. After tales from the USA and Britain, Bryson turns his eye to Australia, the only island that is also a continent and the only continent that is also a country. It is the driest, flattest and climatically aggressive of all the inhabited continents. It has more things that can kill you in a very nasty way than anywhere else. He tries to find out why Aussies are so cool, digging up a past that reveals convicts, explorers, gold diggers and outlaws.

Big Question

Can we make a difference?



Key quotes for understanding the story

- 'In short, *there* was no place in the world like it. There still isn't.'
- 'In any case, the Opera House is not about aesthetics. It's about being an icon.'
- 'It starts to dawn on us that maybe this is why there is nobody else up here, because it's infested with crocodiles.'
- 'It is stable and peaceful and good. It doesn't need watching, and so we don't. But I tell you this: the loss is entirely ours.'

Key words

Habitat – The natural home or environment of an animal, plant or other organism.

Aborigines – One of the original or earliest known inhabitants of a country or region.

Reef – A ridge of jagged rock, coral, or sand just above or below the surface of the sea.

Colonisation – The action of establishing control over the indigenous people of an area.

ARTICLE WRITING – During this term you will be developing your skills in article writing. You will look at the features of an article and how to plan your ideas. One of the most important aspects of article writing is to develop your ideas fully. Use the following steps to create detailed paragraphs:

1. **First sentence – TOPIC**
2. **Second sentence – FACT, REALISTIC STATISTIC, OPINION**
3. **Third/fourth sentence – DEVELOP THE ABOVE – what does it prove?**
4. **Fifth sentence – PERSONAL STORY**
5. **Sixth sentence – RHETORICAL QUESTION**
6. **Seventh sentence – OFFER A SUGGESTION, SOLUTION OR SUMMARY**

Remember: Specific details make your writing believable (place names, titles, streets, etc.)

Route 1 Unit 5: Fractions, Decimals and Percentages

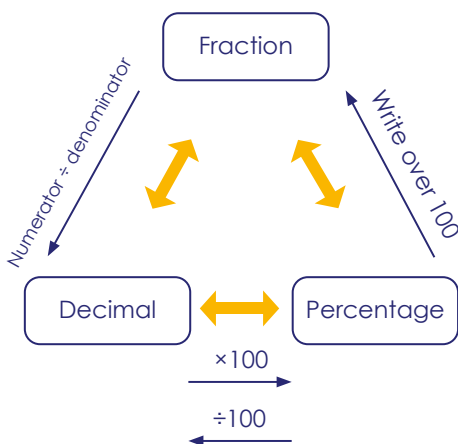
MATHS

| Key Concept | Key Words | Questions |
|--|---|---|
| <p>A fraction is a numerical quantity that is not a whole number.</p> <p>A decimal is a number written using a system of counting based on the number 10.</p> <p>Thousands Hundreds Tens Ones . Tenths Hundredths Thousandths</p> <p>8 7 6 5 . 4 3 2</p> <p>A percentage is an amount out of 100.</p> | <p>Fraction</p> <p>Decimal</p> <p>Percentage</p> <p>Division</p> <p>Multiply</p> | <p>1) Convert the following into percentages:</p> <p>a) 0.4 b) 0.08 c) $\frac{6}{20}$ d) $\frac{3}{25}$</p> <p>2) Compare and order the following in ascending order:</p> <p>$\frac{3}{4}$ 76% 0.72 $\frac{4}{5}$ 0.706</p> |



Clip Numbers
73-76, 82-83

Examples



Order the following in ascending order:

| | | | | |
|------------------------|--------------|-------------------------|------------------------|----------------|
| $\frac{3}{5}$ | 62% | 0.67 | $\frac{7}{10}$ | 0.665 |
| $\times 20 \downarrow$ | \downarrow | $\times 100 \downarrow$ | $\times 10 \downarrow$ | \downarrow |
| $\frac{60}{100}$ | \downarrow | $\frac{70}{100}$ | \downarrow | \downarrow |
| 60% | 62% | 67% | 70% | 66.5% |
| $\frac{3}{5}$ | 62% | 0.665 | 0.67 | $\frac{7}{10}$ |

ANSWERS 1 a) 40% b) 8% c) 30% d) 12% 2 0.706 0.72 $\frac{4}{5}$ 76% $\frac{3}{4}$

Key Concept

$$\frac{x}{y} \rightarrow \frac{\text{Numerator}}{\text{Denominator}}$$

Equivalent fractions
have the same value
as one another.

E.g. $\frac{1}{4} = \frac{2}{8} = \frac{3}{12}$

Key Words

Fraction

Equivalent

Reciprocal

Numerator

Denominator



Clip Numbers
61, 63-70

Questions

1) Calculate $\frac{2}{7}$ of 56.

2) If $\frac{3}{8}$ of a number is 36,
what is the original
number?

3) Order the following
in ascending order:

$$\frac{2}{3} \quad \frac{5}{6} \quad \frac{3}{8} \quad \frac{7}{12}$$

Examples

Calculate $\frac{4}{5}$ of 65:

$$65 \div 5 = 13$$

$$13 \times 4 = 52$$

Divide by the
denominator

Multiply this by the
numerator

If $\frac{4}{5}$ of a number is 52, what is the
original number?

$$52 \div 4 = 13$$

$$13 \times 5 = 65$$

Divide by the
numerator

Multiply this by the
denominator


Order the following in ascending order:

| | | | |
|-----------------------|------------------------|-----------------------|-----------------------|
| $\frac{2}{5}$ | $\frac{1}{2}$ | $\frac{5}{6}$ | $\frac{7}{15}$ |
| $\downarrow \times 6$ | $\downarrow \times 15$ | $\downarrow \times 5$ | $\downarrow \times 2$ |
| $\frac{12}{30}$ | $\frac{15}{30}$ | $\frac{25}{30}$ | $\frac{14}{30}$ |
| (1) | (3) | (4) | (2) |

To be able to compare fractions we
must have a **common denominator**.

Route 1 Unit 5 and 6: 4 Operations with Fractions

MATHS

| Key Concept | Key Words | Questions |
|---|--|--|
| <p>An improper fraction is when the numerator is larger than the denominator e.g. $\frac{20}{12}$</p> <p>Converting from a mixed number into an improper fraction:</p> $2\frac{3}{5} = \frac{(2 \times 5) + 3}{5} = \frac{13}{5}$ <p>A reciprocal is the value that when multiplied by another gives the answer of 1.</p> <p>E.g. $\frac{1}{8}$ is the reciprocal of 8. $\frac{2}{5}$ is the reciprocal of $\frac{5}{2}$</p> | <p>Fraction</p> <p>Equivalent</p> <p>Reciprocal</p> <p>Numerator</p> <p>Denominator</p> <p>Improper/Top heavy</p> <p>Mixed number</p> <div>  hegartymaths Clip Numbers 61, 63-70 </div> | <p>Calculate:</p> <p>1) $1\frac{2}{3} + 2\frac{3}{4}$</p> <p>2) $3\frac{3}{4} - 1\frac{1}{3}$</p> <p>3) $3\frac{1}{5} \times 1\frac{2}{3}$</p> <p>4) $1\frac{3}{5} \div 2\frac{7}{10}$</p> <p>What is the reciprocal of:</p> <p>5) $\frac{2}{3}$</p> <p>6) 9</p> <p>7) 0.75</p> |

Examples

$$1\frac{2}{3} + 2\frac{1}{4}$$

$$= \frac{5}{3} + \frac{9}{4}$$

Convert into an improper fraction



$$2\frac{2}{3} - 1\frac{1}{4}$$

$$= \frac{8}{3} - \frac{5}{4}$$

Find a common denominator



$$= \frac{20}{12} + \frac{27}{12}$$

$$= \frac{32}{12} - \frac{15}{12}$$

$$= \frac{47}{12}$$

$$= \frac{17}{12}$$

Convert back into a mixed number



$$= 3\frac{11}{12}$$

$$= 1\frac{5}{12}$$

$$1\frac{1}{3} \times 2\frac{3}{4}$$

$$= \frac{4}{3} \times \frac{11}{4}$$

$$= \frac{44}{12}$$

$$= 3\frac{8}{12}$$

$$2\frac{1}{3} \div 1\frac{3}{5}$$

$$= \frac{7}{3} \div \frac{8}{5}$$

$$= \frac{7}{3} \times \frac{5}{8}$$


$$= \frac{35}{24}$$

$$= 1\frac{11}{24}$$

Find the reciprocal of the second fraction....

...and multiply

ANSWERS 1) $4\frac{12}{5}$ 2) $4\frac{12}{5}$ 3) $5\frac{1}{16}$ 4) $\frac{27}{16}$ 5) $\frac{2}{3}$ 6) $\frac{6}{1}$ 7) $\frac{3}{4}$

| Key Concept | Key Words | Questions |
|---|---|--|
| <p>Calculating percentages of an amount without a calculator:</p> <p>10% = divide the original value by 10</p> <p>1% = divide the original value by 100</p> <p>Calculating percentages of an amount with a calculator:</p> <p>Amount \times percentage as a decimal</p> <p>Calculating percentage increase/decrease:</p> <p>Amount \times (1 \pm percentage as a decimal)</p> | <p>Percent</p> <p>Increase/decrease</p> <p>Appreciate</p> <p>Depreciate</p> <p>Multiplier</p> <p>Divide</p> <div>  hegartymaths Clip Numbers 84-90 </div> | <p>1) Write the following as a decimal multiplier:</p> <p>a) 45%</p> <p>b) 3%</p> <p>c) 2.7%</p> <p>2) Calculate 43% of 600 without using a calculator</p> <p>3) Calculate 72% of 450 using a calculator</p> <p>4) a) Decrease £500 by 6%</p> <p>b) Increase 65g by 24%</p> <p>c) Increase 70m by 8.5%</p> |

Examples

Calculating a percentage – non calculator:

Calculate 32% of 500g:

$$\begin{array}{ll}
 10\% & 500 \div 10 = 50 \\
 30\% & 50 \times 3 = 150 \\
 1\% & 500 \div 100 = 5 \\
 2\% & 5 \times 2 = 10
 \end{array}
 \quad
 \begin{array}{l}
 \mathbf{32\% = 150 + 10} \\
 \mathbf{= 160g}
 \end{array}$$

Calculating a percentage – calculator:

Calculate 32% of 500g:

$$\begin{aligned}
 & \text{Value} \times (\text{percentage} \div 100) \\
 & = 500 \times 0.32 \\
 & = 160\text{g}
 \end{aligned}$$

Percentage change:

A dress is reduced in price by 35% from £80. What is its **new price**?


$$\begin{aligned}
 & \text{Value} \times (1 - \text{percentage as a decimal}) \\
 & = 80 \times (1 - 0.35) \\
 & = £52
 \end{aligned}$$

A house price appreciates by 8% in a year. It originally costs £120,000, what is the **new value** of the house?

$$\begin{aligned}
 & \text{Value} \times (1 + \text{percentage as a decimal}) \\
 & = 120,000 \times (1 + 0.08) \\
 & = £129,600
 \end{aligned}$$

Route 1 Unit 5: Percentages and Interest

MATHS

| Key Concept | Key Words | Questions |
|--|--|---|
| <p>Calculating percentages of an amount without a calculator:</p> <p>10% = divide the original value by 10</p> <p>1% = divide the original value by 100</p> <p>Per annum is often used in monetary questions meaning per year.</p> <p>Depreciation means the value of something is going down or reducing.</p> | <p>Percent</p> <p>Depreciate</p> <p>Interest</p> <p>Annum</p> <p>Simple</p> <p>Compound</p> <p>Multiplier</p> <div>  hegartymaths Clip Numbers 93-94 </div> | <p>1) Calculate</p> <p>a) 32% of 48</p> <p>b) 18% of 26</p> <p>2) Kane invests £350 into a bank account that pays out simple interest of 6%. How much will be in the bank account after 3 years?</p> <p>3) Jane invests £670 into a bank account that pays out 4% compound interest per annum. How much will be in the bank account after 2 years?</p> |

Examples

Simple interest:

Joe invest £400 into a bank account that pays 3% **simple interest** per annum. Calculate how much money will be in the bank account after 4 years.

$$\begin{aligned}
 1\% &= £4 \\
 3\% &= £4 \times 3 \\
 &= £12
 \end{aligned}$$

$$\begin{aligned}
 4 \text{ years} &= £12 \times 4 \\
 \text{Interest} &= £48 \\
 \text{Total in bank account} &= £400 + £48 \\
 &= £448
 \end{aligned}$$

Compound interest:

Joe invest £400 into a bank account that pays 3% **compound interest** per annum. Calculate how much money will be in the bank account after 4 years.

$$\begin{aligned}
 &\text{Value} \times (1 \pm \text{percentage as a decimal})^{\text{years}} \\
 &= 400 \times (1 + 0.03)^4 \\
 &= 400 \times (1.03)^4 \\
 &= £450.20
 \end{aligned}$$

Remember to always round money questions to 2 decimal places.

ANSWERS 1 a) 15.36 b) 4.68 2) £413 3) £724.67

| Key Concept | Key Words | Questions |
|--|--|---|
| $a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$ $(a^m)^n = a^{mn}$ $a^{-m} = \frac{1}{a^m}$ | Powers Roots Indices Reciprocal | Write as a single power: 1) $a^3 \times a^2$ 2) $b^4 \times b$ 3) $d^{-4} \times d^{-1}$ 4) $m^6 \div m^2$ 5) $n^4 \div n^4$ 6) $\frac{8^4 \times 8^5}{8^6}$ 7) $\frac{4^9 \times 4}{4^3}$ Evaluate: 1) $(3^2)^5$ 2) 2^{-2} 3) $81^{\frac{1}{2}}$ 4) $27^{\frac{1}{3}}$ |



Examples

Simplify each of the following:

- | | | |
|---|--|---|
| 1) $a^6 \times a^4 = a^{6+4}$ $= a^{10}$ | 4) $9^6 \times 9^3 = 9^{6+3}$ $= 9^9$ | 7) $a^{-1} = \frac{1}{a^1}$ |
| 2) $3^6 \times 3^5 = 3^{6+5}$ $= 3^{11}$ | 5) $(a^6)^4 = a^{6 \times 4}$ $= a^{24}$ | 8) $a^{-2} = \frac{1}{a^2}$ |
| 3) $a^6 \div a^4 = a^{6-4}$ $= a^2$ | 6) $(3a^4)^3 = 3^3 a^{4 \times 3}$ $= 27a^{12}$ | 9) $a^{\frac{1}{2}} = \sqrt[2]{a^1} = \sqrt{a}$ |

Route 1 Unit 6: Standard Form

MATHS

Key Concept

We use standard form to write a very large or a very small number in scientific form.

Must be $\times 10$
 b is an integer

$$a \times 10^b$$

Must be $1 \leq a < 10$

Key Words

Standard form

Base 10

Links

Science

The mass of the Earth, Moon and planets in our solar system are written in standard form since they are extremely large numbers.



