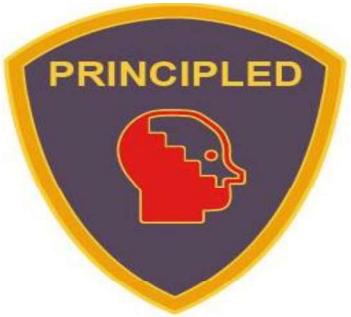
YEAR 8 KNOWLEDGE ORGANISER

TRINITY TERM 2021/22

Name:

Family Group:



LEARNING - LOVING - LIVING

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LEARNING – LOVING – LIVING

WHAT IS A KNOWLEDGE ORGANISER?

The knowledge organiser is a book that sets out the **important**, **useful** and **powerful knowledge** of a single topic on one page.

When used effectively, Knowledge Organisers are useful in:

- Helping build a foundation of **factual knowledge.**
- Embedding **revision techniques** for now and future studies (A-Level, College, University)
- Allowing knowledge to become stored in **long term memory** which frees up working memory for more complex ideas. It also allows you to connect concepts together, even across subjects

HOME LEARNING EXPECTATIONS

EACH NIGHT pupils should spend *at least* **1 hour** per night on homework.
3 subjects per night x 20 minutes per subject= 1 hour.

The homework timetable is to be filled out as a guide to what subjects to complete each night.

Subject teachers will use Microsoft **TEAMS** to set home work activities which will contain an element of knowledge retrieval practise and will relate to knowledge organiser content revised throughout the week.

In Family Group Time, retrieval practice techniques will be modelled by family group leaders.

All retrieval practice work in your **KNOWLEDGE ORGANISER exercise book** and make sure you bring your knowledge organiser to school EVERYDAY (these can slide into your coloured folder).

Knowledge Organiser **BADGES** will be given out in Family Group time to the student who has made progress on Knowledge Recall tests or has shown an exemplary effort in KO retrieval practice throughout the week.

MICROSOFT TEAMS

Remember to check TEAMS **regularly** for updates and additional home learning files including copies of your mastery booklets.

You can also ask your teachers questions on teams and view videos of 'how to use your knowledge organiser'.

HOMEWORK TIMETABLE

Year 8	Subject 1	Subject 2	Subject 3
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			

ADDITIONAL HOMEWORK

Students will also be assigned **ENGLISH** reading activities on www.CommonLit.org with each assignment taking 20-30 minutes to complete and **MATHS** activities with short explanatory videos on the online platform https://mathswatch.co.uk.

It is also recommended to take advantage of FREE online revision tools such as www.senecalearning.com or the recently updated BBC BITESIZE.

It is also recommended that students regularly **READ** a variety of **fiction and non fiction books** of their choosing. This extra reading will develop and broaden general understanding and context in all subjects.

EQUIPMENT CHECKLIST

Pencil case	Knowledge Organiser	2 Black or Blue pens
2 pencils and Eraser	Green Pen	Pencil Sharpener
Mini whiteboard and pen	Calculator	Ruler
Maths geometry set	Class book	

How do I use a knowledge organiser?

Each week Family Group Leaders will **explain** and **model** retrieval practice techniques that will help you retain knowledge from your knowledge organiser AND for revision in the future. There are also some videos on the **Trinity Website** that explain the techniques of using the knowledge organiser for retrieval practice.

4 Methods of Retrieval Practice

@ImpactWales

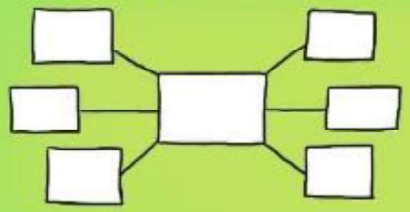
Before you start put away all your books & classroom materials.

Retrieval Practice Examples

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

BRAIN DUMP

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



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

QUIZZING

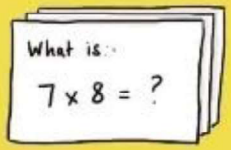
Create practice questions on a topic. Swap your questions with a partner & answer.

Question – What is a metaphor?

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

FLASHCARDS

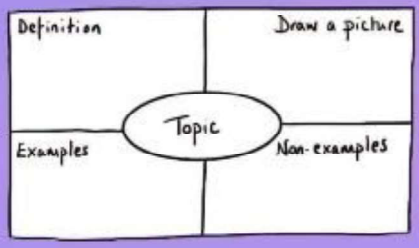
Create your own flashcards, question on one side answer on the other. Can you make links between the cards?



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

KNOWLEDGE ORGANISERS

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



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

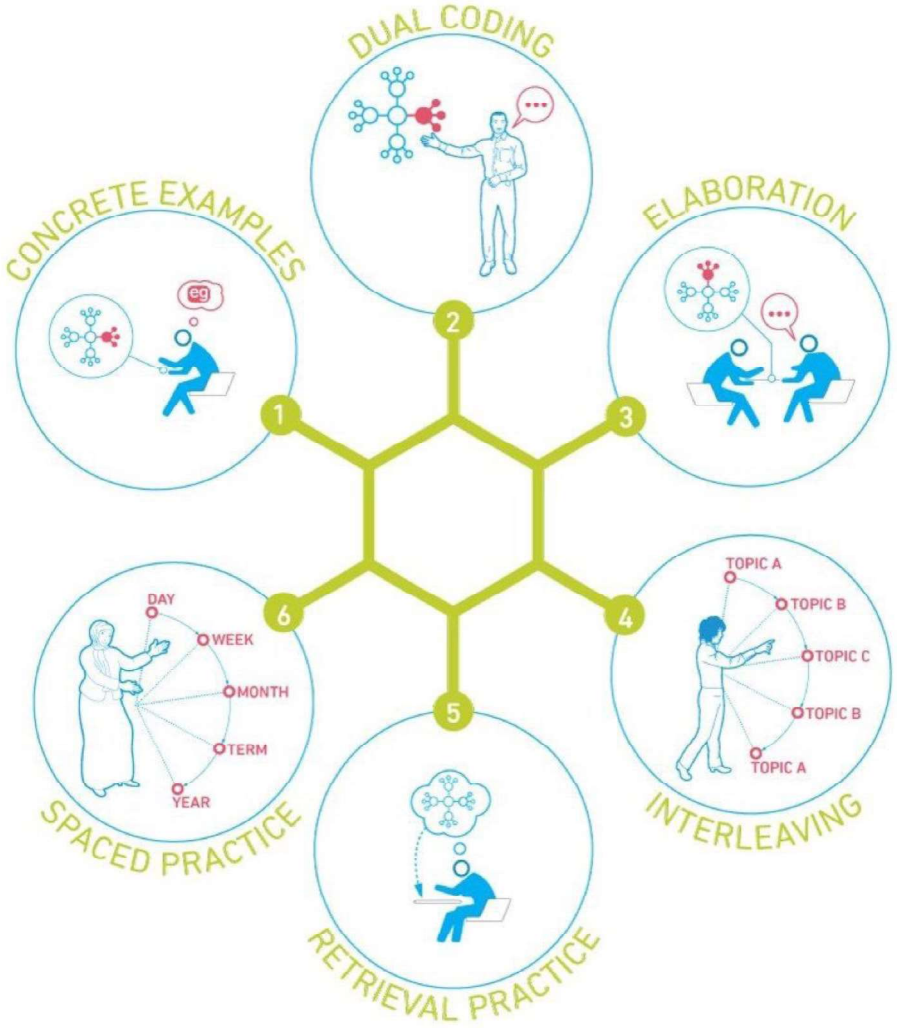
After you have retrieved as much as you can go back to your books & check what you've missed. Next time focus on that missing information

DUAL CODING

Dual coding is the process of combining visual and written materials. You can visually represent materials using methods such as info graphics, timelines, cartoon/comic strips, diagrams and graphic organisers. Combing images with words or explaining an image makes it more likely to 'stick'.

CONCRETE EXAMPLES

When you're studying, try to think about how you can turn ideas you're learning into concrete examples. Making a link between the idea you're studying and a real life example, concrete example, can help students understand abstract ideas and make it 'stick'.



ELABORATION

When talking about studying, elaboration involves explaining and describing ideas with many details. Elaboration also involves making connections among ideas you are trying to learn. Ask yourself questions about a topic to delve deeper. The more information you have about a specific topic the stronger your grasp and ability to recall.

SPACED PRACTISE

Divide up your revision into short manageable chunks of time . When revising aim for 20 - 30 minutes per session. Five hours spread out over two weeks is better than the same five hours all at once. This is **spaced practice** and it is regarded as one of the most effective revision strategies.

INTERLEAVING

Interleaving is a process where you combine multiple subjects and topics while you study in order to improve learning. Switch between ideas and make links between them during a study session. Interleaving has been shown to lead to better long-term retention

RETRIEVAL PRACTICE

Through the act of retrieval, or calling information to mind, our memory for that information is strengthened and forgetting is less likely to occur. Retrieval practice ideas include: Read, cover, write, check, flashcards and brain dumps.

16th Century Elizabethan London		
1	1558	Elizabeth becomes monarch and Queen of England.
2	1564	William Shakespeare is born.
3	1593	Playwright Christopher Marlowe is killed in a pub brawl in London.
4	1599	Shakespeare's Julius Caesar is the first play performed at the Globe.
5	1603	Queen Elizabeth I dies aged 70.

Characters in Shakespeare's Julius Caesar		
6	Caesar	Dictator who ignores the soothsayer's and his wife's warnings.
7	Cassius	Conspirator influencing others to plot Caesar's assassination.
8	Brutus	Conspirator influenced by honour and Roman republicanism.
9	Antony	Caesar's general who incites the mob against the plotters.
10	Decius	Conspirator who convinces Caesar to come to the Capitol.
11	Calpurnia	Caesar's loyal wife who dreams of his murder and warns him.
12	Portia	Brutus' wife. She wants her husband to confide in her.
13	Casca	Conspirator who strikes the first blow in Caesar's murder.
14	Cinna	Conspirator who announces Caesar's assassination.

Vocabulary		
15	Conspirators	Plotters who conspire to assassinate Caesar.
16	Suicide	Considered a sin by Elizabethans, noble by Ancient Romans.
17	Regicide	Killing a monarch, usually a king
18	Tyrannicide	Killing a tyrant
19	Colossus	The Colossus at Rhodes, a statue of a god astride Rhodes harbor.

Plot of Shakespeare's Julius Caesar		
20	Act 1.1	A soothsayer warns Caesar to beware the Ides of March
21	Act 1.2	Cassius persuades Brutus to plot against Caesar.
22	Act 1.3	The conspirators plot to assassinate Caesar
23	Act 2.1	Calpurnia dreams Caesar's murder and convinces him to stay home
24	Act 2.2	Decius persuades Caesar to come to the Capitol
25	Act 2.3	The conspirators assassinate Caesar and announce his death.
26	Act 3.1	Brutus persuades the crowd that Caesar had to die for his ambition.
27	Act 3.2	Antony incites the mob to violence with Caesar's cloak, body and will.
28	Act 3.3	Cinna, the poet is ripped apart by the mob because of his name.
29	Act 4.1	Brutus and Cassius argue about bribery and justice.
30	Act 4.2	Brutus sees Caesar's spirit the night before the battle of Phillipi
31	Act 5.1	Cassius and Brutus lose the battle to Antony and commit suicide.

Theatrical Stagecraft: Dramatic Devices		
32	Tragedy	A play that ends with the death of the protagonist.
33	Dramatic Irony	The audience knows what the characters don't.
34	Stage directions	Instructions for the actors
35	Monologue	a long speech by an actor
36	Irony	A gap between appearance or expectation and reality.
37	Soliloquy	a device often used in drama when a character speaks to himself or herself
38	Pathetic Fallacy	The weather represents the characters' mind-sets.
39	Dramatic Monologue	A speech in which the speaker inadvertently reveals aspects of their character while describing a particular situation or event.

	Term	Definition		Term	Definition
1	**Plosive**	.'b', 'p', 't', and 'd' sounds - which can be harsh, aggressive or shocking	17	**Elegy**	A sad poem, usually written to praise and express sorrow for someone who is dead.
2	**Hyperbole Hyperbolic (adj)**	Exaggeration	18	**Epic**	A long, narrative poem that is usually about heroic deeds and events
3	**Blank verse**	Poetry written in non-rhyming ten syllable lines	19	**Lyric**	A poem which expresses personal emotions or feelings,
4	**Couplet**	A pair of rhyming lines which follow on from each other.	20	**Narrative Poem**	A poem which tells the story of an event
5	**Chiasmus**	Reversal of ideas in a sentence: "Fair is foul, foul is fair."	21	**Ode**	A formal poem written to celebrate a person, place, object or idea.
6	**Free verse**	Non-rhyming, non-rhythmical poetry which follow the rhythm of natural speech.	23	**Sonnet**	A fourteen line poem, with a regular rhythm and varied rhyme scheme, usually about love.
7	**iamb**	A pair of syllables in which the second is stressed and the first is unstressed.	24	**Romantics**	Thought that feelings or emotions should be prized over logic and reason
8	**Pentameter**	Five pairs of syllables per line.	25	**Romantics**	Thought society corrupted children who were born pure and innocent
9	**Tetrometer**	Four pairs of syllables per line of poetry	26	**Romantics**	Thought that the urban, industrialsed world was corrupt
10	**Trimeter**	Three pairs of syllables per line.	27	**Romantic Literature**	challenged rigid social, religious and political traditions
11	**Trochee Trochaic**	A pair of syllables in which the first is stressed and the second unstressed (opposite of an iamb).	28	**Romantic Period**	End of 18th Century until middle of 19th Century.
12	**Volta**	A turning point in the line of thought or argument in the poem	30	**The Sublime**	Nature's duality: awe-inspiring yet terrifying
13	**Quatrain**	A four line stanza	31	**William Blake**	Wrote 'Songs of Innocence and Experience'.
14	**Apostrophe**	Speaking to an object or to someone who is not present or dead	32	**Samuel Taylor Coleridge**	poems include 'Kubla Khan' and 'The Rime of the Ancient Mariner'.
15	**metonymy**	Referring to something by using a word connected to it. E.g. A suit=businessman.	33	**Percy Bysshe Shelley**	His works include, 'Ozymandias' and 'Masque of Anarchy'. Married to Mary Shelley who wrote Frankenstein
16	**Dramatic monologue**	A poem in which an imagined speaker addresses the reader.	34	**William Wordsworth**	His most famous poems include, 'The Prelude', and 'Composed Upon Westminster Bridge'.

Julius Caesar			Romantic Poetry		
	Word	**Definition**		Word	Definition
1	**Ambition (n)** **Ambitious (adj)**	An earnest desire for some type of achievement or distinction, as power, honour, fame or wealth	16	**Sedition (n)**	Rebelling against the government
2	**Feeble (adj)**	Physically weak; frail	17	**Credible (adj)** **Credibility (n)**	How believable something is
3	**Duplicity (n)** **Duplicitous (adj)**	Deceitful in speech or conduct, as by speaking or acting in two different ways.	18	**Oratory (n)** **Orator (n)**	Public speaking
4	**Malice (n)** **Malicious (adj)**	Feeling a need to see others suffer.	19	**Rouse (v)** **Rousing (adj)**	Exciting and inspiring (of a speech)
5	**Shrewd**	Astute or sharp in practical matters.	20	**Antithesis (n)** **Antithetical (adj)**	Opposites
6	**Plight (n)**	A difficult or horrible situation	21	**Domineer (v)** **Domineering (adj)**	Assert your will in an arrogant way. Bossy
7	**Authoritarian (adj)** **Authoritarianism (n)**	Strict, bossy, expecting obedience	22	**Patriotism (n)** **Patriotic (adj)**	A love for your country
8	**Corrupt (v)** **Corruption(n)**	Guilty of dishonest practices	23	**Implore (v)**	To beg desperately for something
9	**Denounce (v)** **Denunciation (n)**	A public statement that something is wrong	24	**Subtle (adj)** **Subtlety (n)**	Using soft or indirect methods to do something
10	**Berate (v)**	To scold or criticise angrily	25	**Defer (v)** **Deferential (adj)**	Showing polite respect to someone powerful
11	**Scathing (adj)**	Severely and strongly critical	26	**Undermine (v)**	To lessen the effectiveness or power of something, to go against someone's power
12	**Manipulate(v)** **Manipulative (adj)**	Influencing or attempting to influence the behaviour or emotions of others for one's own purpose.	27	**Futile (adj)** **Futility (n)**	Pointless or useless
13	**Oppress (v)** **Oppression (n)**	The exercise of power in a cruel or unfair manner	28	**Allude (v)** **Allusion (n)**	Suggest or hint at something
14	**Gullible (adj)** **Gullibility (n)**	Easily deceived or cheated.	30	**Resent (v)** **Resentment(n)**	Feeling bitter towards something
15	**Austere (adj)**	Rigorously self-disciplined and severely moral; serious	31	**Contempt (n)** **Contemptuous (adj)**	A feeling that something is worthless

Commutativity and Associativity

Addition and multiplication are commutative

$a + b \equiv b + a$ e.g. $8 + 3 = 3 + 8$

$a \times b \equiv b \times a$ e.g. $7 \times 5 = 5 \times 7$

But $8 \div 2 \neq 2 \div 8$ and $8 - 2 \neq 2 - 8$

Addition and multiplication are associative

$a + (b + c) \equiv (a + b) + c$ e.g. $8 + (3 + 2) = (8 + 3) + 2$

$a \times (b \times c) \equiv (a \times b) \times c$ e.g. $7 \times (5 \times 2) = (7 \times 5) \times 2$

But $12 \div (4 \div 2) \neq (12 \div 4) \div 2$

Order of Operations

This tells us which operation to perform first.

B	Brackets	
I	Indices	
DM	Division & Multiplication	– equal priority
AS	Addition & Subtraction	– equal priority

For operations of equal priority, we calculate from left to right.

Keywords

Gradient: the steepness of a line

Intercept: where two lines cross. The y-intercept: where the line meets the y-axis.

Parallel: two lines that never meet with the same gradient.

Co-ordinate: a set of values that show an exact position on a graph.

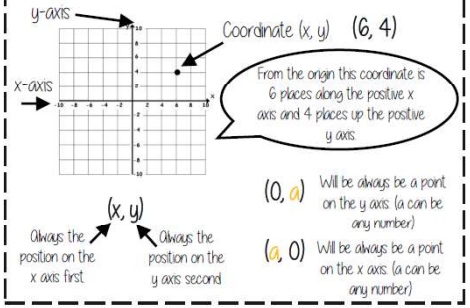
Linear: linear graphs (straight line) – linear common difference by addition/ subtraction

Asymptote: a straight line that a graph will never meet.