Clip Numbers
121 – 129

Questions

A) Write the following in **standard form**:

- 1) 74000
- 2) 1042000
- 3) 0.009
- 4) 0.00000124

B) Work out:

- 1) $(5 \times 10^2) \times (2 \times 10^5)$
- 2) $(4 \times 10^3) \times (3 \times 10^8)$
- 3) $(8 \times 10^6) \div (2 \times 10^5)$
- 4) $(4.8 \times 10^2) \div (3 \times 10^4)$

Examples

Write the following in **standard form**:

- 1) $3000 = 3 \times 10^3$
- 2) $4580000 = 4.58 \times 10^6$
- 3) $0.0006 = 6 \times 10^{-4}$
- 4) $0.00845 = 8.45 \times 10^{-3}$

Calculate the following, write your answer in **standard form**:

- 1) $(3 \times 10^3) \times (5 \times 10^2)$

$$\begin{array}{l} 3 \times 5 = 15 \\ 10^3 \times 10^2 = 10^5 \end{array} \left. \vphantom{\begin{array}{l} 3 \times 5 = 15 \\ 10^3 \times 10^2 = 10^5 \end{array}} \right\} \begin{array}{l} 15 \times 10^5 \\ = 1.5 \times 10^6 \end{array}$$
- 2) $(8 \times 10^7) \div (16 \times 10^3)$

$$\begin{array}{l} 8 \div 16 = 0.5 \\ 10^7 \div 10^3 = 10^4 \end{array} \left. \vphantom{\begin{array}{l} 8 \div 16 = 0.5 \\ 10^7 \div 10^3 = 10^4 \end{array}} \right\} \begin{array}{l} 0.5 \times 10^4 \\ = 5 \times 10^3 \end{array}$$

ANSWERS

A 1) 7.4×10^4 2) 1.042×10^6 3) 9×10^{-3} 4) 1.24×10^{-6}
B 1) 1×10^8 2) 1.2×10^{12} 3) 4×10 4) 1.6×10^{-2}

| Key Concept | Key Words | Questions |
|---|---|---|
| <p>A formula involves two or more letters, where one letter equals an expression of other letters.</p> <p>An expression is a sentence in algebra that does NOT have an equals sign.</p> <p>An equation is a statement in maths that contains an equal sign.</p> <p>An identity is an equation which is always true, no matter what values are substituted.</p> <p>When substituting a number into an expression, replace the letter with the given value.</p> | <p>Substitute</p> <p>Equation</p> <p>Formula</p> <p>Identity</p> <p>Expression</p> | <p>1) Identify the equation, expression, identity, formula from the list</p> <p>a) $v = u + at$</p> <p>b) $u^2 - 2as$</p> <p>c) $4x(x - 2) = x^2 - 8x$</p> <p>d) $5b - 2 = 13$</p> <p>2) Find the value of $5x - 7$ when $x = 3$</p> <p>3) Where $a = d^2 + e$, find a when $d = 5$ and $e = 2$</p> |



Clip Numbers
153, 154, 189, 287

Examples

1) $5(y + 6) = 5y + 30$ is an identity as when the brackets are expanded we get the answer on the right hand side whatever the value of y

2) $5m - 7$ is an **expression** since there is no equals sign

3) $3x - 6 = 12$ is an **equation** as it can be solved to give a solution

4) $C = \frac{5(f-32)}{9}$ is a **formula**

(involves more than one letter and includes an equal sign)


5) Find the value of $3x + 2$ when $x = 5$ $(3 \times 5) + 2 = 17$

6) Where $A = b^2 + c$, find A when $b = 2$ and $c = 3$
 $A = 2^2 + 3 \rightarrow A = 4 + 3 \rightarrow A = 7$

ANSWERS 1) a) formula b) expression c) identity d) equation 2) 8 3) $a = 27$

Route 1 Unit 7: Rearrange and Solve Equations

MATHS

| Key Concept | Key Words | Questions |
|---|---|---|
| <p>Solving equations: Working with inverse operations to find the value of a variable.</p> <p>Rearranging an equation: Working with inverse operations to isolate a highlighted variable.</p> <p>In solving and rearranging we undo the operations starting from the last one.</p> | <p>Solve</p> <p>Rearrange</p> <p>Term</p> <p>Inverse</p> <p>Operation</p> <div>  <p>Clip Numbers 177-186, 280-284, 287</p> </div> | <p>1) Solve $7(x + 2) = 35$</p> <p>2) Solve $4x - 12 = 28$</p> <p>3) Solve $4x - 12 = 2x + 12$</p> <p>4) Rearrange to make x the subject: $y = \frac{3x + 4}{2}$</p> |

| Examples | | |
|---|--|--|
| <p>For each step in solving an equation we must do the inverse operation</p> | <p>Solve:</p> $ \begin{array}{rcl} 5(x - 3) & = & 20 \\ \text{expand} & & \\ 5x - 15 & = & 20 \\ +15 & & +15 \\ 5x - 35 & & \\ \div 5 & & \div 5 \\ x & = & 7 \end{array} $ | <p>Rearrange to make r the subject of the formulae:</p> $Q = \frac{2r - 7}{3}$ $ \begin{array}{rcl} \times 3 & & \times 3 \\ 3Q & = & 2r - 7 \\ +7 & & +7 \\ 3Q + 7 & = & 2r \\ \div 2 & & \div 2 \\ \frac{3Q + 7}{2} & = & r \end{array} $ |
| <p>Solve:</p> $ \begin{array}{rcl} 12 & = & 3x - 18 \\ +18 & & +18 \\ 30 & = & 3x \\ \div 3 & & \div 3 \\ x & = & 10 \end{array} $ | <p>Solve:</p> $ \begin{array}{rcl} 7p - 5 & = & 3p + 5 \\ -3p & & -3p \\ 4p - 5 & = & 3 \\ +5 & & +5 \\ 4p & = & 8 \\ \div 2 & & \div 2 \\ p & = & 2 \end{array} $ | |

ANSWERS 1) $x = 3$ 2) $x = 10$ 3) $x = 6$ 4) $x = \frac{3}{2}$

Key Concept

Algebra can be used to support us to find unknowns in a **contextual problem**.

We can always apply a letter to an unknown quantity, to then **set up an equation**.

It will often be used in area and perimeter problems and angle problems in geometry.

Key Words

Solve

Term

Inverse

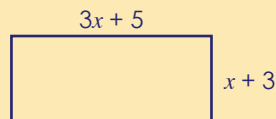
Operation



Clip Numbers
188

Questions

- 1) If the perimeter is 40cm, what is the length of the longest side?

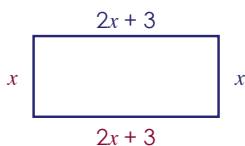


- 2) Jane is 12 years older than Jack. Sarah is 3 years younger than Jack. The sum of their ages is 36. Using algebra, find the age of each person.

Examples

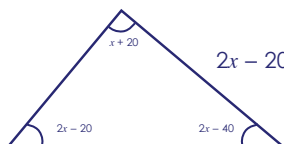
Solve to find the value of x when the perimeter is 42cm.

HINT: Write on all of the lengths of the sides.



$$\begin{aligned} 2x + 3 + 2x + 3 + x + x &= 42 \\ 6x + 6 &= 42 \\ 6x &= 36 \\ x &= 6\text{cm} \end{aligned}$$

We know the perimeter is 42cm.



Angles in a triangle sum to 180°

$$\begin{aligned} 2x - 20 + x + 20 + 2x - 40 &= 180 \\ 5x - 40 &= 180 \\ 5x &= 220 \\ x &= 44^\circ \end{aligned}$$

Jane is 4 years older than Tom. David is twice as old as Jane. The sum of their ages is 60. Using algebra, find the age of each person.

$$\begin{aligned} \text{Tom} &= x & 12 \\ \text{Jane} &= x + 4 & 12 + 4 = 16 \\ \text{David} &= 2x + 8 & (2 \times 12) + 8 = 32 \end{aligned}$$

$$\begin{aligned} x + x + 4 + 2x + 8 &= 60 \\ 4x + 12 &= 60 \\ 4x &= 48 \\ x &= 12 \end{aligned}$$

ANSWERS 1) $x = 3$ cm therefore the longest length is 14cm 2) Jack = 9, Jane = 21, Sarah = 6

Route 1 Unit 7: Inequalities

MATHS

Key Concept

Inequalities show the **range** of numbers that satisfy a rule.

$x < 2$ means x is less than 2

$x \leq 2$ means x is less than or equal to 2

$x > 2$ means x is greater than 2

$x \geq 2$ means x is greater than or equal to 2

On a number line we use circles to highlight the key values:



is used for less/greater than



is used for less/greater than or equal to

Key Words

Inequality

Greater than

Less than

Represent

Number line

Questions

1) State the values of n that satisfy: $-3 \leq n < 2$

2) Solve $4x - 2 \leq 6$ and represent your answer on a number line.

3) Solve $5 < 2x + 3 \leq 9$ and represent your answer on a number line.



Clip Numbers
265-272

Examples

a) State the values of n that satisfy:

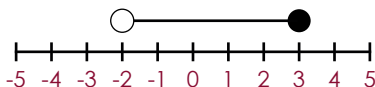
$$-2 < n \leq 3$$

Cannot be equal to 2

Can be equal to 3

$-1, 0, 1, 2, 3$

b) Show this inequality on a number line:
 $-2 < n \leq 3$



Solve this inequality and represent your answer on a **number line**:

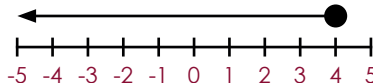
$$5x - 6 \leq 14$$

$$+6 \quad +6$$

$$5x \leq 20$$

$$\div 5 \quad \div 5$$

$$x \leq 4$$



Solve this inequality and represent your answer on a **number line**:

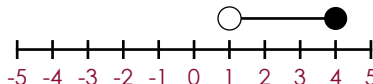
$$4 < 3x + 1 \leq 13$$

$$-1 \quad -1$$

$$3 < 3x \leq 12$$

$$\div 3 \quad \div 3$$

$$1 < x \leq 4$$



ANSWERS 1) $-3, -2, -1, 0, 1, 2$ 2) $x \leq 2$ 3) $1 < x \leq 3$

Key Concept

Arithmetic or linear sequences increase or decrease by a common amount each time.

Geometric series has a common multiple between each term.

Quadratic sequences include an n^2 . It has a common second difference.

Fibonacci sequences are where you add the two previous terms to find the next term.

Key Words

Linear

Arithmetic

Geometric

Sequence

Nth term

Questions

1) 1, 8, 15, 22,

- Find the n th term.
- Calculate the 50th term.
- Is 120 in the sequence?

2) $n^2 - 5$

Find the first 4 terms in this sequence.



Clip Numbers
198, 247-250, 264

Examples

Linear sequences with a picture:

State the n th term.

Hint: Firstly write down the number of matchsticks in each image:

$$7n + 1$$

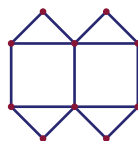
| | Pattern 1 | Pattern 2 | Pattern 3 |
|----|-----------|-----------|-----------|
| +1 | 8 | 15 | 22 |

-7 $+7$ $+7$

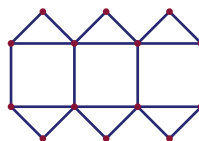
Pattern 1



Pattern 2



Pattern 3



Geometric sequence e.g.

$$4 \xrightarrow{\times 3} 12 \xrightarrow{\times 3} 36 \xrightarrow{\times 3} 108$$

Quadratic sequence e.g. $n^2 + 4$ Find the first 3 numbers in the sequence.

First term: $1^2 + 4 = 5$

Second term: $2^2 + 4 = 8$

Third term: $3^2 + 4 = 13$

ANSWERS 1 a) $7n - 6$ b) 344 c) 18 so yes as n is an integer 2) $-4, -1, 4, 11$

Notes:

A series of horizontal dotted lines spanning the width of the page, intended for handwritten notes. The page is decorated with large, overlapping triangles in yellow, purple, and pink.

The atom

Mass Number \rightarrow 12
Atomic Number \rightarrow 6
C

Atoms are very small, having a radius of about 0.1 nm (1×10^{-10} m).

The radius of a nucleus is less than 1/10 000 of that of the atom (about 1×10^{-14} m).

The mass number tells us the number of protons + neutrons.

The number of protons in an atom is known as its atomic number, this is also the number of electrons.

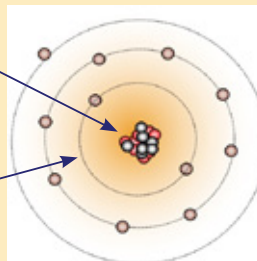
| Name of Particle | Relative Charge | Relative Mass |
|------------------|-----------------|---------------|
| Proton | +1 | 1 |
| Neutron | 0 | 1 |
| Electron | -1 | Very small |

The Nucleus

A dense core of protons and neutrons containing nearly all the mass of the atom.

'Shells' of electrons

Electrons are really very tiny so the atom is mostly empty space.



Some atoms are radioactive, they give out radiation from the nucleus. This is measured in Becquerels (Bq).

Isotopes: An isotope is an atom with the same number of protons but different number of neutrons.

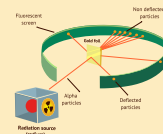
Ions: An atom that has gained electrons (negative ion) or lost electrons (positive ion).

Atomic structure



Plum pudding model

1. In 1901 JJ Thompson suggested the plum pudding model – this was an atom which is mostly a ball of positive charge with negative electrons embedded in it.
2. In 1909 Rutherford changed the accepted model using his alpha scattering experiment. The results from the alpha particle scattering experiment led to the conclusion that the mass of an atom was concentrated at the centre (nucleus) and that the nucleus was charged. This nuclear model replaced the plum pudding model.
3. Niels Bohr adapted the nuclear model by suggesting that electrons orbit the nucleus at specific distances.
4. 20 years later, James Chadwick provided the evidence to show the existence of neutrons within the nucleus.

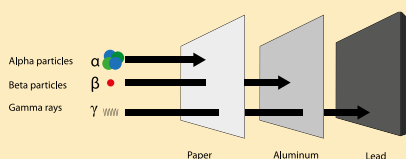
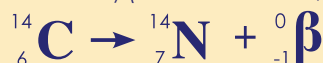


| Name | What it is | What is its charge | What is its mass | Ionising Power | Absorbed by |
|-------|----------------|--------------------|------------------|----------------|-------------|
| Alpha | Helium nucleus | +2 | +4 | High | Paper/air |
| Beta | Electron | -1 | Tiny | Medium | Thin steel |
| Gamma | EM Wave | 0 | 0 | Low | Thick Lead |

Alpha Decay (Atomic number -2, mass number -4)

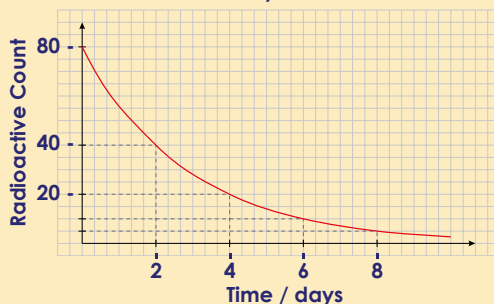


Beta Decay (Atomic number +1, mass number 0)



Half-life

The half-life of a radioactive source is **the time taken for half the material to decay.**



The half-life of the material above is 2 days.

The starting count was 80 half of it = 40

The time to get to 40 was 2 days.

In this example it would take: 2 days to get to 50%, 4 days to 25%, 6 days to get to 12.5%. The shorter the half-life the faster the radiation is emitted.

Chemistry of the atmosphere

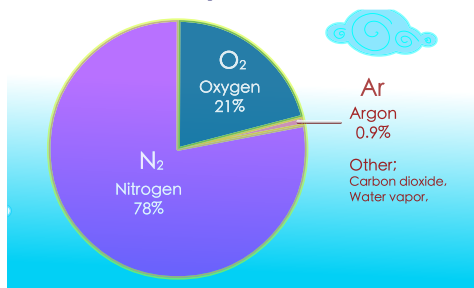
SCIENCE

Early atmosphere

During the first billion years of the Earth's existence there was intense volcanic activity that released gases that formed the early atmosphere and water vapour which condensed to form the oceans. The Earth's early atmosphere was similar to the atmospheres of Mars and Venus today, consisting of mainly carbon dioxide with little or no oxygen.

Volcanoes also produced nitrogen which gradually built up in the atmosphere along small proportions of methane and ammonia. The carbon dioxide dissolved in the formed oceans and carbonates were precipitated producing sediments, reducing the amount of carbon dioxide.

Present atmosphere



Global warming:

Scientists believe that greenhouse gases, such as methane and carbon dioxide, are causing the planet's temperature to increase, resulting in global climate change.

The burning of fossil fuels is one way in which we are increasing the amount of carbon dioxide in our atmosphere. The increase in the amount of cattle also results in more methane which equally increases the temperature.

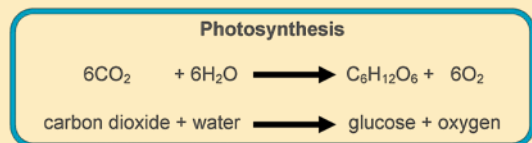
Global warming can cause;

- Extreme weather conditions.
- Increase in sea levels due to ice caps and glaciers melting.
- Changing of natural wildlife habitats.
- Decreased food security.

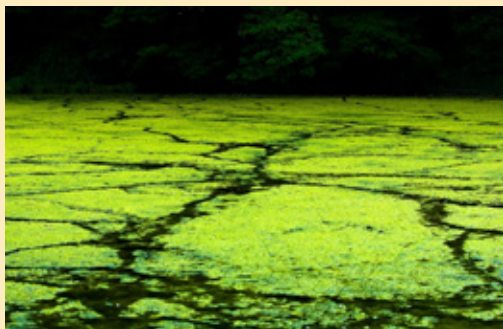
These will also have social effects on businesses who rely on the income generated from agriculture in the effected regions, furthermore homes will also be destroyed due to increased sea levels.

Changes from the early atmosphere

Algae first produced oxygen about 2.7 billion years ago and soon after this oxygen appeared in the atmosphere. Over the next billion years plants evolved and the percentage of oxygen gradually increased to a level that enabled animals to evolve.



Algae also decreased the amount of carbon dioxide in the atmosphere via photosynthesis, along with carbon dioxide forming sedimentary rocks and fossil fuels.



Chemistry of the atmosphere

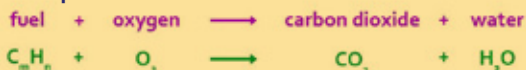
Atmospheric pollutants

When fuels undergo combustion the gases released are;

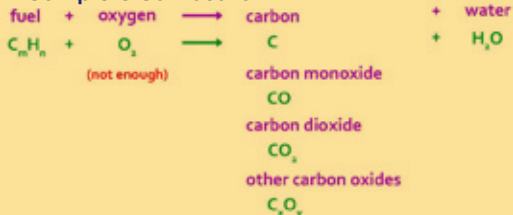
- Carbon dioxide
- Carbon monoxide
- Sulfur dioxide
- Nitrogen oxides
- Particulates

Fuels undergo either complete or incomplete combustion;

Complete combustion



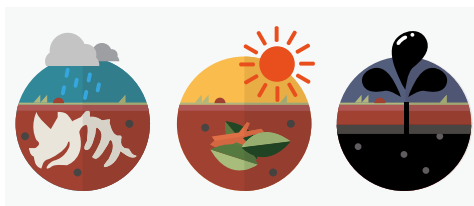
Incomplete combustion



Formation of coal, gas and crude oil

Coal is formed from trees in swamps millions of years ago. When these trees and animals die they get buried in mud. Layers form over them and the pressure and heat over time results in the formation of coal which is then mined. Oil and natural gas are also formed in this process except they are formed by marine organisms in the sea.

Limestone is also produced from dead living organisms. The creatures themselves have decayed but their skeletons and shells undergo compaction to form limestone (calcium carbonate) CaCO_3 .

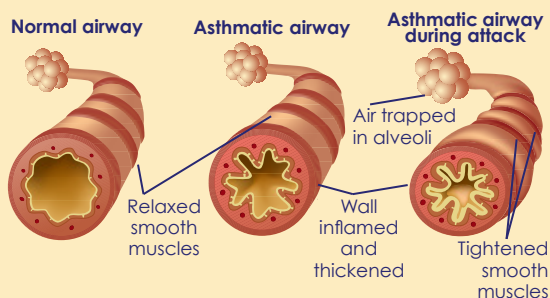


Carbon monoxide is a toxic gas (the silent killer) as it is colourless odourless and not easily detectable.




Sulphur dioxide and Nitrogen oxides cause acid by dissolving into water droplets in clouds, this makes the rain more acidic which can damage buildings and wildlife.

Particulates are unburnt carbon particles. These are absorbed into the clouds and cause more water droplets to form in clouds. They also make clouds better at reflecting sunlight, which causes global dimming.

Sulfur dioxide, Nitrogen oxides and particulates also cause respiratory health problems for humans.



States of matter

| State of matter | Diagram of structure | Movement of particles | Can it be compressed? | Density |
|-----------------|---|---|--|--|
| Solid |  | Vibrate around a fixed position. They don't have enough energy to move apart. | No, the particles have no space between them to move into. | High, there are lots of particles in a unit of volume. |
| Liquid |  | They have enough energy to move from place to place but are still attracted to each other. | No, the particles have no space between them to move into. | Quite high, there are lots of particles in a unit of volume. |
| Gas |  | They have so much energy that they don't bond to each other. Collisions with containers cause pressure. | Yes, the particles have lots of space between them to move into. | Low, there are few particles in a unit of volume. |

Density

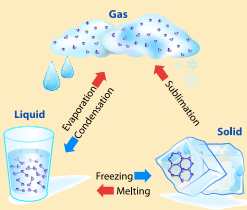
Calculating the density of an irregular shaped object can be done using a Eureka can and measuring the volume of the water displaced. A balance is used to measure the mass of the object. The density can then be calculated using the following equation:

$$\text{Density} = \frac{\text{Mass (kg)}}{\text{Volume (m}^3\text{)}}$$



Changes of state

Particles have energy. The more energy they have, the faster they move. The faster they move, the more they can spread out from one another. Solids have the least amount of energy, followed by liquids and finally by gases.



Internal energy

The energy in a substance is stored in the vibration and movement of its particles, this is called internal energy.

$$\text{Internal energy} = \text{kinetic energy} + \text{potential energy}$$

Temperature: This is linked to the kinetic energy of the gas particles. The higher its temperature the more kinetic energy the gas particles have. If the temperature remains constant so does the kinetic energy of the particles.

Specific latent heat

Specific latent heat of a substance is the energy needed to change the state of 1kg of the substance with no change in temperature.

$$\text{Energy (J)} = \text{Mass (kg)} \times \text{Specific Latent Heat (J/kg)}$$

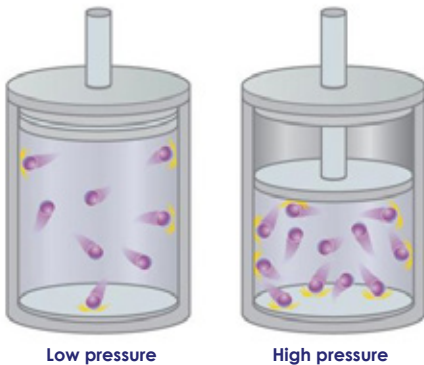
$$E = m \times L$$

Specific latent heat of fusion: Turning 1kg of solid to a liquid

Specific latent heat of vaporisation :turning 1kg of liquid to a gas

Pressure and volume

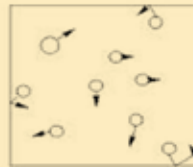
Increasing the volume of a gas (making the container bigger) whilst keeping the temperature constant will decrease the pressure of the gas.



Temperature and pressure

Gas particles move in **different directions** with a **range of speeds**.

As the particles hit the side of the container they create a net force which acts at right angles to the wall of the container.



Cool gas, fewer and less energetic collisions

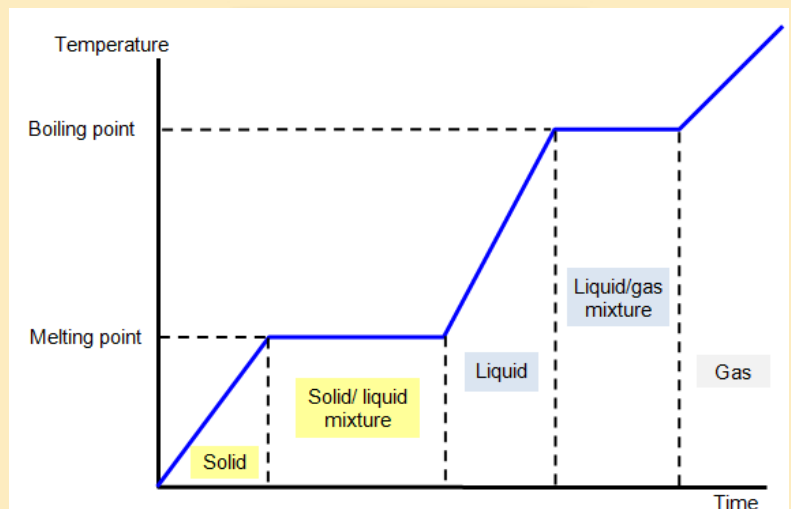


Hot gas, more and more energetic collision

Increasing the temperature of a gas increases the kinetic energy of the gas particles, this increases the number of collisions with the surface, this increases the pressure acting on the sides of the container.

Changing state

When a material changes state (melting or boiling) its internal energy increases, but its temperature does not. This means that although bonds are being broken, the kinetic energy of the particles remains constant until it has change state.



Exothermic reactions

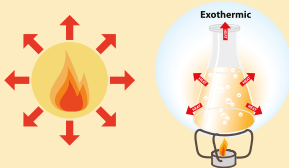
Exothermic reactions release thermal energy (heat) into the surroundings (the temperature increases). Most chemical reactions are exothermic, they can occur spontaneously and some are explosive.

Examples of exothermic reactions:

- Combustion
- Respiration
- Neutralisation
- Oxidation
- Reaction with metals and acids

Using exothermic reactions:

Exothermic reactions can be used in hand warmers and self heating cans. Crystallisation of the supersaturated solution is used in reusable warmers. However, disposable, one off hand warmers heat up the surroundings for longer.



Endothermic reactions

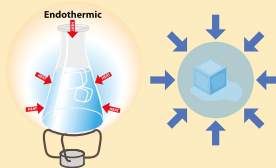
Endothermic reactions absorb thermal energy (heat) from the surroundings (the temperature decreases).

Examples of exothermic reactions:

- Thermal decomposition
- Photosynthesis
- Reaction between citric acid and bicarbonate of soda

Using exothermic reactions:

Endothermic changes can be used in instant cold packs for sports injuries.



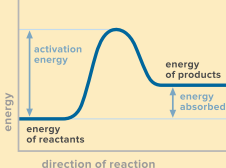
Reaction profiles and activation energy

A reaction profile (also known as an energy level diagram) is a graph that shows how the energy in a reaction changes as the reaction progresses.

The graph starts at the energy level of the reactants and finishes with the energy level of the products of the reaction.

The overall energy change of a reaction is the difference between the energy of the reactants and the products.

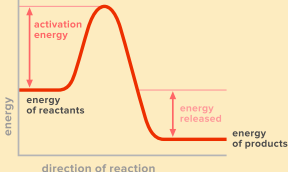
Endothermic reactions



If a reaction is endothermic, the products have more energy than the reactants, because energy is taken in from the surroundings during the reaction.

This means the reaction profile finishes higher than it started.

Exothermic reactions



If a reaction is exothermic, the products will have less energy than the reactants, because energy is given out to the surroundings during the reaction.

This means the reaction profile finished lower than it started.

Activation energy

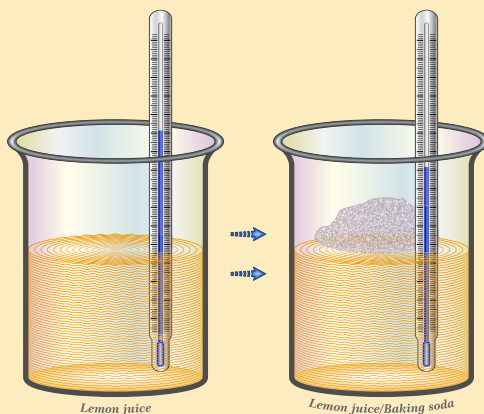
The activation energy is the minimum amount of energy the reactant particles need when they collide with each other in order to react. The greater the activation energy the more energy that is needed to start the reaction.

Investigating temperature changes

Record the initial temperature of the solution, using a thermometer, then record the maximum or minimum temperatures reached during the reaction.

If the temperature increased – Exothermic reaction (thermal energy has been released to the surroundings).

If the temperature decreased – Endothermic reaction (thermal energy has been taken in from the surroundings).



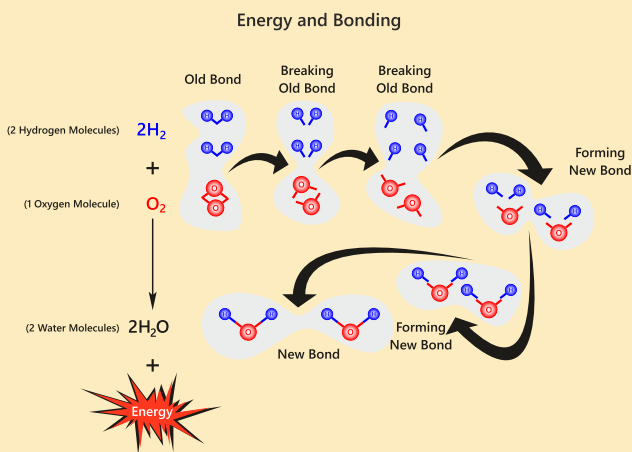
Bond energy calculations

The energy needed to break a bond between 2 atoms is called the **bond energy** for that bond. They are measured in KJ/mol.

Breaking and making a particular bond always involves the same amount of energy. The amount of energy needed to make or break a specific bond is found experimentally and is a constant.

We can use these bond energies to calculate the amount of energy taken in during the reaction and the energy given out. We can then calculate the overall energy change using:

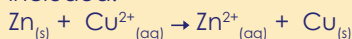
Total energy = Energy in - Energy out



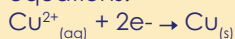
Cells and batteries

An electrical cell made from zinc and copper. Electrons flow from the more reactive metal (zinc) to the less reactive metal (copper). Zinc acts as the negative terminal of the cell, providing electrons to the external circuit.

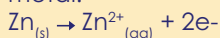
The sulfate ions do not change in the displacement reaction. They are spectator ions. In the ionic equations they are not included.



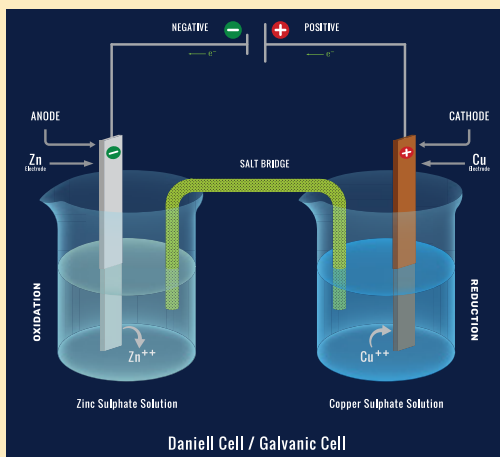
You can think of this redox reaction as 2 half equations:



The copper ions are reduced to copper metal.



The zinc metal is oxidised to zinc ions.



Why Is Our Earth Restless

GEOGRAPHY



Destructive plate boundary:

- Plates move together.
- Dense oceanic crust subducts under continental crust.
- EQ's/Composite volcanoes.



Constructive plate boundary:

- Plates move apart.
- Crust created.
- EQ's/(normally) shield volcanoes.



Conservative (transform) plate boundary:

- Plates slide past each other.
- EQ's.

Collision plate boundary:

- Continental plates move together.
- No subduction.

Volcano

1. Heat from the core causes **convection currents** (a movement within the Earth's mantle caused by the heat of the core) in the mantle. Plates either move towards or apart due to convection currents in the mantle.
2. Friction causes melting of the plates and may trigger powerful earthquakes. Magma rises up through cracks and erupts onto the surface.
3. The process repeats over and over again with layers of cooled lava and fallen ash creating steep sides.



Earthquake

1. Plates move due to convection currents in the mantle.
2. Friction is created.
3. When the built up pressure is eventually overcome the plates slip past in a sudden movement.
4. The shockwaves created produce an **earthquake** (a sudden shaking of the ground which releases energy and results from underground movement along a fault plane).

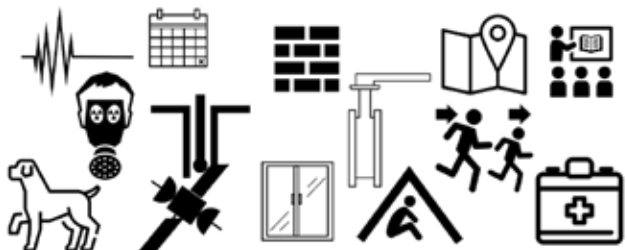


Tsunami

1. The displaced water forms the start of the tsunami.
2. As the waves reach shallower water e.g. near the coast, the wave height can increase by several metres.