Reciprocal: a pair of numbers that multiply together to give 1

Perpendicular: two lines that meet at a right angle.

Coordinates in four quadrants



Plotting y = mx + c graphs

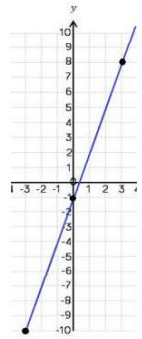
R

$y = 3x - 1$ → 3 x the x coordinate then – 1

x	-3	0	3
y	-10	-1	8

Draw a table to display this information

This represents a coordinate pair (-3, -10)



You only need two points to form a straight line

Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

Real life graphs

A plumber charges a £25 callout fee, and then £12.50 for every hour.
Complete the table of values to show the cost of hiring the plumber.

Time (h)	0	1	2	3	8
Cost (£)	£25				£125

The y-intercept shows the minimum charge. The gradient represents the price per mile

In real life graphs like this values will always be positive because they measure distances or objects which cannot be negative.

Direct Proportion graphs To represent direct proportion the graph must start at the origin.

When you have 0 pens this has 0 cost. The gradient shows the price per pen

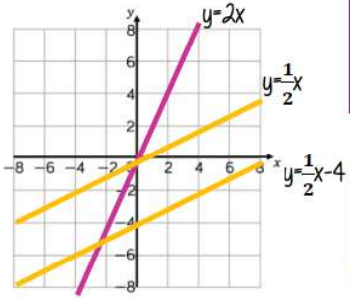
A box of pens costs £2.30
Complete the table of values to show the cost of buying boxes of pens.

Boxes	0	1	2	3	8
Cost (£)		£2.30			

Compare Gradients

$y = mx + c$

The coefficient of x (the number in front of x) tells us the gradient of the line



The greater the gradient – the steeper the line

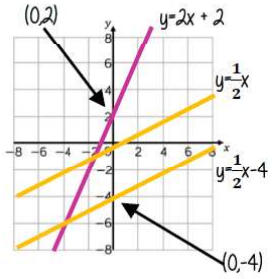
Parallel lines have the same gradient

Positive gradients

Negative gradients

Compare Intercepts

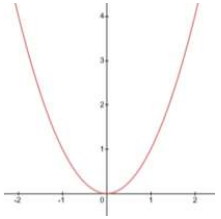
$y = mx + c$ ← The value of c is the point at which the line crosses the y-axis. Y intercept



The coordinate of a y intercept will always be (0,c)

Lines with the same y-intercept cross in the same place

Parabola



A **quadratic function** has a term in x^2. It's graph is curved

Direct Proportion

As one variable changes the other changes at the same rate.

This is a multiplicative change

4 cans of pop = £2.40

4 cans of pop = £2.40 → (x 0.5) → 2 cans of pop = £1.20

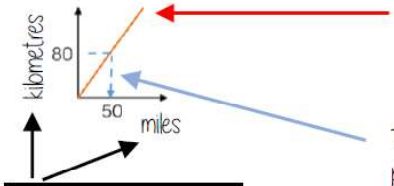
4 cans of pop = £2.40 → (x 3) → 12 cans of pop = £7.20

This multiplier is the same in the same way that this would be for ratio

Sometimes this is easiest if you work out how much one unit is worth first
e.g. 1 can of pop = £0.60

Conversion Graphs

Compare two variables



This is always a straight line because as one variable increases so does the other at the same rate

To make conversions between units you need to find the point to compare – then find the associated point by using your graph.
Using a ruler helps for accuracy
Showing your conversion lines help as a "check" for solutions

Labelling of both axes is vital

Collecting Data

Primary data is data you collected by or for the person using it.
Secondary data is data collected by someone else.
Hypothesis this is a testable statement
Bias is an unfair influence on outcomes

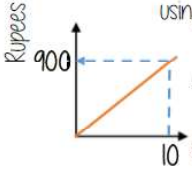
Conversion between currencies

£1 = 90 Rupees ← Currency is directly proportional

For every £1 I have 90 Rupees

£1 = 90 Rupees → (x 10) → £10 = 900 Rupees

Currency can be converted using a conversion graph



Convert 630 Rupees into Pounds

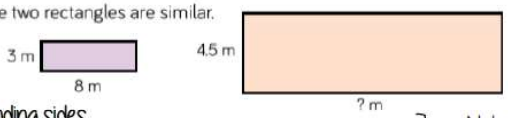
630 ÷ 90 = 7

£1 = 90 Rupees → (x 7) → £7 = 630 Rupees

Ratio between similar shapes

Angles in similar shapes do not change.
e.g. if a triangle gets bigger the angles can not go above 180°

The two rectangles are similar.



Corresponding sides

3m : 4.5m → (÷ 3) → 1 m : 1.5 m

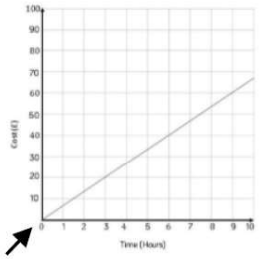
8m : 12m → (x 8) → 1 m : 1.5 m

Note
Simplify to the same ratio

Range

A measure of spread in statistics.
The difference between the greatest value and the least value in a set of numerical data.
Example: The range of 5, 6, 14, 15 and 45 is 45 – 5 = 40

Direct Proportion using y=kx



The line must be straight to be directly proportional – variables increase at the same rate k

Direct proportion graphs always start at (0,0) as they are describing relationships between two variables

Mean average

This is a measure of central tendency which represents and or summarises a set of data.
The mean mean is the sum of a set of numbers divided by the number of terms in the set.
Example: The mean of 5, 6, 14, 15 and 45 is
(5 + 6 + 14 + 15 + 45) ÷ 5 = 17.

Ungrouped Data

The number of times an event happened

The table shows the number of siblings students have. The answers were
3, 1, 2, 2, 0, 3, 4, 1, 1, 2, 0, 2

2 people had 0 siblings. This means there are 0 siblings to be counted here.

Number of siblings	Frequency	
0	2	0
1	3	3
2	4	2 + 2 + 2 + 2 OR 2 x 4 = 8
3	2	3 + 3 OR 3 x 2 = 6
4	1	4

2 people have 3 siblings so there are 6 siblings in total

Best represented by discrete data (Not always a number)

OVERALL there are 0 + 3 + 8 + 6 + 4 Siblings = 21 siblings

Grouped Data

If we have a large spread of data it is better to group it. This is so it is easier to look for a trend. Form groups of equal size to make comparison more valid and spread the groups out from the smallest to the largest value.

Discrete Data – The groups do not overlap

Cost of TV (£)	Tally	Frequency
101 – 150	𝍸 II	7
151 – 200	𝍸 𝍸 I	11
201 – 250	𝍸	5
251 – 300	III	3

We do not know the exact value of each item in a group – so an estimate would be based to calculate the overall total (Mid Point)

Continuous Data – To make sure all values are included inequalities represent the subgroups

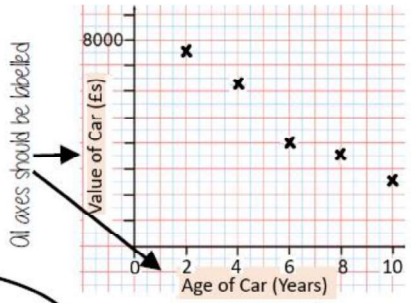
x Weight(g)	Frequency
40 < x ≤ 50	1
50 < x ≤ 60	3
60 < x ≤ 70	5

e.g this group includes every weight bigger that 60Kg up to and including 70Kg

Draw and interpret a scatter graph

Age of Car (Years)	2	4	6	8	10
Value of Car (£s)	7500	6250	4000	3500	2500

- This data may not be given in size order
- The data forms information pairs for the scatter graph
- Not all data has a relationship

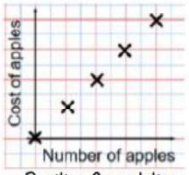


"This scatter graph show as the age of a car increases the value decreases"

The link between the data can be explained verbally

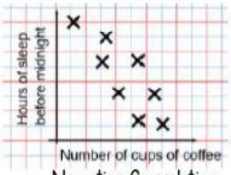
The axis should fit all the values on and be equally spread out

Linear Correlation



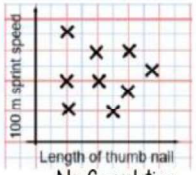
Positive Correlation

As one variable increases so does the other variable



Negative Correlation

As one variable increases the other variable decreases

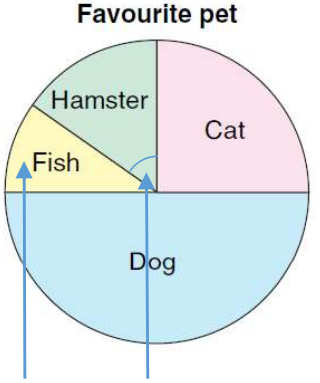


No Correlation

There is no relationship between the two variables

Pie Chart

A form of presentation of statistical information. The frequency or amount of each quantity is proportional to the angle at the centre of the circle.