Prediction, Protection, Planning



Why Is Our Earth Restless?

Hazard – Are a naturally occurring event that pose a risk to human life and property.

Event – No danger to life or property.

Capacity to cope – How well countries can prepare and respond to a hazard.

Risk – Probability of a hazard event causing harmful consequences.

Vulnerable – The extent to which a community, structure, service or geographical area is likely to be damaged or disrupted, due to the hazard or location.

Crust – Thinnest layer, varies from 5km to 70km thick.

Oceanic crust – Dense, basalt rock.

Continental crust – Lighter, granite rock.

Mantle – Thickest layer, molten rock.

Outer core – Liquid metal, creates the magnetic field.

Inner core – Solid, inner most layer of the earth.

Plate boundary – The region where two or more plates meet.

Constructive plate boundary – Plates move apart.

Destructive plate boundary – Plates move together.

Conservative (transform) plate boundary – Plates slide past each other.

Collision plate boundary – Continental plates move together.

Earthquake – A sudden shaking of the ground which releases energy and results from underground movement along a fault plane.

Tsunami – A long, high sea wave, produced by a disturbance, such as a volcanic eruption, submarine earthquake or coastal landslide.

Volcano – Opening in the Earth's crust. It allows hot magma, ash and gases to escape from below the surface.

Composite (strato) volcano – Narrow base, steep sided. Andesitic, viscous (sticky) lava.

Shield volcano – Wide base, shallow sloping sides. Basaltic, non-viscous (runny) lava.

Lava – Solid rock resulting from cooling of molten magma.

Magma – Hot semi-fluid material below the earth's crust.

Subduction zone – Dense oceanic rock sinks under continental rock at destructive plate boundaries.

Ash cloud – Volcano ejects as into the atmosphere.

Pyroclastic flow – Cloud of gas and ash that travels up to 450mph, 1000°C+.

Jökulhlaup – Flooding from glacial melting.

Lahar – Ash mixes with water, sticky mud that can slide down the side of a volcano.

VEI – Volcano explosivity index.

Richter scale – Measures the strength of an earthquake, 0-9, logarithmic scale.

Focus – Point within the Earth's crust where an earthquake starts.

Epicentre – Point directly above the focus on the Earth's surface.

Seismic waves – Transmit energy from the focus.

Fault – Fracture in the Earth's crust.

Mitigate – Reduce the direct impacts.

Prediction – Forecast when and where the hazard is likely to occur through monitoring.

Protection – Actions taken before the hazard to reduce impacts e.g. building design.

Planning – Actions taken to enable communities to respond to and recover from natural disasters e.g. evacuation plans, warning systems.

Aseismic building – Earthquake proof building e.g. cross-bracing.

Seismometers – Measures the strength of earthquakes.

Tilt meters – Detect when the volcano swells up with magma.

Bore holes – Drilled into the side of volcanoes to measure the temperature of underground water.

Hazard mapping – Guide land-use planning decisions so building can be prevented or advised against in high-risk areas.

Why Is Our Earth Restless?

GEOGRAPHY

Convection currents – A current in a fluid that results from a heat source.

Development – How wealth and quality of life varies between countries. HICs, NEEs, LICs.

Mitigate – Directly reduce the impacts from an action e.g. reduce shaking of buildings.

Evacuation – Moving people from a vulnerable place.

Infrastructure – Basic physical structures needed for society to function e.g. roads, power lines.

HDI (Human development Index) 0-1, measures 3 factors, life expectancy, literacy rate, average wage. Life expectancy – average period that a person may expect to live.

GNI (Gross National Income) per capita – Average wage per person.

Geothermal energy – Energy created and stored in the earth.

Social – Interaction of people.

Economic – Money.











Environmental – Plants and animals.

Case Studies

Take 10

Japan Earthquake
11.1.2012 14:46

Case study knowledge is important.
Learn these 10 facts and apply them to your quizzes and tests.

| | | | |
|---|---|---|---|
| Destructive plate boundary Philippine plate & the Pacific plate are moving towards the Eurasian/ North American plate roughly 9cm/yr. |  | 9.0 magnitude / 6 mins long Focus: 20 miles, Epicentre: 43 miles east of Tohoko |  |
| HDI: 0.915 Life expectancy: 84 Mean years of schooling: 15 yrs GNI (average wage): \$46,880 |  | Prediction: 30 mins for the tsunami to arrive at the coast. Warnings and sirens used. Seabed near the epicentre shifted by 24m |  |
| 130,927 displaced 52,358 temporary houses |  | 20,352 killed 5,314 injured |  |
| Protection: Billions spend on earthquake and tsunami defences: 5 meter levee. Earthquake proof (aseismic) buildings |  | Planning: National Disaster Prevention Day - on 1st September, evacuation centres, emergency kits. People knew how to react. |  |
| Cost \$235 billion |   | 23 trillion Yen made available for rebuilding. Over the next 10 years. Sendai airport was rebuilt, new buildings have to conform to high standards & must be earthquake proof. Houses are not to be made of wood. Tsunami barriers -18m high deepest in the world | |

Why Is Our Earth Restless?

Take 10

Haiti Earthquake - 12.1.2010

Case study knowledge is important. Learn these 10 facts and apply them to your quizzes and tests.

| | | | |
|--|--|--|--|
| Conservative plate boundary: Caribbean and North American. | | 7.0 magnitude Focus: 13km, Epicentre: 25km west of capital 100's of aftershocks | |
| HDI: 0.503 Life expectancy: 63.7 Mean years of schooling: 5.4 GNI (average wage): \$668 | | 300,000+ killed 300,000 injured | |
| 1.3 million homeless | | 250,000 homes, 8 hospitals and 60% of government buildings destroyed. | |
| Cholera outbreaks as dead bodies piled up on the streets. | | 1 in 5 people lost their job because so many buildings were destroyed, including the port and airport. | |
| Cost \$8.5 billion | | International rescue: Red Cross, USA, United National. Donated food, water, medicine, shelter | |

Take 10

Nyiragongo Volcano - 17.1.2002

Case study knowledge is important. Learn these 10 facts and apply them to your quizzes and tests.

| | | | |
|--|--|--|-------------|
| Constructive plate boundary: North African Rift Valley on the African plate. | | VEI 3 Stratovolcano Lava flow 60 km/hour Lava lake 260m Earthquake tremors | |
| HDI: 0.495 Life expectancy: 60.4 Mean years of schooling: 9.7 GNI (average wage): \$800 | | 147 killed | |
| Lava flow split the city into 3, 30% of city covered in lava. 3 health centres & 1 hospitals destroyed. People lost their businesses and jobs. | | Petrol station caught fire. Aviation fuel stores exploded as the lava flow damaged Goma airport. | |
| 400,000 evacuated. 200,000 homeless. 350,000 fled to Rwanda Cholera outbreaks in temporary camps. | | 350,000 depended on aid, UN provided 260 tonnes of food - 70,000 people for week. Also blankets, household utensils, temporary shelter, clean water, sanitation and healthcare | |
| Cost \$35 million | | (after the eruption) Goma Volcano Observatory Practise drills Education | 3P's |

Take 10

Ejafjallajokull - Iceland 14.4.2010

Case study knowledge is important. Learn these 10 facts and apply them to your quizzes and tests.

| | | | |
|--|--|---|--|
| Constructive plate boundary. North American and Eurasian plates moving apart 2-4 cm/yr. 33 active volcanoes, 1823 last eruption. | | Lava flows Ash cloud (8-15 km) Flooding from glacial melting 200 meters ice melted - jökulhlaup | |
| HDI: 0.935 Life expectancy: 82 Mean years of schooling: 18.6 yrs GNI (average wage): \$32,250 | | Prediction: 80+ seismometers 120 GPS sensors Iceland Met Office FutureVoic (EU funded) | |
| Farmland flooded, heavy ash ruined some agricultural land & animals poisoned by ash fall. | | 0 killed Stay indoors to stop getting breathing problems | |
| Protection: Embankments along river. Houses are strengthened to withstand the weight of the ash. | | Planning: Evacuation routes / guides / checklist, Rescue teams check the areas to determine if safe to stay. Texts, Website | |
| Cost \$5 billion world economy | | 100,000 flights cancelled, people stranded, during Easter holidays, perishable foods wasted as could not be transported. | |

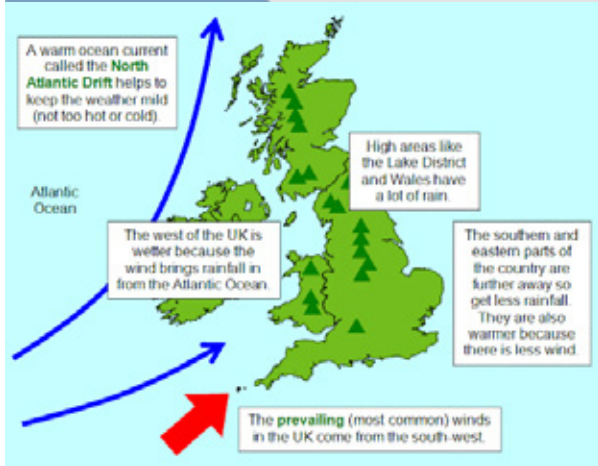
What Makes Our Weather Wild?

GEOGRAPHY



The UK is sometimes referred to as a 'weather roundabout' because it is affected by several different air masses arriving from different directions.

The south and west of the UK are often affected by air masses from the Atlantic Ocean and Europe. Scotland can be affected by cold air masses from the Arctic.



There are 3 important factors that affect the weather in the UK:

1. Air masses
2. Prevailing wind
3. Ocean current (North Atlantic Drift)

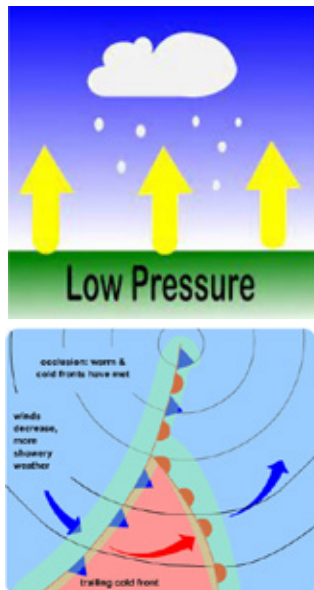
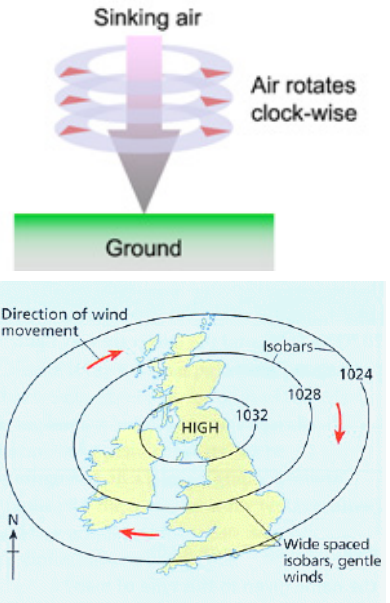
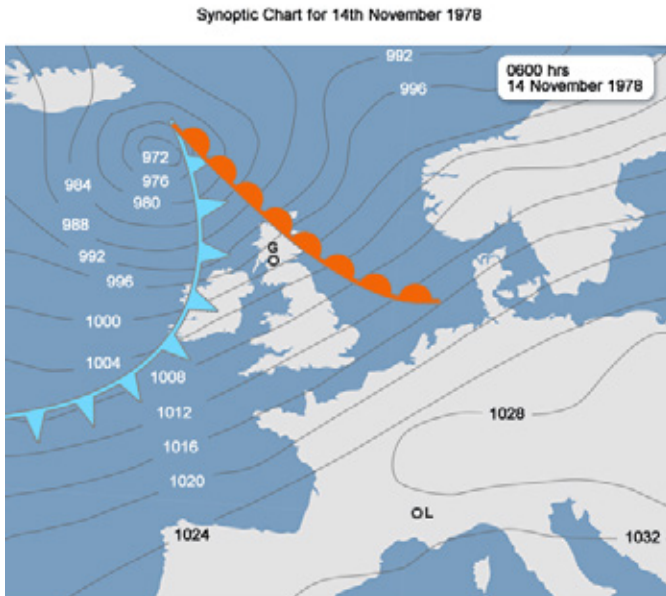
How Does Weather In The UK Vary?

The UK has a mild climate - cool, wet winters and warm, wet summers. There are 5 main reasons why the climate varies within the UK: Latitude, wind, distance from the sea, altitude and pressure.



What Are Anticyclones And Depressions?

Depressions are low pressure weather systems and anticyclones are high pressure weather systems. They cause different weather. There's a depression or an anticyclone over the UK most of the time.

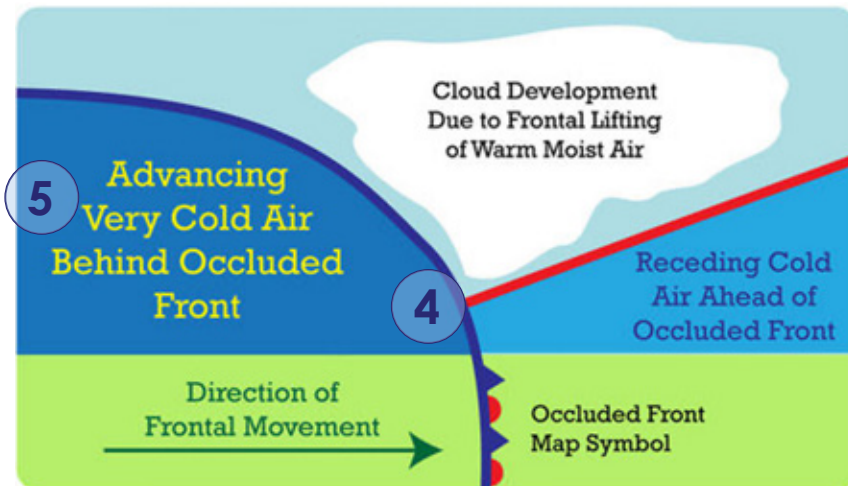
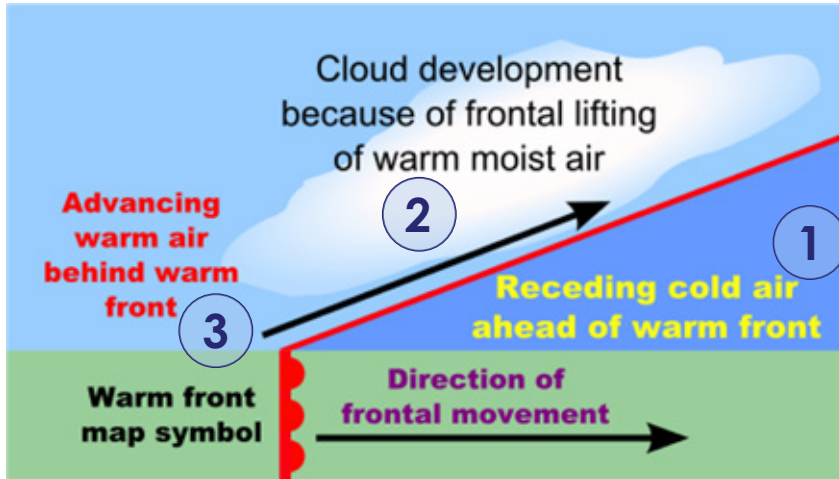


Depressions form over the Atlantic Ocean, then move east over the UK. Here's how they form:

1. Warm, moist air from the tropics meets cold, dry air from the poles.
2. The warm air is less dense so it rises above the cold air.
3. Condensation occurs as the warm air rises, causing rain clouds to develop.
4. Rising air also causes low pressure at the earth's surface.
5. So winds blow into the depression in a spiral (winds always blow from areas of high pressure to areas of low pressure).
6. A warm front is the front edge of the moving warm air. A cold front is the front edge of the moving cold air.

What Weather Do Depressions Bring?

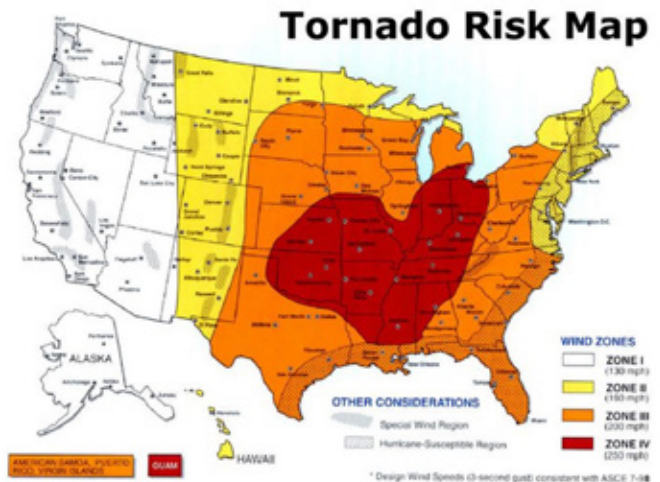
When a depression passes overhead you get a particular sequence of weather conditions. Imagine you're stood on the ground ahead of the warm front and the depression's moving towards you:



1. Ahead of the warm front there is no rain and falling pressure. Temperatures are cool.
2. As the warm front passes, rain is heavy and pressure falls. The wind speed is strong.
3. When warm air is overhead, there is no rain and the wind speed decreases.
4. As the cold front passes, the pressure rises suddenly and so does the wind speed. Towering thick clouds give heavy showers.
5. Finally, the cold air over head leads to rising pressure, cold temperatures high clouds and light showers. Wind speed decreases.

Does The UK Experience Tornadoes?

Tornadoes occur in lots of places around the world, most usually in the continent of North America. Central USA has a region named 'Tornado Alley', because of the frequency and intensity of tornadoes there. In this region, warm air from the Gulf of Mexico in spring and summer meets with cool air from Canada, leading to the build-up of powerful storms which can, if the right conditions are present produce tornadoes. The most violent tornadoes are usually found in the USA, Canada and Bangladesh, it is unusual to find them elsewhere. However, they have been known to happen in the UK and the Tempest data base has some documented evidence of where, and of the impacts caused.

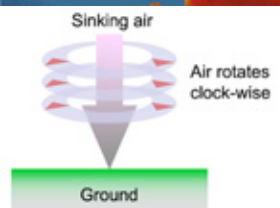


What weather conditions do anticyclones bring?

Anticyclones are high pressure weather systems and cause clear skies and dry weather.

Anticyclones also form over the Atlantic ocean and move east over the UK:

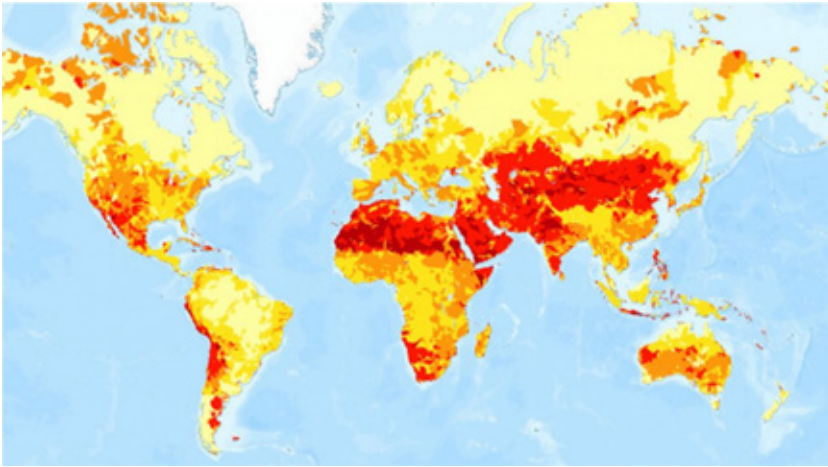
1. Anticyclones are where air is falling, creating high pressure and light winds blowing outwards
2. Falling air gets warmer, so no clouds are formed, giving clear skies and no rain for days or even weeks
3. **In summer**, anticyclones cause long periods of hot, dry, clear weather. There are no clouds to absorb the sun's heat energy so more gets through to the earth's surface causing high temperatures
4. **In winter**, anticyclones give long periods of cold, foggy weather. Heat is lost from the earth's surface at night because there are no clouds to reflect it back. The temperature drops and condensation occurs near the surface, forming fog. (It doesn't heat up much in the day because the sun is weak).



Why Are Droughts So Challenging?

Climatic conditions that cause drought:

- Droughts are caused when changes in atmospheric circulation mean it doesn't rain much in an area for years e.g. this happens in Ethiopia.
- Changes in atmospheric circulation can also make the annual rains fall e.g. monsoon rains don't come when they normally do in places like India.
- Droughts are also caused when high pressure weather systems (called anticyclones) block depressions (weather systems that cause rain) e.g. this happens in the UK.



The impact of droughts are more severe in poor countries due to:

- More people in poor countries depend on **farming**. If crops and livestock die lots of people will lose their livelihoods and some might starve.
- Poor countries have **less money to prepare** for droughts **or respond** to them e.g. they can't afford to build reservoirs so the impacts of the drought are more severe.



Is The UK's Weather Becoming More Extreme?

It is becoming **wetter** – it is raining more.

- The rainfall is becoming more intense, especially in winter.
- Major flooding caused by storms and high rainfall occurred in **December 2015**. Record amounts of rain fell on the **Cumbrian Fells** in NW England. On December 5th a new UK 24 hour record was set when 341.4mm of rain fell at Honister Pass in the Lake District.
- The exceptionally high rainfall fell onto already soaked ground following a wet November. This resulted in serious flooding across the region. 2 people were killed by the floods and widespread damage was done to bridges and roads. Thousands of people were affected as homes were flooded and power supplies cut.



It can become **colder**.

- In **March 2018**, after a fairly average winter, bitterly cold weather swept across much of Europe and the UK from Siberia. Heavy snow fell across parts of the UK causing deaths and serious disruption to transport services.
- This event is commonly known as the '**Beast from the East**'.



It is becoming **hotter** – temperature is increasing.

- In **2018, the UK experienced once of the hottest and driest summers on record:**
- Parts of the south and east had no rainfall for several weeks, leading to dry fields and serious problems for farmers.
- In NW England, a hosepipe ban was enforced in August as reservoir levels fell.
- Throughout the UK, temperatures soared to over 30°C on several occasions.



Key terms

- | | | |
|---------------------------|-------------------------|----------------|
| • Air mass | • Relief rainfall | • Pressure |
| • Prevailing wind | • Convectional rainfall | • Altitude |
| • Ocean current | • Climate | • Depressions |
| • Sea surface temperature | • Temperature | • Anticyclones |
| • Reservoir | • Precipitation | • Drought |
| • Condensation | • Latitude | |

9.3: What Were The Major Turning Points Of The Second World War?

HISTORY

Dunkirk

Failures

- The allies lost 2472 guns, 63,879 vehicles, 76,097 tons of ammunition and 416,940 tons of stores.
- 40,000 French troops were captured and imprisoned by the Germans.
- During the operation to evacuate Dunkirk, 68,111 British soldiers were killed, wounded or captured.
- The German Luftwaffe (air force) was now able to launch 'Operation Sealion' which saw extensive bombing of Britain.
- The German Army were now able to attack Russia and invaded with an army of 3 million soldiers. The Russians were forced back and the Germans took around a million prisoners.
- 338,000 British and French troops had to be evacuated.



Successes

- By the time the Germans did advance on Dunkirk with tanks, the Allies had managed to strengthen their defences on the Dunkirk beaches which allowed them to put up good resistance to the German tanks.
- The photographs and newspaper accounts of the 'Little Ships' proved to be an inspiration to the British public.
- The contribution of civilian vessels made to the Dunkirk evacuation gave rise to the term 'Dunkirk spirit', an expression still used to describe the British ability to rally together in the face of adversity.
- In February 1941, the USA started to provide weapons, equipment and supplies to Britain on credit. They were sympathetic to the Allies following Dunkirk.

The Battle of Britain, 1940

- The Nazis wanted to bomb Britain into surrender.
- The British RAF had modern fighter planes, which were directed by radar.
- On 15 September 1940, 56 German planes were shot down and Goering had to abandon the daylight bombing.
- Churchill said of the British pilots: 'Never was so much owed by so many to so few.' However almost 14,000 Londoners died in 1940 as a result of the bombings.

Significance

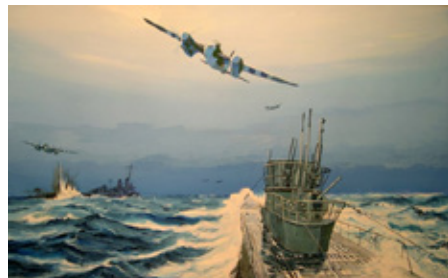
- Britain delivered Hitler's first military defeat, which checked German progress across Europe.
- Churchill considered the RAF's role in the war effort to have been vital, famously declaring: "Never in the field of human conflict was so much owed by so many to so few."
- The postponement of Hitler's invasion plans meant that Britain could become a stronghold for the Allied forces as the War continued and would eventually become the base from which the liberation of Western Europe was launched, in 1944.



9.3: What Were The Major Turning Points Of The Second World War?

The Battle of the Atlantic, 1941 – 1943

- The Germans were looking to exploit Britain's reliance on its **sea supply lines**. They used their bases on the French Atlantic coast to launch **U-boats**.
- In April 1941 alone, the British lost over 700,000 tonnes of shipping and cargo. Later, Churchill would say 'The only thing that ever really frightened me during the war was the U-boat peril.'
- However, with the help of US warships, better radar for detecting the U-boats and long-range aircraft that could spot the U-boats, this menace was effectively defeated by the end of 1943. Around 90% of men who served in U-boats were killed in action.



Significance

- The control of the Atlantic allowed the US to help supply Britain and mainland Europe to slow Germany's advance.
- The German navy lost 783 submarines during the battle.
- Control of the Atlantic made the D-Day invasions possible in 1944.

Stalingrad, September 1942 – February 1943

- German armies again moved towards the Soviet Union (Russia).
- Hitler orders the mighty **6th army** to take the city of Stalingrad. This was a vital city for Russia, of great strategic importance.
- A bitter struggle took place but eventually the German army was surrounded and cut off from help as winter set in.
- Over 90,000 German soldiers surrendered.

Significance

- The time it took Germany to attack Russia allowed Britain and the USA to strengthen their forces and plan their attack.
- 20 million people in the USSR died during the German attack.
- Churchill commented that the Russians 'tore the heart out of the German army'.
- After Stalingrad, the Russian army was able to push the Germans into retreat. The German advance had finally been stopped and even reversed.
- Britain and the USA began an intense bombing campaign of German cities and strategic locations such as armaments factories and air force bases.
- It allowed the Allies to begin their attack on the Germans which eventually led to their surrender in 1945.

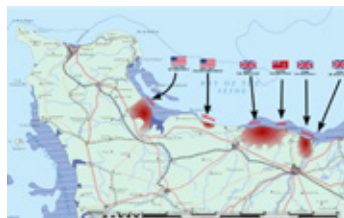


D-Day, 6 June 1944

- 4,000 ships carried 176,000 troops across the channel to the coast of northern France (Normandy).
- By the end of the day, significant ground had been taken by some troops (though landings at other beaches were less successful).
- Of the troops landing, 2,500 of the Allies were killed and a further 8,500 wounded. The Allies though secured a foothold on the French coast.

Significance

- Eventually the German Army was comprehensively defeated.
- Around 400,000 German troops died.
- The Allies now had a foothold back in Europe where they were welcomed by the French. This gave them the opportunity to push back German troops.
- The Allies had outmaneuvered the German commanders. The Allied strategy was far more effective and exposed the weaknesses in the thinking of the German commanders.
- France was eventually freed from German control and the Allied forces could advance into Germany.
- Hitler's army was now split between the Eastern and Western fronts



9.4: To What Extent Do We Live In Multicultural Britain?

HISTORY

Examples of countries from which immigrants arrived in Britain

Nearly all people living in Britain will have ancestors who migrated here at some point – Jutes, Angles, Saxons, Romans, Vikings... Here is a list of more countries from which there has been more recent migration.

Remember, Britain had a large Empire up to 1947 and had profited from the Empire for centuries.

- Ireland – During the 1800s, around 632,000 people migrated to the British Isles from Ireland, mostly due to famine. After 1945, there was a further wave of Irish migration.
- Caribbean Islands – Around 15,000 West Caribbeans moved to Britain after the First World War. During the Second World War, thousands more came to help with the war effort but returned home. Some then came back to Britain meaning there were around 170,000 in Britain by 1961.
- Europe – Around 200,000 Jews fled Eastern Europe and came to Britain by 1900 due to persecution. In the 1930s, the rise of the Nazis meant around 60,000 arrived from Germany. During the Second World War, thousands of Poles came to Britain for safety and around 114,000 stayed when the war ended. By 1950, around 100,000 Hungarians, Ukrainians, Estonians, Latvians and Lithuanians had come to Britain to flee oppression in the USSR.
- Cyprus – After the Second World War, Cyprus was very poor and made worse when Turkey invaded. Around 70,000 Cypriots left for Britain.
- Kenya and Uganda – During the years of the British Empire, some people from India moved to Africa to benefit from opportunities created by Britain's connections. However, when the Empire fell, Asians living in Kenya and Uganda were driven out. 70,000 Asians came to Britain from Kenya and Uganda.
- India, Pakistan and Bangladesh – British India ended in 1947, the British separated the lands into 3 countries (partition). The idea was to separate the different religious populations up. Pakistan and East Pakistan (now Bangladesh) were created for the Muslim population of India. This caused huge upheaval as huge numbers of people were forced to move. This led to fighting and the deaths of tens of thousands. Some sought safety in Britain, to escape the persecution they were facing. In 1955, 10,000 immigrants arrived from India and Pakistan. By 1991, around 1.5 million were living and working in Britain.
- Hong Kong, Malaysia and Singapore – People from the Far East began to move to Britain throughout the 1950s and 1960s. Most came from the poorer areas of the British colony of Hong Kong. By 1961, there were around 30,000 people from the Far East living in Britain. In 1997, Hong Kong was handed back to China and a further 50,000 people from Hong Kong were given British passports.



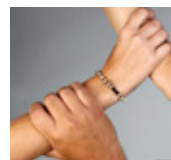
9.4: To What Extent Do We Live In Multicultural Britain?

Developments in British social policy from the 1960s

| | |
|--|---|
| <p>Women</p> <p>1960s – Reliable contraception became available to women.</p> <p>1972 – Equal Pay Act made it illegal to pay women less than men for the same work.</p> <p>1975 – Sex Discrimination Act made it unlawful to discriminate against women in work, education and training.</p> <p>1979 – Britain's first female Prime Minister, Margaret Thatcher, was elected.</p> <p>However,</p> <p>2016 – Women typically earn 10% less than men for equal work.</p> <p>23% of women aged 16-30 say they have been sexually harassed at work.</p> | <p>Black and minority ethnic groups (BAME)</p> <p>1965 – Race Relations Act made it unlawful to discriminate a person because of their colour or race.</p> <p>1976 – Race Equality Act made racially offensive music or publications illegal and set up tribunals to prevent racial discrimination in the workplace.</p> <p>1981 – Scarman Report tried to change the way the police dealt with black suspects and offenders.</p> <p>1991 – Macpherson Report tried to tackle racism in the police force.</p> <p>However,</p> <p>BAME communities still experience racism, there were 47,571 racist incidents recorded by police in England and Wales in 2013-14.</p> |
| <p>Homosexuals</p> <p>1967 – Sexual Relations Act legalised gay sex for people over 21. Gay people could now be more open about their sexuality without being prosecuted.</p> <p>1972 – The first London Pride festival was held to promote gay rights and encourage gay people to be proud of their sexuality.</p> <p>2000 – People identifying as gay were able to serve in the armed forces. The age of sexual consent for same sex couples was made the same as for a man and a woman.</p> <p>2014 – Gay marriage was allowed.</p> <p>However,</p> <p>many gay people still report abuse and bullying due to their sexuality. Many gay men still hide their sexuality. For example, there are no openly gay footballers.</p> | <p>People with disabilities</p> <p>1970 – Disabled Persons Act recognised the rights of people with disabilities.</p> <p>1981 – Education Act stated that disabled children were to be included, where possible, in mainstream schools.</p> <p>1991 – Disability Living Allowance introduced.</p> <p>1995 – Disability Discrimination Act made discrimination against disabled people unlawful.</p> <p>However,</p> <p>In 2014, 25% of people with disabilities said they lacked control over their daily lives.</p> |

Facts on migration

- The UK is the 10th largest **source** of migrants to the **rest of the world**.
- In 2015, 4.9 million people born in Britain lived in other countries.
- 24% of Briton's believe the main reason immigrants come to Britain is for welfare – 66% of immigrants arriving in the UK already have job offers. 93% of people claiming welfare payments are British nationals.
- People often accuse immigrants of 'stealing' jobs. In 2015, foreign citizens account for 10.7% of total employment in the UK.
- Between 2001 and 2011, migrants from the European Economic Area contributed 34% more in taxes than was received in any form of benefit.
- 26% of NHS doctors were born outside of the UK.