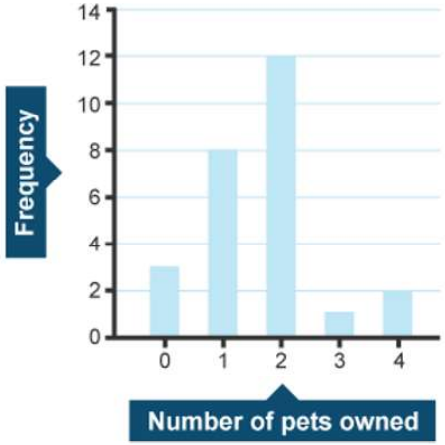


sector angle at centre

Bar Chart

Represents data as vertical blocks.

x* – *axis shows the **type** of data
y* – *axis shows the **frequency** for each type of data
Each bar should be the **same width**
There should be **gaps** between each bar
Remember to **label** each axis.



Keywords

Outcomes: the result of an event that depends on probability.
Probability: the chance that something will happen.
Set: a collection of objects.
Chance: the likelihood of a particular outcome.
Event: the outcome of a probability – a set of possible outcomes.
Biased: a built in error that makes all values wrong by a certain amount.
Union: Notation '∪' meaning the set made by comparing the elements of two sets.

Probability can be represented as a fraction, decimal or percentage.
0: impossible
1: certain

Construct sample space diagrams

Sample space diagrams provide a systematic way to display outcomes from events

The possible outcomes from rolling a dice

The possible outcomes from tossing a coin	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

This is the set notation to list the outcomes S =

In between the { } are a, the possible outcomes

S = { 1H, 2H, 3H, 4H, 5H, 6H, 1T, 2T, 3T, 4T, 5T, 6T }

Probability from sample space

The possible outcomes from rolling a dice

The possible outcomes from tossing a coin	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	(2T)	3T	(4T)	5T	(6T)

What is the probability that an outcome has an even number and a tails?

This is the set notation that represents the question P

P (Even number and Tails) = 3/12

There are three even numbers with tails

There are twelve possible outcomes

Numerator: the event

Denominator: the total number of outcomes

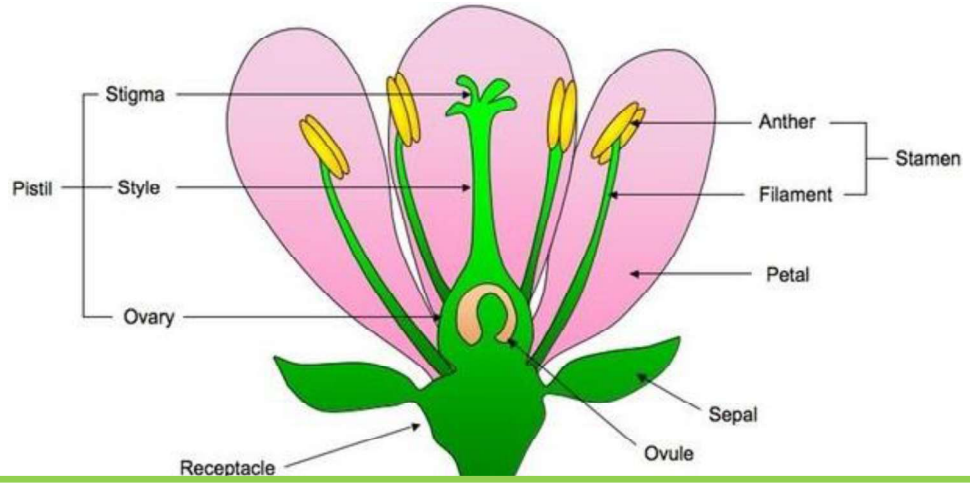
In between the ( ) is the event asked for

Pollination

Pollination is the transfer of pollen from the anthers of one flower to the stigma of another flower (of the same species).

- In **wind pollination**, the wind carries the pollen from the anthers of one flower to the stigma of another.
- In **insect pollination**, insects carry pollen from anthers to stigmas. Insects (e.g. bees) go to flowers to get nectar for food; the pollen sticks to them, and is carried on to the next flower.

Flowers of insect-pollinated plants tend to be adapted to attract pollinating insects, sometimes having stripes to guide the insects toward the nectar and pollen.

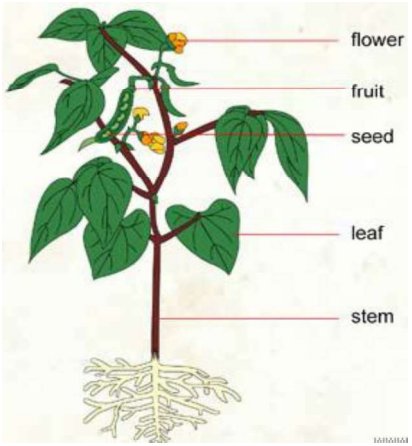


Plant Structures

There are three main plant tissues:

1. Dermal tissue – outer covering of the plant.
2. Vascular tissue – used for transport in the plant.
3. Ground tissue – for photosynthesis, storage and support.

These tissues work together in the organs (roots, stems, leaves and flowers) and the organs work together in two organ systems:



Shoot system

Stem, leaves, fruit ,flowers (if present)

Root system

One or more separate roots

Plant Reproductive System

Anthers produce pollen, the male gametes. They are joined to the flower by a filament.

Female gametes, ovules, are produced and stored in the ovary. Above this is a stalk-like structure called a style that ends in a sticky surface called the stigma. The stigma will accept incoming pollen to allow fertilisation.

Fertilisation

After pollination, the pollen makes a pollen tube down the style to the ovary. The nucleus of the pollen cell travels down the tube to get to the ovum (egg cell) – when the cells join, this is fertilisation.

The cell made when the pollen and ovum fuse will become a seed, which can become a new plant. Plants then form fruits, often from the ovary walls.

Seed Dispersal

Plants spread their seeds out – this is called dispersal – so that the offspring don't complete with them for light or soil nutrients. Dispersal can be via:

- Animals – eating the fruit and releasing seeds in waste (e.g. mistletoe).
- Wind – carrying seeds away (e.g. sycamore or dandelion).
- Water – tides or currents carrying away fruit (e.g. coconuts).

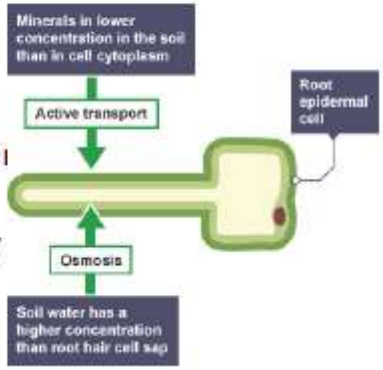
Photosynthesis

- Plants use **photosynthesis** to make food (glucose) using **energy** from the sun

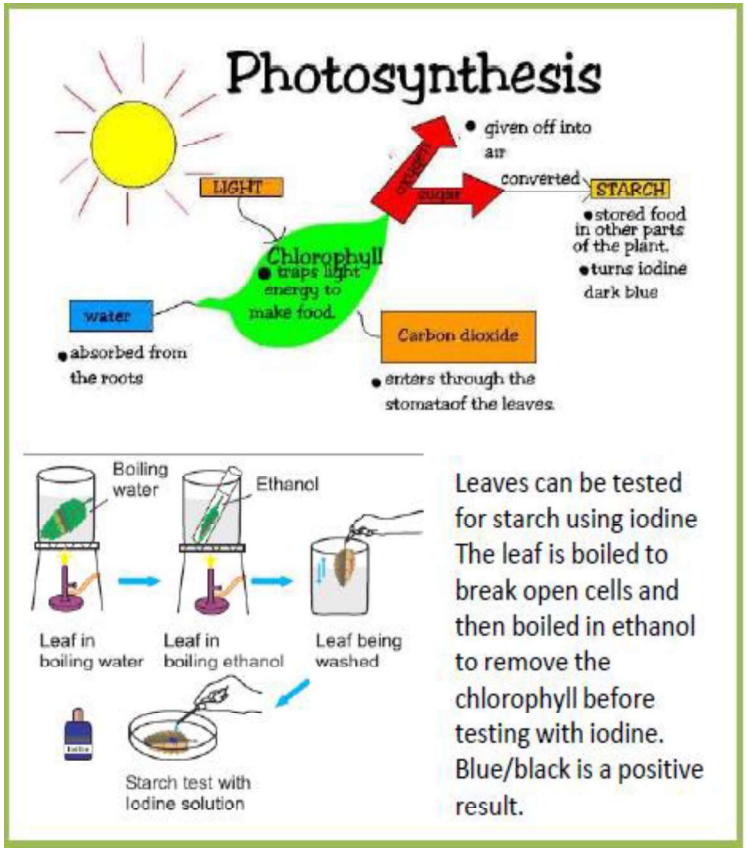
- The plant takes in **water** through the roots and **carbon dioxide** through the leaves via stomata
- Photosynthesis takes place in the **chloroplasts** which contain **chlorophyll** to absorb the light from the sun
- The glucose made in photosynthesis is stored as **starch**
- We can use **iodine** to test for starch; if starch is present the iodine will turn black
- Limiting factors for photosynthesis are light, temperature & CO_2 concentration