We live in a democracy. A democracy is a country where the people choose their government. In this country there are too many people to ask and too many decisions to take, therefore representatives are elected to make decisions. These representatives are called MPs (Members of Parliament). We also elect representatives to help govern our local area; these are called local councillors.

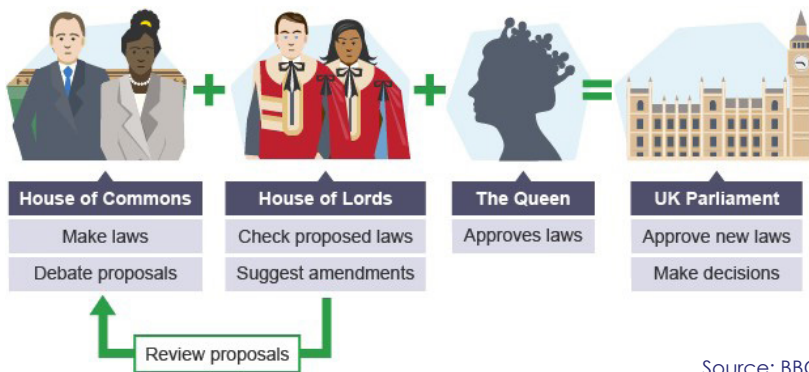
The UK Parliament meets in Westminster, London. It has two parts – the House of Commons and the House of Lords, plus the Monarchy. The House of Commons is made up of 650 MPs and the House of Lords of around 810 Lords or, as they are sometimes known, peers.

How are MPs elected?

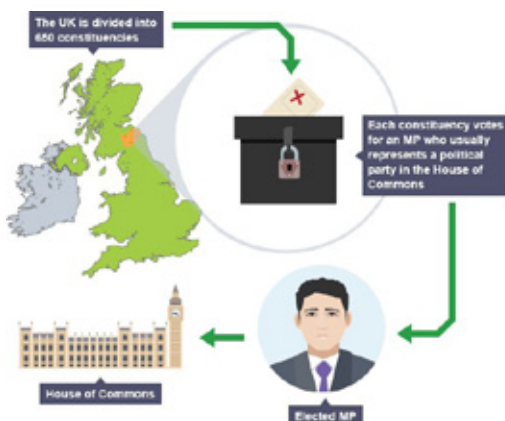
Members of Parliament (MPs) are usually elected every five years at a General Election. For the General Election, the country is divided into 650 constituencies or areas. Each constituency elects one MP to Parliament. The last General Election in the UK was held on 12th December 2019.

The main role of MPs in Parliament is to represent their constituents (the people in the area that elected them) in areas where the UK Parliament takes decisions e.g. immigration or defence. MPs either debate or ask questions in the House of Commons or they work in smaller groups known as committees.

Other important roles of MPs in Parliament are to help make laws and to scrutinise (check up on) the work of the government or investigate issues.



Source: BBC



If you were prime minister what would you change?

Source: BBC

Activities

1. Find out who your Member of Parliament is, which party do they belong to?

www.members.parliament.uk/FindYourMP

2. If you were Prime Minister what would you change? Think about:

- Housing.
- Healthcare.
- Education.
- Tax.
- Freedom.

Write up your ideas as a speech to encourage others to vote for you.

The House of Lords

The House of Lords is the second chamber of the UK Parliament. The role of the House of Lords is to help make laws as well as check on the work of government and investigate issues.

The main group of people in the House of Lords are peers. Most peers have been appointed by the Queen on the advice of a Prime Minister because they are experts in a particular area e.g. trade, education or science. Others in the Lords are Church of England bishops and 92 are hereditary peers or people with titles (such as Barons or Viscounts) who have inherited the right to sit in the Lords (they are there because of the family they are from).

No party has overall control in the House of Lords, so the Government has to try to find compromises and agreements. In fact, around 200 members do not represent political parties and sit as crossbenchers. Even members who do belong to political parties often act in an independent way and because of this, debates are mostly based on discussion, persuasion and respect, rather than fierce argument. Because members of the House of Lords come from a wide variety of backgrounds and are chosen differently from MPs, they provide an important second opinion to the House of Commons.



The Monarchy

The UK's political system can be described as a Constitutional Monarchy with a King or Queen as Head of State.

However, it is the Houses of Parliament that make our laws, not the Monarch (Queen). The Queen only passes legislation - this is known as Royal Assent. When a Parliamentary Bill is given Royal Assent it becomes an Act of Parliament. It is then up to the government to implement that law. For example, the Department for Transport will deal with new Acts relating to transport.

The Monarch must remain politically neutral and does not interfere with Parliament. No Monarch has refused Parliament's wishes for over 300 years.



Activities

1. Do you think it is right for the Queen to appoint the peers in the House of Lords?
2. Do you think it is good or bad to have bishops in the House of Lords?
3. Do you think it is right that people should have a place in the House of Lords and help to make laws because of who their parents were?
4. Do you think it would ever be right for the Queen to not agree with what Parliament has asked?

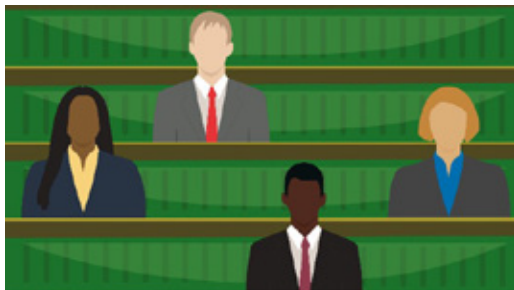
Did you know that famous athletes Sebastian Coe and Tanni Grey-Thompson are peers?

What do MPs do?

The role of a Member of Parliament (MP) is to represent his/her constituents in the House of Commons, including those who did not vote for them or did not vote at all. MPs highlight issues affecting their constituents by making speeches, questioning government ministers, or by openly supporting and highlighting particular campaigns. MPs' role is to challenge the policies of the Government by taking part in debates in the House of Commons. They also vote on new laws and keep track of the work of the Government to make sure their plans are fair and sensible. They keep in contact with their constituents, so they understand their needs and concerns. That means they are in a good position to act as the voice of their constituents in Parliament. They also:

- Write to or organise meetings with a relevant minister.
- Speak in Parliament.
- Ask questions during Prime Minister's Questions.
- Challenge other organisations (such as local councils, health boards) and individuals on behalf of their constituents (Lobbying).
- Take part in committees which scrutinise (check) new legislation or question the work of the government.

When the Government proposes a new law, MPs discuss and challenge it, and may suggest that some amendments (changes) are made. Finally, MPs vote on the law: If most of the MPs vote 'Aye' (yes) then the law is passed to the House of Lords for further debate.



The work of an MP outside parliament

MPs don't spend all their time in the House of Commons. When they are not working in parliament, MPs work in their constituencies, communicating with their constituents by writing letters, emails and replying to phone messages. Often MPs will hold 'surgeries' where local people can meet with their MP and ask questions. Constituents usually meet with their MP to seek help with a problem or issue. Some MPs send out newsletters to their constituents and communicate via their own website or social media accounts.

MPs are asked to attend a large number of meetings and events, including with their local constituency political party. They require the support of the local party to ensure that they will be selected to stand as a candidate in future elections. The election of MPs who are not linked to any political party is unusual.

Activities

1. What qualities do you think a good Prime Minister should have?
2. Do you think you would be a good MP? Why?
3. Write a job advert for an MP. Think about:
 - What skills they would need.
 - What personal qualities should they have.
 - What would make a good MP.



What is local democracy?

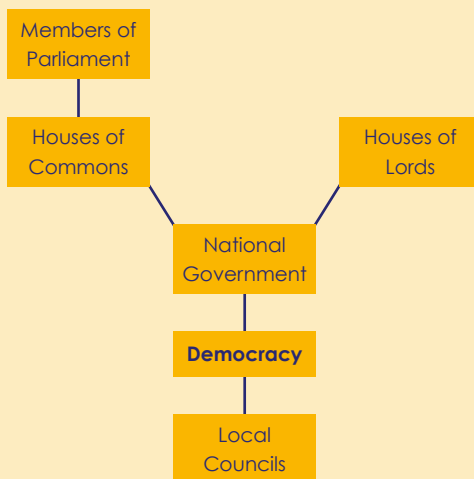
Local councils are responsible for schools, planning, parks, roads, culture and leisure services, council housing, social work, council tax and emergency services. Local government has very different responsibilities to other forms of government. Each area elects at least one councillor, these elections are usually more frequent than the general elections. Local councillors represent everyone who lives in the area that elected them. Most councillors are on committees that decide local issues, for example the planning committee might decide if a new building should be built. Local councils are also responsible for your safety and will employ child protection officers and social workers to help make sure you are safe.



Activities

1. Many of us have clear ideas about what could be improved about the area we live in. Local councillors are there to listen to our ideas. How would you improve the place where you live? Write a list of the things you would change. Which is the most important and why?
2. Who is your local councillor? Which party do they represent?

Produce your own spider diagram to summarise everything you have learnt about democracy in the UK.



Define: Puberty

The process of physical maturity in a person that takes place in adolescence.

Define: Menstruation

Also known as a period. The process in a woman of discharging blood and other material from the lining of the uterus at intervals of about one lunar month from puberty until the menopause, except during pregnancy.

Define: Hormones

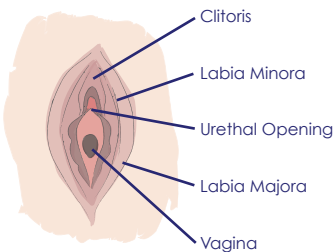
A chemical substance produced in the body that controls and regulates the activity of certain cells or organs.

Define: Wet Dream

An involuntary ejaculation that occurs whilst a person is asleep.

| Physical Changes during Puberty | |
|---------------------------------|--|
| Boys Only | <ul style="list-style-type: none"> Starts between 10 and 12 years of age. Facial hair. Voice breaking. Erections. Wet dreams. Widening of chest and shoulders. |
| Girls Only | <ul style="list-style-type: none"> Starts between 9 and 11 years of age. Menstruation/periods begin. Breast growth. Stretch marks. Cellulite. Hips widen. |
| Both | <ul style="list-style-type: none"> Grow taller. Sweat more. Changes to hair and skin. Spots and pimples. |

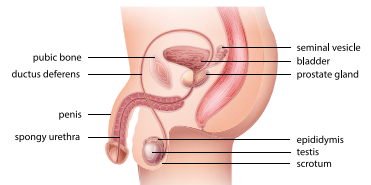
Female Genitalia External (Vulva)



Female Genitalia Internal



Male Genitalia



Things to Remember

- Puberty begins at different times for different people.
- Changes will happen at different rates and in a different order for different people.
- Everyone goes through puberty, you are not alone.
- Good diet and exercise can help deal with some of the physical changes.
- Puberty is normal despite feeling very abnormal.

Who can you turn to for help and support

- Parents or trusted family members.
- Your Doctor or Practice Nurse.
- Teachers or school staff.
- School Nurse.
- NSPCC - Helpline: **0808 800 5000** (24 hours, every day) www.nspcc.org.uk
- Childline - Helpline: **0800 1111** (24 hours, every day) www.childline.org.uk
- NHS Live Well Website - www.NHS.UK/Livewell

Define: Sexual Consent

The giving of permission by a person to engage in any form of sexual activity including penetrative and oral sex.

Define: Affirmative Consent

Consent is only given when a person agrees verbally to engage in sexual activities including penetrative and oral sex.

Define: Coercion

The action or practice of persuading someone to do something they wouldn't normally do or something they don't want to do by using force or threats.

Define: A person who is a minor

A person who is under the age of 18 and legally considered a child.

Consent is:

1. **Freely given.** It's not okay to pressure, trick, or threaten someone into saying yes.
2. **Reversible.** It's okay to say yes and then change your mind at any time!
3. **Informed.** You can only consent to something if you have all the facts.
4. **Enthusiastic.** You should do stuff you WANT to do, not things people expect you to do. If someone doesn't seem enthusiastic stop and check in.
5. **Specific.** Saying yes to one thing (like going to the bedroom to make out) doesn't mean you're saying yes to other things (like having sex).

What does the Law say?

| Act | Definition | Consequence |
|---------------------------|---|--|
| Rape | A rape is when a person uses their penis without consent to penetrate the vagina, mouth, or anus of another person. | <ul style="list-style-type: none"> • Rape is punished by a maximum of fifteen years in prison. • Aggravated Rape is punished by a maximum of twenty years in prison. • Both offences would result in placement on the sex offenders register. |
| Sexual Assault | Sexual assault is when a person is coerced or physically forced to engage against their will, or when a person touches another person sexually without their consent. Touching can be done with any part of the body or with an object. | Up to 10 years in prison and placement on the sex offenders register. |
| Sex Between Minors | When both parties involved in the sexual activity are under 16 but have consented to the activity. | <ul style="list-style-type: none"> • Technically the law is that if two 13-15 year olds engage in consensual sexual activity and each knows that the other is under 16, they will both be guilty of an offence carrying a maximum penalty of five years imprisonment, however it is unlikely the CPS will prosecute. • If one party is under 13 and the other under 18 it is Statutory Rape which is punishable by life imprisonment, but the average is 6-7 years when prosecuted. |

When can consent not be given?

1. **When a person is drunk or high**, to the point that they are unable to speak or look after themselves.
2. **Asleep or passed out** - if they are not conscious they are unable to agree to any sexual activity. If someone passes out whilst engaging in sexual activity STOP!
3. **They are underage** - legally a person under the age of 16 cannot give consent to any sexual activity.
4. **Mental disability or learning difficulties** which mean they are unable to fully understand what they are consenting to.

Who can you turn to for help and support?

- Parents or trusted family members.
- The Police/Community support officers.
- School Safe Guarding Team or any member of staff.
- NSPCC - Helpline: **0800 800 5000** (24 hours, every day) www.nspcc.org.uk
- Childline - Helpline: **0800 1111** (24 hours, every day) www.childline.org.uk
- Rape Crisis - Helpline: **0800 802 9999** (12-2:30 and 7-9:30) www.rapecrisis.org.uk
- Survivors UK Male Rape and Sexual Abuse Support - www.survivorsuk.org
- RASAC (Rape and Sexual Abuse Support Centre) - National Helpline: **0800 802 9999** (12-2.30 & 7-9.30) www.rasasc.org.uk

Sexually Transmitted Infections

Define: Sexually Transmitted Infection

Sexually Transmitted Infections are infections that are passed on mainly through sexual contact both vaginally, anally and orally.

Define: Bacteria

Single-celled micro-organisms that can exist either as independent (free living) organisms or as parasites (dependent on another organism for life).

Define: Virus

A micro-organism that is smaller than bacteria that cannot grow or reproduce apart from a living cell. A virus invades living cells and uses their chemical machinery to keep itself alive and to replicate itself.

Define: Parasite

A plant or an animal organism that lives in or on another and takes its nourishment from that other organism.

| Act | Definition | Consequence |
|--|--|--|
| Chlamydia: Bacterial infection | Women often have no symptoms or may have pain with sexual intercourse, lower abdominal pain, changes in bleeding pattern. Men may have no symptoms or may have watery or thick discharge from penis, pain or urinating. | Antibiotics. |
| Gonorrhoea: Bacterial infection | Women usually have no symptoms, but may have pain with sex, vaginal discharge, lower abdominal pain. Men may have no symptoms or discharge from penis, discharge from anus, pain in testicles, pain on urinating. | Antibiotics. |
| Syphilis: Bacterial infection | Painless ulcer (chancere) usually on genitals; later swollen glands, rash, hair loss. | Antibiotics. |
| Bacterial vaginosis: Bacterial infection | If the control of the normal bacteria in a healthy vagina fails, an overgrowth of certain bacteria can occur. Greyish white, smelly vaginal discharge. | Oral tablets and/or vaginal pessaries. |
| Genital warts: Viral infection | Fleshy or flat lumps on or around genitals, anus, groin or thigh. | Visible warts can be treated, but the infection cannot be cured. |
| Genital herpes: Viral infection | Painful, red blisters, little sores or ulcers, flu like symptoms, and sometimes a discharge. | Anti-herpes drugs and pain relief can be given to treat symptoms, but the infection cannot be cured. |
| Hepatitis B: Viral infection | May have no symptoms or mild flu like illness or vomiting, abdominal pain, dark urine and yellowing of the skin and whites of the eyes. Can be passed on through vaginal, anal or oral sex without a condom with someone who has the infection; from mother to baby. By sharing needles, syringes, toothbrushes, razors and unsterilized instruments that pierce the skin. | Not curable, but it is treatable with anti-viral medications. |
| Trichomoniasis: Parasitic infection | Women may have no symptoms, but there may be a yellowy green frothy vaginal discharge. Men usually have no symptoms. | Antibiotic tablets and or vaginal pessaries. |
| Pubic lice - crabs: Parasitic infection | Intense itching in the pubic area, small nits (eggs) on pubic hair. | Special shampoo, cream or spray applied to pubic area. Wash all clothing and bed linen. |
| HIV: Human Immunodeficiency Virus | HIV attacks the white blood cells and causes damage to the immune system so that it can be difficult to fight off infections. Usually no obvious symptoms for many years. HIV can be transmitted through blood, semen and vaginal fluids, sharing needles and from mother to baby. | No immunisation or cure available although there are medications to manage the condition. |
| Pelvic inflammatory disease (PID) | An infection of the womb and fallopian tubes that can cause infertility. Pain during sex, sore abdomen or back, heavy, irregular or painful periods, spotting, high temperature, feeling sick; sometimes no symptoms. | Antibiotics and rest. |

Where to get more help and support

- Your Doctor
- Community Nurse
- School Nurse
- NHS Online
- www.healthforteens.co.uk
- www.brook.co.uk

Things to Remember

- You can have an STI and not know it.
- Only a Doctor can diagnose an STI.
- If you are diagnosed with an STI you must inform prior partners so they can be tested.
- Some STIs can be transmitted without having sex.

Conception, Fertility and Pregnancy

Define: Conception

The point when the sperm meets the egg and a foetus is conceived.

Define: Fertility

The ability of people to conceive a child.

Define: Pregnancy

The condition or period of being pregnant.

Define: Infertility

The inability or difficulty to conceive a baby through natural methods.

Define: Miscarriage

The spontaneous or unplanned ending of a pregnancy before the foetus can survive independently.

Define: Still Birth

Foetal death that occurs after 28 weeks of pregnancy which results in the foetus being born without signs of life.

Pregnancy and foetal development by month

1. The embryo is only two layers of cells, making it microscopic. But by the end of the month, a little poppy seed will grow to be about the size of an apple seed.
2. While still small, the foetus is growing at a rapid pace; about a millimetre every day and doubling in size weekly.
3. The mother may not yet be showing, but her breasts have likely increased in size and her clothes are feeling a bit tight. By the end of the month, the foetus will be the size of a lime or a baseball and be about as long as a pea pod (7.4 cm).
4. The foetus is now about as big as an avocado or the size of your entire hand and weighs around 100 grams. Mothers will probably also be starting to show.
5. Now, the foetus is between 25 and 30 centimetres in length so about the size of a banana.
6. Mothers are now probably starting to feel a little bit heavy. At this stage the foetus is starting to put on fat, making him/her about the size of a mango.
7. The foetus is now able open and close their eyes. At 40 centimetres in length and about 1kg, they are the size of an aubergine.
8. Baby is getting ready to greet the world! At 2.2 kilograms, they have developed lungs and are the size of a pineapple.
9. At this point, the average size of babies are about 3.5kg and about 50 centimetres in length about the size of a watermelon.

Options for Unplanned Pregnancy

| | |
|---------------|--|
| Keep the Baby | When deciding if to keep the baby, the people involved need to consider not just the financial implications such as the cost of raising a child but also the impact on income if one parent has to stay home to care for the child. They also need to consider the support that they have around them in terms of friends and family. |
| Adoption | Adoption is the least common choice for unplanned pregnancy in the UK. It means that the birth parents give up all legal rights to the child and allow other people to raise their child. Adoptions are arranged through social services and adoption agencies but they are made legal by court order. Once an adoption order is made legal it cannot be undone and the level of contact between birth parents and adoptive parents are settled by those involved. An adoption order cannot be issued until the baby is at least 6 weeks old. No one can force you to put a baby up for adoption even if you are under 18, and the father's permission is only needed if he is named on the birth certificate. Again information on the father cannot be forced. However a court can decide the adoption can go ahead without your consent if it thinks the child would be put at risk if they were not or if it is determined that you're incapable of giving consent, for example due to a mental disability. |
| Abortion | <ul style="list-style-type: none"> • Abortions are quite common and about 1/3 of women will have had an abortion by the time they are 45. If you live in England, Wales or Scotland, two doctors need to agree that continuing the pregnancy will cause you significant physical or mental distress. Once they have agreed, you have until 24 weeks into the pregnancy to have an abortion. A GP will not perform the abortion but will refer you to a specialist service like the Marie Stopes Clinic. You do not need the permission of the father in order to have an abortion nor do you need the permission of your parents if you are under 16 and are considered mature enough to make medical decisions. A woman can change her mind at any point in the process. If your GP does not agree with abortion and refuses to refer you for the procedure, you have the right to go to another Doctor for the referral. There are two ways of ending an unwanted pregnancy; a medical abortion or a surgical abortion. Which you have depends on many factors, including how far along in the pregnancy you are. • Up to 10 weeks: Early medical abortion sometimes known as 'the abortion pill' Early medical abortion can involve two visits to a clinic and is performed in the first ten weeks of pregnancy. This method involves taking two medicines which end a pregnancy. It's not the same as emergency contraception. • Up to 15 weeks: Vacuum aspiration sometimes known as 'the suction method' For this procedure either a general (asleep) or local (awake) anaesthetic would be given. The procedure only takes about 5-10 minutes and there is no wound or stitches. The cervix is gently stretched to allow a thin tube to pass through it into the womb. Once the tube is inserted the pregnancy is removed by suction. Most people only take an hour or so to recover and go home the same day. • Abortions after 15 weeks: Abortion after 15 weeks is less common and most abortions happen in the first 13 weeks of pregnancy. |

Infertility

Causes

Infertility can be caused by many different things. For 25% of couples, a cause can't be identified.

In women infertility is most commonly caused by problems with ovulation, the monthly release of an egg. Some problems stop an egg being released at all, while others prevent an egg being released during some cycles but not others. This can be caused by several medical conditions such as PCOS, thyroid problems, fibroids, PID, endometriosis or an untreated STI.

In men the most common cause of infertility is poor quality semen. Possible reasons for abnormal semen include a lack of sperm or a very low sperm count, sperm that aren't moving properly, abnormal sperm shape, making it harder for them to move, or hypogonadism, an abnormally low level of testosterone.

Treatments

Fertility treatment is available on the NHS but there are long waiting lists and couples must meet strict criteria to be eligible. The treatment offered will depend on what's causing the fertility problems and what's available from the local clinical commissioning group (CCG).

Medical Treatments: Fertility medicines are usually prescribed to women as they're mostly used to help with ovulation problems. But, in some cases, they may also be prescribed to men. Some of these medicines may cause side effects, such as nausea, vomiting, headaches and hot flushes.

Assisted Conception: Intrauterine insemination (IUI), also known as artificial insemination, involves inserting sperm into the womb. Sperm is first collected and washed in a fluid. The best quality sperm are selected.

In vitro fertilisation (IVF): In IVF, the egg is fertilized outside the body. A fertilised egg called an embryo is then returned to the woman's womb to grow and develop.

Define: Hygiene

Conditions or practices conducive to maintaining health and preventing disease, especially through cleanliness.

Define: Body Odour

The unpleasant smell of a person's unwashed body.

Define: Halitosis

Medical term for bad breath.

Hair

Puberty causes the oil glands in the hair to produce more oil which can make hair more oily meaning that it needs to be washed more regularly.

Oral Care

Brushing teeth twice a day, flossing and using a mouth wash can prevent bad breath and dental issues. Regular visits to the dentist are also important.

Body Odour

Due to puberty, sweat glands not only become more active than before, they also begin to secrete different chemicals into the sweat that has a stronger smelling odour. Daily bathing and the use of antiperspirant or deodorant: Antiperspirants will reduce the amount of sweat you produce whereas deodorants cover the smell and odour.

Genital Hygiene

Women:
The inside of the vagina rarely needs cleaning with the use of soap. It has a natural balance of substances that can become disturbed by washing causing any bacteria that enter to have the potential of developing into an infection. The labia should only need cleaning once a day using a mild soap and water. The area should also be cleaned following sexual intercourse. Over cleaning of the genital area can be harmful and lead to infections such as thrush.

Define: Oral Hygiene

The practice of keeping one's **mouth** clean and free of disease and other problems.

Define: Puberty

The process of physical maturity in a person that takes place in adolescence.

Face

During and after puberty people can be more prone to spots and acne. This can be managed through the use of daily face washes. Exfoliants should be used twice weekly in order to remove dead skin cells.

Body Hair

Body hair in new places is something you can count on. You may want to start shaving some places where body hair grows, but whether you do is up to you. Some guys who grow facial hair like to let it develop into a moustache and beard. Some girls may decide to leave the hair on their legs and under their arms as is. It's all up to you and what you feel comfortable with.

Genital Hygiene

Men:
The penis, scrotal area and anus, should only need cleaning once a day. No attempt should be made to try and clean the inside of the urethra; this can cause serious damage. Special care should be taken by uncircumcised men to make sure the head of the penis is cleaned. This can be done by allowing the warm water to act as a lubricant and the foreskin should be gently pulled back. Failure to clean this area properly will result in smegma collection, causing bad odours and an increased risk of infection. The area should be cleaned after sex, even if wearing a condom, to prevent bacterial build-up and unpleasant smells arising.

FGM and Breast Ironing

Define: Female Genital Mutilation

Female Genital Mutilation (FGM) comprises of all procedures that involve partial or total removal of the external female genitalia, or other injury to the female genital organs for non-medical reasons.

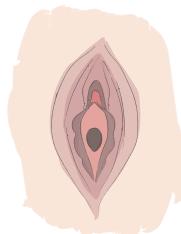
Define: Male Circumcision

The removal of the foreskin from the human penis. In the most common procedure, the foreskin is opened, adhesions are removed, and the foreskin is separated from the glans. After that, a circumcision device may be placed, and then the foreskin is cut off.

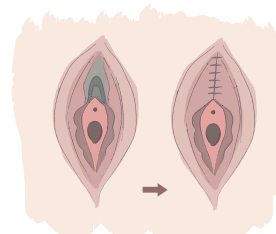
Define: Breast Ironing

Breast ironing, also known as breast flattening, is the pounding and massaging of a pubescent girl's breasts, using hard or heated objects, to try to make them stop developing or disappear. This can lead to greater chances of breast cancer as well as problems during pregnancy and with breast feeding.

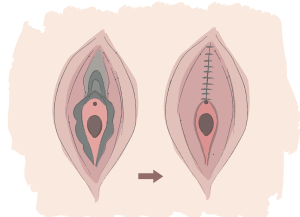
Types of FGM



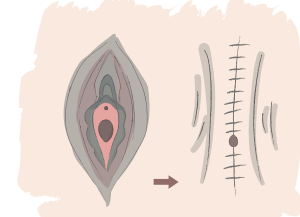
Type 1 – Clitoridectomy: partial or total removal of the clitoris and, in very rare cases, only the prepuce (the fold of skin surrounding the clitoris).



Type 2 – Excision: partial or total removal of the clitoris and the labia minora, with or without excision of the labia majora (the labia are the 'lips' that surround the vagina).



Type 3 – Infibulation: narrowing of the vaginal opening through the creation of a covering seal. The seal is formed by cutting and repositioning the inner, or outer, labia, with or without removal of the clitoris. Sometimes referred to as Pharaonic circumcision.



Type 4 – Other: all other harmful procedures to the female genitalia for non-medical purposes, e.g. pricking, piercing, incising, scraping and cauterising the genital area.

Why is FGM performed?

- Preservation of virginity and chastity
- Religion, in the mistaken belief that it is a religious requirement
- Fear of social exclusion
- To ensure the girl is marriageable or to improve marriage prospect
- Hygiene and cleanliness
- Belief that it increases the sexual pleasure for the male
- Enhancing fertility
- Family honour
- Social acceptance

FGM and the Law

Over **24,000** girls under the age of 15 living in the **UK** are at **risk** of undergoing the most **severe** form of FGM at any one time.

Female Genital Mutilation Act 2003 makes it **illegal** for FGM to be **performed** in the **UK** or anywhere in the world on **UK citizens** or **permanent residents** of **any** age.

If you **carry out** or **help** in carrying out FGM or if you **arrange** for someone to undergo FGM you face up to **14 years in prison**.

It is also **illegal** to **take** a British national or permanent resident **abroad** for FGM or to **help** anyone trying to do this.

Effects of FGM

PHYSICAL EFFECTS

- Bleeding
- Urinary tract infections
- Shock and pain
- Pregnancy complications
- Difficulty during childbirth
- Menstruation problems
- Painful sex
- Infertility
- Tetanus infections
- Loss of bladder control

EMOTIONAL EFFECTS

- PTSD
- Anxiety
- Trust Issues
- Anger Issues

Where to get more help and support

- School Staff and Wellbeing Team
- National FGM Support Clinics
- NSPCC - www.nspcc.org.uk
- Childline - Helpline: 0800 1111 (24 hours, every day) www.childline.org.uk
- CEOPS - www.ceop.police.uk/safety-centre

Sexuality and Gender Identity

Define: Asexual

A person who generally does not experience sexual attraction to any group of people.

Define: Androgyny

A gender expression that has elements of both masculinity and femininity.

Define: Biological Sex

The physical anatomy and gendered hormones one is born with.

Define: Bisexual

A person who experiences sexual, romantic, physical, and/or spiritual attraction to people of their own gender as well as another gender.

Define: Cisgender

A description for a person whose gender identity, gender expression, and biological sex all align.

Define: LGBTQ+

Lesbian, Gay, Bisexual, Trans, Queer/Questioning + = Other

Define: Sexuality

A person's sexual preference or orientation. Who they are attracted to.

Define: Drag Queen

A man who dresses up in an exaggerated feminine form usually in a show or theatre setting.

Define: Gender Dysphoria

Where a person experiences distress due to a mismatch of their biological sex and their gender identity.

Define: Heterosexual

A medical definition for a person who is attracted to someone with the other gender.

Define: Homosexual

A medical definition for a person who is attracted to someone with the same gender.

Define: Transvestite

A person who dresses as the opposite gender expression for any one of many reasons, including relaxation, fun, and sexual gratification.

Define: Intersex

A person with a set of sexual anatomy that doesn't fit within the labels of female or male (e.g., XXY phenotype, uterus and penis).

Define: Pansexual

A person who experiences sexual, romantic, physical, and/or spiritual attraction for members of all gender identities/expressions.

Define: Transgender

A person whose gender identity is the binary opposite of their biological sex, who may undergo medical treatments to change their biological sex.

Define: Transsexual

A person whose gender identity is the binary opposite of their biological sex, who may undergo medical treatments to change their biological sex.