Roots

- Plants absorb **all** their water in the roots by osmosis and keep water moving constantly through the plant by losing water as vapour from the leaves – transpiration
- Root hair cells increase the surface area for absorption of water.
- Root hair cells have a thin cell wall to allow water to pass through by osmosis easily
- Root hair cells don't contain chloroplasts as they are not performing photosynthesis
- Root hair cells absorb minerals through active transport. This requires an input of energy from the cell

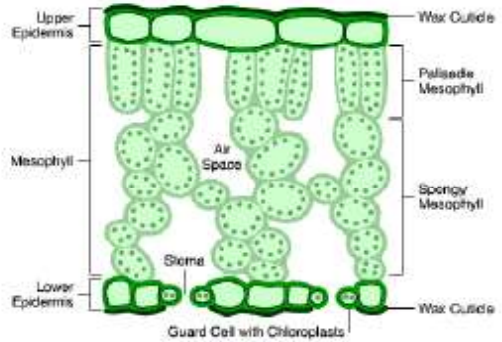


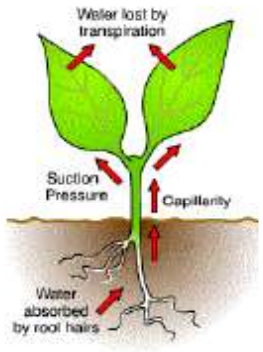
Key Terms	Definitions
Osmosis	Movement of water from a high concentration to a low concentration through a partially permeable membrane
Diffusion	Movement of particles from a high concentration to a low concentration until they are evenly spread out
Active transport	Movement of particles against a concentration gradient
Transpiration	The process by which plants lose water, as vapour, from their leaves through the stomata.
Chlorophyll	Green pigment in leaves, needed for photosynthesis, kept inside chloroplast



Leaf adaptations

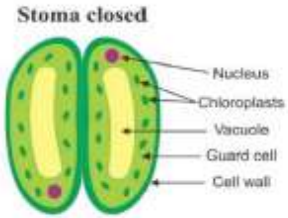
- Large **surface area** to absorb lots of light
- The upper layer has a **waxy coating** to prevent water loss and damage
- The **palisade cells** are towards the top of the leaf and which contain lots of chloroplasts. They are long & thin to use all the light up.
- There are small holes on the bottom of the leaf called **stomata**, these allow carbon dioxide into the leaf and oxygen out of the leaf
- The stomata are opened and closed by the **guard cells**



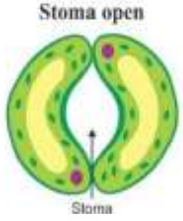


Key Terms	Definitions
Epidermis	Type of plant tissue that covers the surface of a plant
Palisade mesophyll	Tissue in the leaf where photosynthesis takes place
Spongy mesophyll	Tissue in the leaf with air spaces between cells – specialised for gas exchange
Xylem	Narrow tubes in the roots, stem and leaves, which transport water and mineral ions up the plant from the roots
Phloem	Living vessel that carries food from the leaves to the rest of the plant
Guard cell	In pairs, guard cells form the stomata on leaves – the holes through which gases are exchanged. They can open and close the stomata as required by the plant.
Transpiration	The process by which plants lose water, as vapour, from their leaves through the stomata.
Stomata	Pores on the underside of leaves. Open and close.

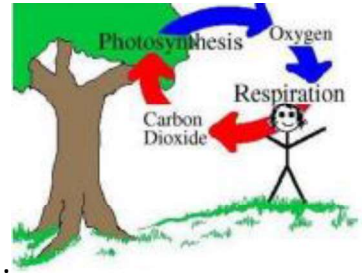
Stomata, guard cells and transpiration



- Stomata allow the gases of photosynthesis to enter or leave the leaf. They need to be open to allow photosynthesis to take place. They also allow water to leave through transpiration
- Transpiration is the upward flow of water up from the roots and out of the leaf. It causes more water to be drawn up from the roots
- Guard cells control the opening and closing of stomata. This is useful in dry conditions, because the plant can conserve water instead of losing lots of it through transpiration.
- Factors that speed up transpiration will also increase the rate of water uptake from the soil e.g light, temperature, wind, humidity



Carbon dioxide and oxygen



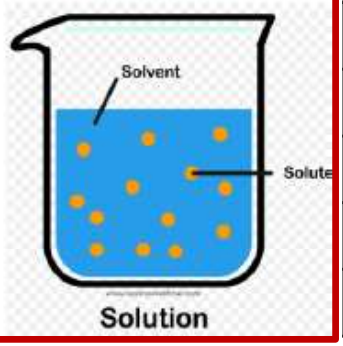
- The balance of oxygen and carbon dioxide in the atmosphere is maintained through respiration in plants and animals and by photosynthesis in plants.
- Plants use oxygen during respiration. They produce much more oxygen during photosynthesis than they consume in respiration; this is how the oxygen consumed by plants and animals is replenished in the air.
- Recently the balance of oxygen and CO_2 has been upset; CO_2 levels are rising due to deforestation and burning fossil fuels, leading to global warming.

Dissolving

- During dissolving, the **solvent particles** surround the **solute particles** and move them away so they are spread out in the **solvent.**
- This is how a solution is made.

Solutions

- A solution is made up of a liquid in which a substance is dissolved.
- The liquid part of the solution is called the **solvent** e.g. water
- The substance that has dissolved into the solvent is called the **solute** e.g. salt
- When the solute dissolves into the solvent, a **solution** is made e.g. salt water
- Salt is described as **soluble**, because it dissolves into the solvent
- A substance that will not dissolve into a solvent is described as **insoluble** e.g. sand



Key Terms	Definitions
Dissolving	When solvent particles surround solute particles so they are spread out
Saturated Solution	A solution in which no more solute can dissolve
Evaporation	A method for separating a dissolved substance from solution
Filtration	A method for separating an insoluble solid from a liquid

Saturated Solutions

- When no more solute can dissolve in a solvent, we say the solution is **saturated**.
- However, more solute will be able to dissolve if the solvent is heated. This is because solubility increases with higher temperature.
- Solubility increases because the solvent particles are moving slightly faster, as they have more energy. This means there is more space for solute particles to fit in.
- **Mass is always conserved**. For example, if 5 grams of solute are dissolved in 100g of solvent, the mass of the solution will be 100 + 5 = 105g

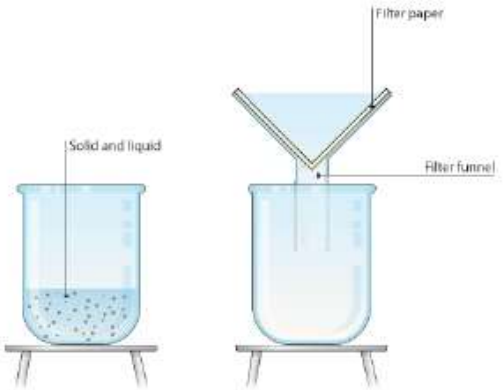
Key Terms	Definitions
Mixture	A substance made up of different elements or compounds that are not chemically bonded to each other
Solute	The substance that dissolves into the solvent
Solvent	The liquid that the solute dissolves into
Solution	The solute dissolved in the solvent
Solubility	How easily a substance dissolves
Soluble	The substance dissolves into a solvent
Insoluble	The substance does not dissolve into a solvent

Evaporation

- If you have a solution in which a solute is dissolved, for example salt water, the water can be evaporated to leave you with pure salt.
- This is done by using a Bunsen Burner to heat the solution inside an evaporating basin.

Filtration

- This is a good method of separation for when an insoluble solid is mixed with water e.g. sand and water.
- The mixture is poured through folded filter paper inside a funnel.
- The insoluble solid is trapped in the filter paper and the liquid passes through into the beaker.

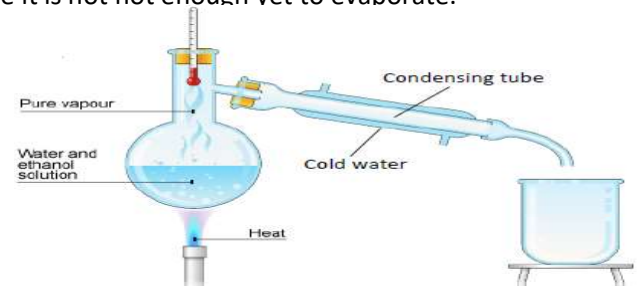


Key Terms	Definitions
Distillation	A method for separating the parts of a liquid solution according to their boiling point.
Chromatography	A method for separating mixtures of compounds according to their solubilities in a solvent.

Distillation

This is good for separating mixtures of liquids, e.g. ethanol and water.
Different liquids have different boiling points, e.g. ethanol has a lower boiling point than water.
Distillation separates liquids according to their boiling points:

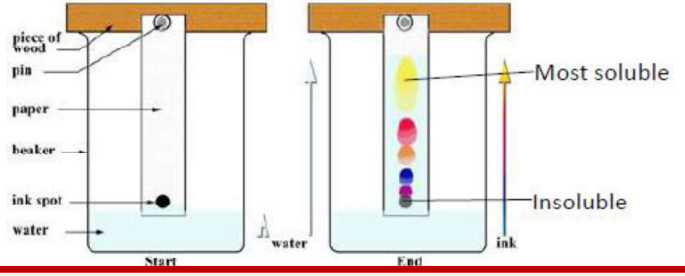
1. The mixture of liquids is heated in the round flask
2. The liquid with the lower boiling point (ethanol in this example) will evaporate first, turning into a gas
3. It passes through the condensing tube which is surrounded by cold water, so the gas condenses into liquid form
4. It drips into the beaker
5. The liquid with the higher boiling point (water in this example) is left in the round flask because it is not hot enough yet to evaporate.