Define: Gender Identity

Gender identity is a way to describe how you feel about your gender. You might identify your gender as a boy or a girl or something different. This is different from your sex, which is related to your physical body and biology.

Some of these terms are controversial in their definitions and may mean slightly different things to different people. These definitions have been taken from Stonewall charity.

Important legal changes that have affected LGBTQ+ people in the UK

- **2000:** Government lifts the ban on lesbians and gay men serving in the Armed Forces.
- **2001:** Age of consent for gay/bi men is lowered to 16.
- **2002:** Equal rights are granted to same-sex couples applying for adoption.
- **2003:** Repeal of Section 28 - Section 28 was a law that made it illegal to talk positively about homosexuality in schools.
- **2003:** A new law comes into force protecting LGBT people from discrimination at work. Until 2003 employers could discriminate against LGBT people by not hiring them or not promoting them, just because of their sexual orientation or gender identity.
- **2004:** Civil Partnership Act is passed.
- **2004:** Gender Recognition Act is passed - This Act allowed trans people to change their legal gender. This means that they can get a new birth certificate that reflects who they really are, which helps for future legal processes like marriage.

- **2007:** It becomes illegal to discriminate against people because of their sexual orientation or gender identity when providing them with goods or services.
- **2008:** The Criminal Justice and Immigration Act makes 'incitement to homophobic hatred' a crime.
- **2009:** A new law gives better legal recognition to same-sex parents.
- **2013:** The Marriage (Same-Sex Couples) Act is passed.

Trans Teens and Children

If a child is under 18 and thought to have gender dysphoria, they'll usually be referred to a specialist child and adolescent Gender Identity Clinic (GIC). Treatment is arranged with a multi-disciplinary team (MDT). This is a group which may include specialists such as mental health professionals and paediatric endocrinologists. Most treatments offered at this stage are psychological, rather than medical or surgical. If the child is diagnosed with gender dysphoria and they've reached puberty, they could be treated with

gonadotrophin-releasing hormone (GnRH) analogues. These are synthetic hormones that suppress the hormones naturally produced by the body. They also suppress puberty and can help delay potentially distressing physical changes caused by the body becoming even more like that of the biological sex, until they're old enough for other treatment options. The effects of treatment with GnRH analogues are considered to be fully reversible, so treatment can usually be stopped at any time. Teenagers who are 17 years of age or older may be seen in an adult gender clinic. They are entitled to consent to their own treatment and follow the standard adult protocols. Gender Reassignment surgery will not be considered until a person has reached 18 years of age.

Schools and LGBTQ+ Students

All schools are required to have a policy relating to LGBTQ+ students and how they are supported in schools. However each case will be dealt with on an individual basis as to

what is best for the students. Discussions will be conducted with Safeguarding team, parents, wellbeing teams and appropriate external agencies involved in the students care.

Where to get more help and support

- Parents and trusted family members
- Teachers and School Staff including School Nurse and Wellbeing Team
- Your Doctor or Community Nurse
- NHS Online
- Young Stonewall: www.youngstonewall.org.uk
- The Proud Trust – Local Support groups: www.theproudsttrust.org
- Friends and Family of Lesbians and Gays: www.fflag.org.uk

Define: Pornography

Printed or visual material containing the explicit description or display of sexual organs or activity, intended to stimulate sexual excitement.

Define: Soft Porn

Films, magazines, photographs etc. that show sexual images such as nudity but not sexual acts.

Define: Hardcore Porn

Films, magazines, photographs etc. that shows sex in a very detailed way, or shows very violent or unpleasant sex.

Define: Child Pornography

Sexually explicit material depicting anyone under the age of 18.

Define: Revenge Porn

Revealing or sexually explicit images or videos of a person posted on the Internet, typically by a former sexual partner, without the consent of the subject and in order to cause them distress or embarrassment.

Define: Sexting

Sending sexually explicit messages or pictures via mobile phones, instant messaging or email.

Pornography Laws in the UK

- It is legal to watch pornography in the UK as long as it doesn't feature under 18s, sex with animals, torture, scenes of rape or sexual assault, scenes which are violent to the point of life threatening or likely to cause serious harm.

- Pornographic material can be shown on TV after 9pm as long as it doesn't show erect penises or close ups of genitals.

- The legal age to buy pornographic material is 18, be this magazines, DVDs or internet access. The internet tries to prevent under-age access using credit cards or disclaimers.

- Under 18s who film or take sexual pictures of themselves or others can be charged with child pornography offences which can lead to prison sentences of up to 10 years, even if all involved agreed.

- It is illegal to watch pornography with an under 18; this is considered a form of abuse.

- It is illegal to make and/or distribute pornographic photographs or films without all participants knowledge and consent. This can lead to up to 2 years in prison.

Ways in which Pornography can distort views of relationships and Sex

- Sex ends when the man ejaculates and orgasms.

- External ejaculation is expected and common.

- Women orgasm every time they have sex.

- Anal sex is common and popular amongst heterosexual couples.

- People use insults and abusive language when having sex.

- Sex is good every time.

- Everyone wants to have sex all the time.

- Penises are large (over 6 inches)

- Sex is an aggressive act of dominance of one partner over another.

- Sex is all about what men want and men are in control.

- Women are portrayed as bored and sexually frustrated.

- Women are expected to dress up and wear make-up for sex.

- People want to have sex with more than one person at a time.

- Sex is loud.

- Consent to sex means all sex acts.

- It is illegal to make and/or distribute pornographic photographs or films without all participants knowledge and consent. This can lead to up to 2 years in prison.

- You must look and dress a certain way to be considered sexy.

Where to get more help and support

- Parents and trusted family members
- Teachers and School Staff including School Nurse and Wellbeing Team
- Report any inappropriate images to the website.
- NSPCC - www.nspcc.org.uk
- Childline - Helpline: 0800 1111 (24 hours, every day) / www.childline.org.uk
- CEOPS - www.ceop.police.uk/safety-cent

Body Image and Eating Disorders

Define: Body Image

The perception that a person has of their physical self and the thoughts and feelings that result from that perception.

Define: Eating Disorder

Any of a range of psychological disorders characterized by abnormal or disturbed eating habits.

Define: Anorexia

An emotional disorder characterized by an obsessive desire to lose weight by refusing to eat.

Define: Bulimia

An emotional disorder characterized by a distorted body image and an obsessive desire to lose weight, in which bouts of extreme overeating are followed by fasting or self-induced vomiting or purging.

Define: Binge Eating

The consumption of large quantities of food in a short period of time, typically as part of an eating disorder.

Factors affecting body image

- Puberty and the changing body
- The media
- Peers and family

Where to get more help and support

- Parents and trusted family
- School Staff, school nurse and Wellbeing Team
- Your GP or Practice Nurse
- Youth Access - www.youthaccess.org.uk

Ways to promote positive body image

- Accept your body.
- Remember nobody's perfect.
- Don't body-shame yourself.
- Build better habits.

Statistics on Eating Disorders

- Between 1.25 and 3.4 million people in the UK are affected by an eating disorder
- Around 25% of those affected by an eating disorder are male
- Eating disorder are most common in individuals between the ages of 16 and 40 years old

Causes of Eating Disorders

Eating disorders are not simply about food; the behaviours that accompany them may often serve as a coping mechanism or a way to feel in control. Eating disorders have many causes which are individual to the person however some common causes are:

- Distorted Body Image
- Bullying
- Depression and/or Anxiety

Symptoms of Eating Disorders

Symptoms of eating disorders will vary between individuals and type of eating disorder. Not matching the symptoms exactly does not mean that someone does not have an eating disorder, however, some common symptoms include:

- Eating very little food or eating large amounts of food in a short time in an uncontrolled way
- Having very strict habits, rituals, or routines around food
- Spending a lot of time worrying about your body weight and shape
- Changes in mood
- Deliberately making yourself ill after eating
- Avoiding socialising when food may be involved
- Withdrawing from social groups, hobbies you used to enjoy or from family life
- Physical signs such as digestive problems or weight being very high or very low for someone of your age and height

Treatments for Eating Disorders

Although there is no easy treatment for eating disorders, they are treatable and manageable. The treatment will often be linked to the underlying causes of the eating disorder. Common treatments include:

- Cognitive behaviour therapy
- Medication – Anti-Depressant
- Talk Therapy
- Group support

The best course of treatments will be decided by a Doctor and team of specialists. In severe cases in-patient treatment might be necessary.

- Like your body - Find things to like about your looks.
- Take care of your body.
- Eat healthy foods.
- Get a good night's sleep.
- Be active every day.
- Keep to a healthy weight.

• The Mix - www.themix.org.uk
Freephone: 0808 808 4994 (13:00-23:00 daily)

• B-eat - www.b-eat.co.uk
Helpline: 0808 801 0711 (Daily 3pm-10pm)

• Men Get Eating Disorders Too -
www.mengetedstoo.co.uk

• Anorexia & Bulimia Care -
www.exibulimiacare.org.uk
Helpline 03000 11 12 13 (option 1: support line, option 2: family and friends)

These all link together

| User Group | Barriers | Solution |
|--|--|---|
| Ethnic minorities | Lack of role models | P - Provision Programming of sessions |
| Retired people / people over 50 | Low level of adapted provision (suitable activities) | |
| Families with young children | Family commitments/ lack of time | |
| Single parents | Lack of disposable income/ family commitments | P - Promotion Targeted promotion Role models |
| Children | Lack of role models, lack of money | |
| Teenagers | Lack of awareness of activities/ role models | |
| Disabled | No disabled access | A - Access Access to facilities/ equipment |
| Unemployed/ economically disadvantaged | Lack of disposable income | |
| Working single people/ couples | Work restrictions - lack of time | |

Did you know???

Studies show that recreational walking, fishing/ angling, cycling and swimming are some of the most popular sports and activities in the UK!

Emerging Sports (new)

Think Ultimate Frisbee

**Factors Impacting Popularity of Sport**

Participation
Provision
Environment
Spectatorship
Media Coverage
Success for both teams/ individuals
Role models
Acceptability

These can affect popularity in a **positive** OR **negative** way.

Sports Example (Provision)

Tennis lacks easily accessible courts reducing popularity
There are lots of facilities for football therefore more people participate.



VS



Values in sport

Team spirit
Fair play
Citizenship
Tolerance & Respect
Inclusion
National pride

Olympic Values

Friendship
Respect
Excellence
Determination
Inspiration
Courage

Sports Initiatives

"This Girl Can"

"Chance to shine"



Gamesmanship

E.g. – Time wasting

Sportsmanship

E.g. – Giving the ball back to the opposition when they have kicked it out when an injury occurs to your team

Spectator Etiquette

E.g. – Quiet during rallies in Wimbledon, quiet during play in snooker, quiet during the playing of national anthems

Reasons for observing etiquette: Fairness, promoting values, safety of participants

Olympic Creed

"The most important thing is not to win but to take part, just as the most important thing in life is not the triumph but the struggle. The essential thing is not to have conquered, but to have fought well."

Pierre De Coubertin

PEDs

Testing methods:

Blood / urine sample, hair / hair sample

Drug offences by elite performers

E.g. Dwain Chambers and David Millar

Against use:

Long term ill health. Consequences when found guilty, unfair advantage

Why they are used?

Pressure to succeed

Importance of hosting major sporting events

| Benefits of hosting | Drawbacks of hosting |
|--|---|
| Developing/Improving transport system | Bidding can be expensive and you may not be awarded |
| Increased direct and indirect tourism | Event can cost hosts more than what is raised in revenue |
| Commercial benefits e.g. money from sponsors | Facilities can end up not being used after event |
| Participation may increase in some sports | Negative impact on status of country if event runs poorly |
| Sport facilities improve/new ones built | Hosting event will help promote one area of sport, others |
| Morale of the country raised | Can cause division in the country if the specific area which hosted (e.g. one city) is perceived to have been the one |



“One-off”

E.g. hosting the Olympic / Paralympic Games will only happen in a city once in a generation

Regular

E.g. UEFA Champions league final is an annual event which a city would host more than once in a relatively short period of time but is shared around as a rule

Regular and Recurring

E.g. hosting a formula 1 Grand Prix would be annual)

Many benefits and drawbacks are relevant to more than one of the legacy areas (sporting, social, economical).

E.g. – Sport facilities could have both sporting and social legacy.

Potential “legacy”

- Money
- Tourism
- New facilities

Know about the role of national governing bodies in sport

Infrastructure

Competitions and tournaments – E.g. Basketball England organise national competitions for over 500 teams from senior to under 13 level

Rule-making and disciplinary procedures– E.g. the Football Association has a disciplinary procedure for any individual or team connected with the sport

Providing a national directive and vision

Providing guidelines, support and insurance to members

Assist with facility developments

Support

Providing technical advice

Providing location and contact details for local clubs, how to get started in the sport etc.

E.g. England Hockey provide information about playing surfaces

Promotion

Promoting participation - E.g. Equal opportunities policies

Increasing the popularity of the sport - E.g. Schemes for schools

Exposure to the media - E.g. press releases, public relations

Funding

Lobby for, and receive, funding
Distribution of funds
Examples:



Policies

Anti-doping policies

Promoting etiquette and fair play—
Football Association's "Respect campaign"

Community programmes

Information and guidance on safeguarding

Leadership Opportunities



Club manager



PE teacher



Amateur coach

- Adaptability of teaching
- Setting up lessons
- Organisation
- Leading lessons
- Planning & Delivery
- Support

Responsibilities

- Professional conduct (Being a role model)
- Insurances and Equality
- Legal obligations (Disability Act 1995)
- Health and Safety
- Child Protection (DBS checks)

Leadership Qualities

- Confidence
- Effective planning
- Communication
- Evaluation
- Listen
- Clear instructions
- Calm
- Motivation
- Adaptability

3 Types of Leaders

Autocratic

- Make decisions
- Command like

Democratic

- Leader makes final decision but will take suggestions from the group
- Encourages creativity

Laissez-Faire

- Give team/ group complete freedom
- Provide support with resources/ facilities
- Will be there for Health and Safety

Maurizio Sarri



An effective Sports Leader will choose an appropriate leadership style for their group.

They will adapt as required.

Some sports are dangerous and are best taught using an autocratic style for safety reasons.

Older, more advanced athletes may prefer Laissez-Faire as it provides more freedom.

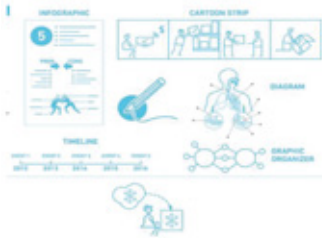


Notes:

A large background graphic consisting of three overlapping triangles: a yellow one on the left, a light purple one on the right, and a light pink one at the bottom. The page is filled with horizontal dotted lines for writing.

HOW TO SELF TEST

WITH KNOWLEDGE ORGANISERS



Graphic Organisers

Try to come up with different ways to represent the information visually, from your knowledge organiser for example: an infographic, a timeline, a cartoon strip, a Venn diagram, or a diagram of parts that work together.

Work your way up from drawing what you know from memory. By presenting your work in a different format the information is more likely to transfer to your long-term memory.

HOW TO USE GRAPHIC ORGANISERS

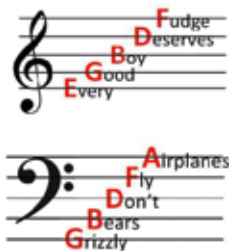


Look, Cover, Write, Check

This strategy is commonly used by primary schools, it is a proven effective method of practising the spelling of key terminology found in your knowledge organiser.

Start by carefully looking at the keyword you need to spell, cover it up, write it down, check it against your knowledge organiser and correct it if necessary. Make sure to practise the words you get incorrect several times as practice makes perfect!

USING 'LOOK, COVER, WRITE, CHECK'



Keyword Mnemonics

Make up a sentence where each word begins with the same letter as the word you need to remember.

E.g.: Colours of the rainbow: 'Richard Of York Gave Battle In Vain' (Red, Orange, Yellow, Green, Blue, Indigo, Violet)

E.g.: The order of the planets: 'My Very Enthusiastic Mother Just Served Us Noodles' (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune)

HOW TO USE MNEMONICS FOR REVISION





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