Chromatography

Chromatography is used to separate the compounds in a mixture according to how soluble they are in a solvent.
It uses chromatography paper dipped in the solvent as follows:

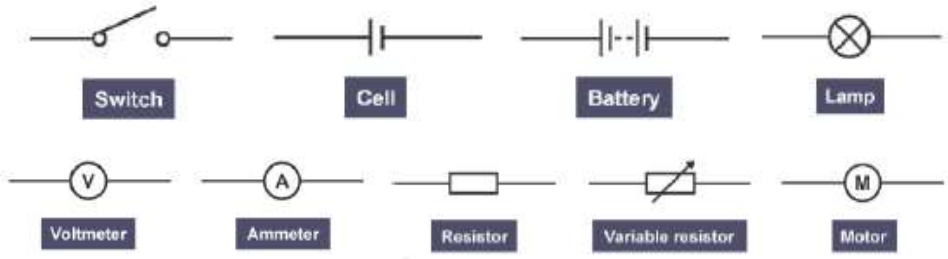
1. A spot of the mixture, for example pen ink, is placed near the bottom of the paper
2. The paper is dipped in the solvent e.g. water, so that the spot is just above the solvent level. If the spot goes in the solvent, it will run.
3. The compounds that are most soluble will travel with the solvent up the paper
4. The compounds that are insoluble will stay in the same place
5. In this way, the compounds are separated according to their solubility in the solvent



Charge & static electricity

Electric charges are positive or negative. For example, electrons have a negative charge. Opposite charges attract each other (+ and -), whereas charges that are alike repel each other (+ and +, OR -and -). This is because there is a force of attraction between opposite charges, but a force of repulsion between like charges.

- If a material has a charge, but the charge is not moving anywhere, we call this static electricity. This will only happen if the material is an insulator. To get a positive or negative charge on an insulator, all you have to do is rub it with a different material (use the force of friction).
- For example: rubbing a balloon on your hair will produce a charge on the balloon and the opposite charge on your hair. This causes them to attract each other.
- When a static charge is produced like this, it is because electrons from one material are transferred to the other material (see first diagram).
- The material that gains electrons becomes more negative.
- The material that loses electrons becomes more positive.
- Any time there is a difference in electric charge between two points, there is a difference in electrical potential energy. We call this a potential difference.

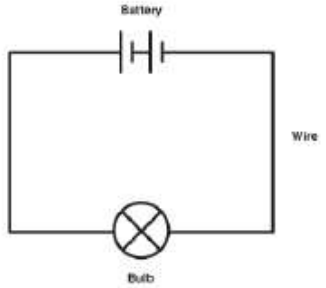


In a circuit with only **one loop**, so all components are in **series**, the potential difference from the supply is **shared** by all the components.
If a circuit includes components on different loops (in **parallel**), each loop receives ALL the potential difference from the supply. The parallel components don't have to share.

Key Terms	Definitions
Circuit	A complete loop of conductors
Current	The rate of flow of charge
Resistance	The property of materials that determines how much current they will carry and how much work they do
Work	Transfer of energy from one store to another
Component	Part of a circuit. See symbols below
Series	Linking components one after another, making one loop
Parallel	Linking components so they are in separate loops

If there is a charge on materials that are **conductors** (like metals), the charge is able to flow. The rate (speed) of flow of the charged particles is the current. Current is measured in amps (A). Usually the flowing charged particles are **electrons**.
Charges flowing around a loop is called a **circuit**.
Three ingredients are needed in a circuit:

1. Conductors connected in a loop for the current to flow through
2. A source of potential difference, like a battery. This causes a difference in electric potential energy between each end of the circuit.
3. Components (like lamps) with resistance.

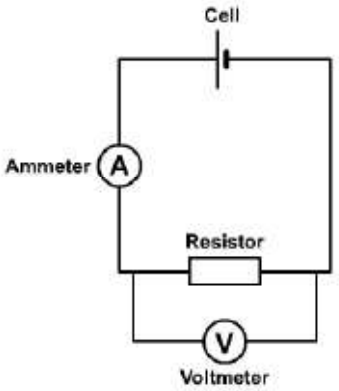


The greater the resistance in a circuit, the lower the current in the circuit.
The greater the resistance of a component, the more **work** it will do.

Key Terms	Definitions
Charge	A positive or negative property of substances, that causes the substance to feel a force when there are other charges nearby
Conductor	Material that can carry electric current e.g. metals
Insulator	Material that does NOT conduct electric current
Friction	The force caused when two materials move past each other
Potential difference	p.d. for short, and also known as voltage. This is the measure of the difference in electrical potential energy between two points
Static Electricity	Electric charges that are **not** flowing
Electrons	Tiny, negatively charged, particles, found in all atoms
Resistance	The property of materials that determines how much current they will carry and how much work they do

Measuring current and potential difference

- Current is measured with an ammeter. An ammeter is included in the circuit (in series with the other components).
- Potential difference (voltage) is measured with a voltmeter. Since voltmeters measure the difference in potential energy between two points, they must be added across the component whose potential difference you want to measure.

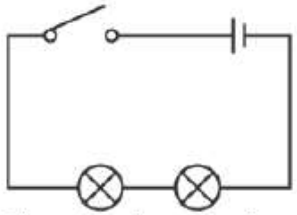


Resistance

Resistance, potential difference and current are linked in the equation $V = IR$. This is also known as Ohm's Law. This equation shows that:

- If potential difference is kept constant... increasing resistance *decreases* current
- You could increase current EITHER by increasing potential difference OR decreasing resistance
- You can calculate the resistance of a component using $R = V/I$

Equation	Meanings of terms in equation
$V = I\,R$	*V = potential difference (volts, V)* *I = current (amperes, A)* *R = resistance (ohms, Ω)*

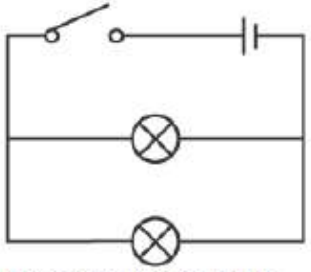


These two lamps are in **series** with each other

Potential difference in series and parallel

In a circuit with only **one loop**, so all components are in **series**, the potential difference from the supply is **shared** by all the components.

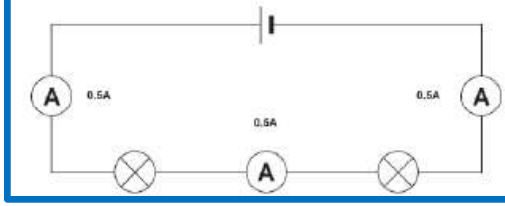
If a circuit includes components on different loops (in **parallel**), each loop receives ALL the potential difference from the supply. The parallel components don't have to share.



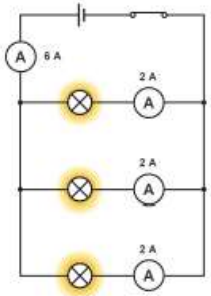
These two lamps are in **parallel** with each other

Current in series and parallel

In a circuit with only **one loop**, so all components are in **series**, the current is the same through every part of the circuit. In other words, the electrons flow at the same rate everywhere in the circuit. The diagram shows some example readings.



If a circuit includes components on different loops (in **parallel**), the current splits at the junctions in the circuit. The total current in all the separate loops adds up to the current before or after the split, as the diagram shows.



Key Terms	Definition
Respiration	A chemical reaction that releases energy from food molecules.
Aerobic	With oxygen.
Anaerobic	Without oxygen.
Fermentation	Anaerobic respiration that occurs in yeast.
Mitochondria	Cell organelle where aerobic respiration occurs.
Fatigue	When muscle cells become tired and no longer contract efficiently.

Respiration

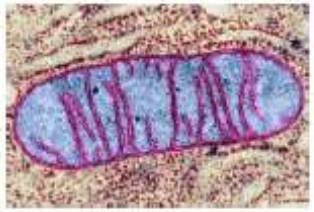
Respiration is a chemical reaction that occurs in plant and animal cells and releases energy from food molecules. The organism can then use this energy in several different ways including:

1. To build large molecules from smaller ones
2. To move
3. To keep warm

There are two types of respiration: aerobic and anaerobic.

Aerobic respiration

Aerobic respiration occurs in the presence of oxygen and takes place in the mitochondria. Cells that require a lot of energy (e.g. muscle cells, sperm cells) will have higher numbers of mitochondria so they can release more energy.



Aerobic respiration is shown by the following equation:

glucose + oxygen → carbon dioxide + water

$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

Respiration can use different food molecules as the reactant but it is generally shown as glucose. Oxygen and glucose travel to the cells through the circulatory system and the waste products are removed from cells in the same way.

Anaerobic respiration

Anaerobic respiration occurs when there is not enough oxygen present and takes place in the cytoplasm. Much less energy is released from anaerobic respiration than from aerobic respiration.

In animals the equation for anaerobic respiration is:

glucose → lactic acid

If lactic acid builds up in muscle cells it causes fatigue. We continue to have an elevated heart rate and breathing rate after exercise so that more oxygen enters the cells. This oxygen reacts with the lactic acid removing it from our muscles allowing them to work efficiently again.

In plants and yeast the equation for anaerobic respiration is:

glucose → ethanol and carbon dioxide

This process can also be called fermentation and is useful as the ethanol can be used to make alcoholic drinks and the carbon dioxide is what makes bread rise.

Key Terms	Definitions
Pressure	The force exerted over a given area
Fluids	A substance that can flow
Pascals	The unit for pressure which can also be written as (N/m^2)

Equation	Meanings of terms in equation
$P = \frac{F}{a}$	*P = Pressure (Pa)* *F = Force (N)* *a = Area (m^2)*

Pressure on surfaces

Objects exert pressure on the surface that they are on. The size of the pressure depends on the force applied by the object and the surface area of the object.

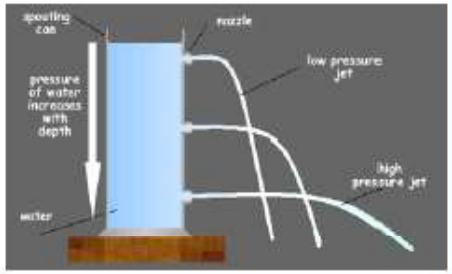
Pressure is calculated by dividing force by area.

Some objects look to increase pressure for example drawing pins have a very low surface area, so exert a high pressure.

Snow shoes have a very large surface area so exert a very low pressure, stopping people sinking into the snow.

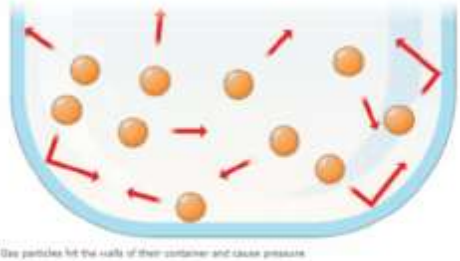
Pressure in fluids

Fluids (liquids or gases) exert pressure at 90˚ to the surface. In a gas, particles are constantly colliding with objects, this exerts a pressure. In a liquid like water, the deeper you go, the higher the pressure.



Gas Pressure

Gas pressure is **caused by gas particles colliding with the walls of the container.** A container also experiences pressure on the outside. Air particles on the outside collide with the outside wall. **An imbalance between the pressure on the inside and outside can cause the container to change its shape.**



There are **3 factors** affecting gas pressure:

1. Number of particles:

The more gas particles inside the container, the more often collisions will occur, creating a higher pressure.

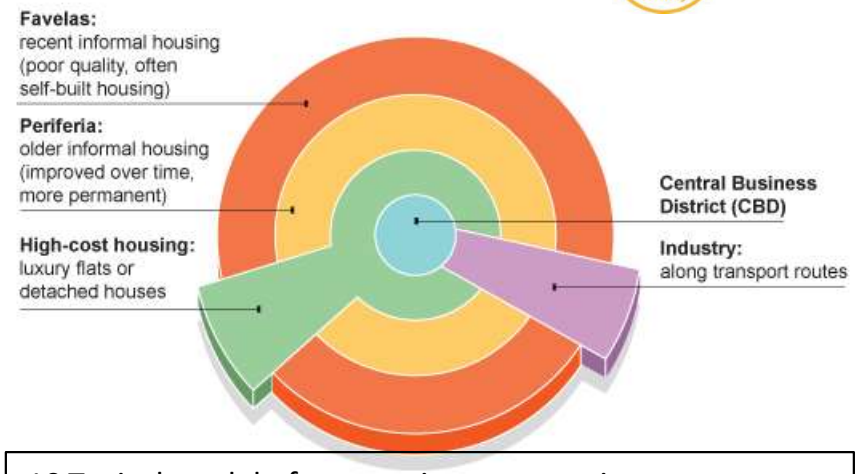
2. Temperature:

If gas particles are heated up, they move with a higher speed and collide more often with the walls of the container, causing a higher pressure.

3. Volume:

If the same amount of gas particles are put into a container of a smaller volume, pressure will increase because particles will collide more frequently with the walls when they have less space.

	Mexico Key Facts		UK Facts for comparison
1	Continent	North America	Europe
2	Level of affluence	Emerging Country	Developed
3	GDP per capita	$9821 US	$39 720 US
4	Population	129.2 million	66.4 million
5	Percentage living in urban areas	83.5%	82%
6	Fertility Rate	1.7	1.8
7	Infant mortality rate	12.2 per 1000 live births	3.8 per 1000 live births.
8	Average age	27.4 years	40
9	Percentage working in the tertiary sector	63.1%	79%



10.Typical model of a emerging country city.

What is an development?

Development is the progress in economic growth, use of technology and improving welfare that a country has made. When a country develops it basically gets better for the people living there- their quality of life improves (e.g. wealth, health and safety).

What are the four types of development?

Social development is to do with people and society. It is about the improvement that has been made by a country improving the quality of life of people who live there. This could be by improving literacy levels through access to education, healthcare and increasing life expectancy.

Economic development is about the improvement that has been made by a country in terms of wealth. This could include the value of goods and services that a country is producing or the proportion (amount) of people who are working in primary, secondary, tertiary or quaternary jobs.

Environmental development recognises the importance of the natural world and includes looking at how countries are monitoring greenhouse gas emissions (air quality), or what they are doing to improve water quality.

Sustainable development means that the needs of the present generations will be met while protecting the needs of the future. Resources can not be exhausted and environments need to be protected. It is a balance. For example: using renewable energy sources rather than depleting stocks of oil and gas.

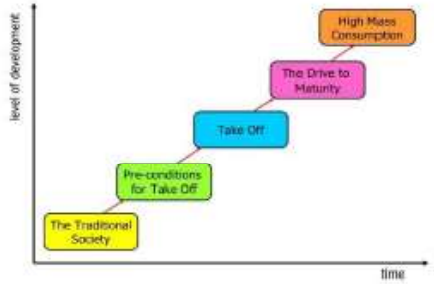
How can development be measured?

Geographers find it useful to be able to measure how developed places are, and to compare them and see how they change over time. To do this they use development indicators.

Social measures of development	Economic measures of development -tend to focus upon money and a country's economy.
1. Quality of life	1. Standard of living
2. Infant mortality	2. GDP per capita
3. Birth rate	3. GNI per capita
4. Doctors per 1000	4. Absolute poverty
5. Literacy rate	5. Relative poverty
6. Death rate	6. Employment type
7. Life expectancy	
8. Access to education	

What is Rostow's Model

In 1960 an American economist named Walt Rostow created a model to show the stages that countries are likely to pass through on their way to being more developed. There are five linear stages. It has been criticised for being too simplistic and outdated



Stages of Rostow's Model

1. Traditional society: Characterised by subsistence economy which relies on collecting natural resources (logging, mining- primary industry). High levels of agriculture and labour intensive agriculture.

2. Pre-conditions: Infrastructure starts to improve, so trade is easier. Agriculture develops into a larger scale- less workers and more machinery. Secondary industries- such as manufacturing start to take off. Introduction of TNCs.

3. Take off: Increasing industrialisation- secondary manufacturing dominates. TNCs often dominate the economy. Rural to urban migration happens on a greater scale. Nation becomes more modernised- airports, roads, railways, education, healthcare and internet access.

4. Drive to maturity: Country becomes able to support itself- not relying on foreign investment. As education and aspirations change and improve- more tertiary jobs: sales, nursing and teaching etc. Universities and schools mean that high-tech industry develop and quaternary jobs begin.

5. High mass consumption: High proportion of employment in service sector (tertiary). Secondary manufacturing shifts to smaller factories with less environmental impact. As the population becomes wealthier- consumption (buying new/used goods) increases, focusing on high value goods such as card and designer labels.

What is Ethiopia's place in the model?
Government spending has led to improvements in healthcare and education, and the arrival of TNCs, suggest that **stage 2 is more appropriate**.

Due to new technologies starting to replace older livestock farming, **the pre-conditions for take off are emerging.**

What is urbanisation?

Urbanisation is an increase in the amount of people living in urban areas, such as towns and cities, compared with those living in rural areas, such as the countryside- potentially due to migration.

What is a city?

Cities can be found nearer the top of the hierarchy.

Settlements move up the hierarchy as more people live in them; they develop more functions and provide more services as a result.

Settlements increase in size but decrease in frequency.

What is a city?

Cities can be found nearer the top of the hierarchy.

Settlements move up the hierarchy as more people live in them; they develop more functions and provide more services as a result.

What is a megacity?

The rapid rate of growth which has taken place in ACs, and more recently LIDCs, has led to the creation of cities with a **population over 10 million.**

Cities with a population of this size are known as **megacities** such as **Tokyo, Delhi and Mumbai.**

Why are megacities important? Pros/Cons

+ Smaller ecological footprint – many people live in apartments or smaller connected houses rather than larger homes in sprawling neighbourhoods.

+ Cities are also walkable and have public transportation options that can make cars less of a necessity.

- Concentrations of people mean concentrations of pollutants and rubbish.

- Cities produce up to 70 percent of global CO_2 emissions and smog is becoming a common feature in many urban landscapes.

- Cities across the globe producing 1.3 billion tons of waste annually, that's a lot for one area to handle.

What is a World City?

A **World City** (also known as a global or alpha city) is one which is considered to be an *important hub in the global economic system.*

A World City may have:
- Headquarters of TNCs based in the city
- A centre for media and communication
- A major centre for manufacturing
- Important port (can handle bulk carriers)
- Financial services- banks or stock exchange
- High rated universities- high quality of healthcare
- Cultural opportunities- cinema/live music etc

London is an example of a world city.
Its status as a world city comes from:
- Its financial importance (London Stock Exchange)
- Scientific research from its universities
- Power of companies located there
- Landmarks both new and old, are recognised worldwide

What causes rapid urban growth of cities in LIDCs?

Urbanisation is driven by two key factors…
- **Rural-urban migration:** people being drawn from the rural areas to live in cities.
- **Internal growth:** when people who have moved into the cities have lots of children.

Rural-urban Migration

The factors which draw people to cities are referred to as *pull factors.*

These work in combination with *push factors* which tend to drive people away from rural areas.

Push Factors	Pull Factors
Opportunities for employment other than agricultural work- wages in rural areas are limited and are in poverty levels in most cases.	There are more opportunities for employment-wages offered are better.
Rural areas often have fewer services (including access to healthcare and education) and poorer infrastructure.	Better healthcare systems and education in urban areas.

Internal Growth

Once people arrive in cities and find employment and housing- they will tend to have children.

This increase in population is known as *internal growth* and can result in rapid population growth- particularly in LIDCs where cities have youthful populations.

Development Dynamics

Case Study: India

Where is India located?

Continent: Asia
Nearby countries: Pakistan, Sri Lanka, Bangladesh, Nepal
Nearby oceans: Indian Ocean, Arabian Sea, Bay of Bengal

India is the 7th largest country in the world by land mass.

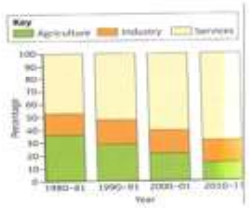
Think like a geographer: How does India's location promote economic development?

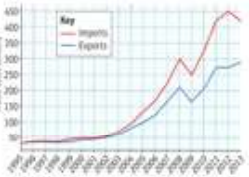
- **What other major economies are nearby?** China! Now a major economy and superpower. India and China have existing political tensions. India is a former British colony.
- **Is India landlocked? Which countries are easily accessed?** India is not landlocked, meaning it can easily transport goods internationally by boat. India aims to become a major transport hub within south east Asia.
- **Is India a large or small country? What about its population?** India is a large country, with good access to resources such as coal. India's population is rapidly growing, totals 1.324 billion (2016). This makes India the second most populous country in the world.

Development Indicator	Social, Economic or Environmental	Value
HDI (Human Development Index)	Social, Economic and Environmental	0.621 (131st in the world)
Life Expectancy	Social	68 years
Adult Literacy	Social	74%
Infant Mortality	Social	34 per 1000 birth
GDP (Gross domestic Product per capita)	Economic	$1,709

India's Economic Development

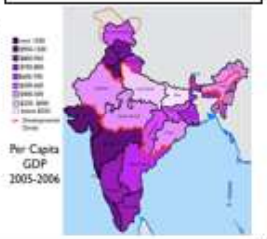
India has undergone rapid development in recent decades which has resulted in India now being identified as an **emerging** country, rather than a **developing** country.





The general trend in employment has been a loss of primary employment, with an expansion of the services sector.

India's imports and exports have grown, as India buys and sells more products internationally. India's total imports have grown by almost 1500% since 1980.

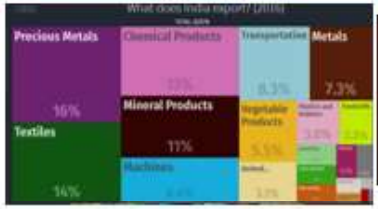


India's development has been unequal. and has led to contrasting development levels. Compare the dark regions (higher GDP) to the lighter colours (lower GDP).

Who/What does India trade with?

Export: Goods sold to other countries

Import: Goods bought from other countries



The types of products India makes and sells

Geopolitics

Definition: How are a countries world politics influenced by geographical factors.

What controls India's geopolitics?: It's history, geography, international context and domestic policies

Globally: India is a member of the G20. The G20 are the twenty most developed economies in the world. These countries meet every year, and discuss world trade issues.

In Asia: The partitioning of India and Pakistan in 1947 was accompanied with riots and mass casualties. The effects of this are still felt today:
The relationship between India and Pakistan is still far from healthy
Both countries are nuclear armed.

The rise of the call centre

Bangalore, India.

A large transnational corporation (TNC), with headquarters in the UK.

Aviva have call centres in Perth (Australia), Norwich (UK) and Sheffield (UK).

Aviva is the UKs largest insurance company

Why India?

- ✓ Wages much lower (India = £1,200, UK = £12,000) The cost of operation is lower by up to 60%.
- ✓ Improvements in education levels.
- ✓ Fewer safety restrictions = longer hours

Advantages of Aviva	Disadvantages of Aviva
Bring much needed money to the Indian economy, creating 1000s of jobs .	A fifth of all call centre jobs outsourced, weakening the UK economy.
Increase development levels, investing in infrastructure.	Retain profits, and pay tax in the UK. This limits the economic benefit to Bangalore.

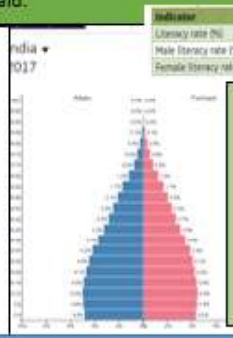
Impact of Development

Economic Development on Different Age and Gender Groups

The Elderly (50+): Access to better healthcare, which may prolong their life. Do not possess necessary skills so may lag behind. Socially, changes to the Indian society may be difficult to adapt to.

Females: The BIGGEST winners: Emancipation of women = equal access to a high quality education and healthcare system, which enables them access to highly skilled jobs that are well paid.

Young adults: Access top universities, receiving a world class education = compete for the highest skilled and paid jobs = more equal society.



Rate of change in female literacy rates (11.8%) greater than males (6.8%) between 2001-2011.

Impact on the environment

Environment: The atmosphere (pollution), the green space, wildlife, rivers and water systems etc.

India is ranked as the 155th country out of 177 in a global ranking on environmental quality. This costs India around $80 billion per year (5.7% of its total economy)

The effects

Solid Waste Pollution:
- Indian cities generate 100 million tonnes of waste each year.
- 40% of urban waste in India is just simply not collected, and is allowed to rot on the streets.

Water Pollution:
- India has the capacity the deal with just 1/6 of its sanitation produced.
- Over 100 Indian cities directly dump untreated sewage into the Ganges.

Air Pollution:
- Major issue in India, with wood burning and vehicle emissions behind the primary cause.
- Natural methods of fuel production (wood burning) constitutes 90% of rural energy, and 24% of urban energy. These biomass house burners are the leading cause of greenhouse gas emissions.

Challenges of an Urbanising World

Case Study: Mumbai

Mumbai has a total population of 18 million people! Compare this to Birmingham, which has population of just 1 million!

Mumbai is located in the region of Maharashtra

Notice how well connected Mumbai is to other areas in India. This allows for the easy flow of resources and people into, and out of Mumbai.

Think like a geographer: How does Mumbai's location and connectivity promote economic development?

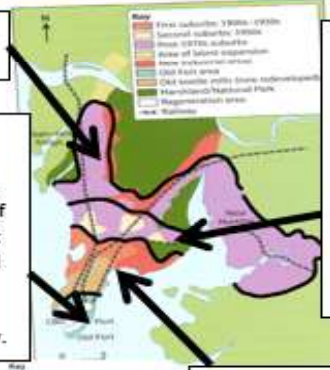
- **Access to the ocean:** Natural deep harbour, easily accessible for modern container ships, promoting exports and imports.
- **Mumbai's location in India:** Western coastline of India. Quick access via boat or plane to the major emerging economies of the middle east.
- **So how important is Mumbai's location?** 25% of all international trade within India is handled by the dock in Mumbai.

The suburban railways of Mumbai are vital to the connectivity of the city. The roads are often gridlocked. In a single day, the suburban train network carries around 7.5 million people.

The structure of Mumbai

Does it fit with the Burgess Model?

Outer Suburbs



CBD: Tip of Mumbai, major historic centre. Bank of India and Walt Disney located here. Large port shipping internationally.

Inner Suburbs: First area developed to house workers. Large percentage in poverty and in slum housing. This does not match Burgess model.

Inner City: Major contrasts in development levels. Some very expensive, some old slum housing (25,000 people)

Rapid Population Growth

Population change in Mumbai, India

Convinces a person to move away from their rural home

Attracts a person to Mumbai

Push factors	Pull factors
Difficult rural conditions making it harder to make a living from farming. Population increase has also meant lower farming wages	Mumbai's rapid economic growth has created a huge range of jobs, from the most highly skilled to small-scale service jobs and low-skilled manual labour.
There are few services in rural India – education and health care is often basic, there are few leisure or entertainment facilities	Education opportunities are much better in Mumbai, there is a much bigger range of health care options and lots to see and do
New farming techniques in India have meant fewer jobs in farming	Wages in Mumbai are much higher, even for low-skilled jobs, than they are in the countryside

The Challenges of Living in Mumbai

Traffic Congestion: Rapid rise to 1.8 million privately owned cars in Mumbai as people gain wealth and cars become affordable.

Slum settlements: Slums = inner city/suburbs, making travel to work cheap. Slums are not officially recognised. In Dharavi, water is only available from a standpipe for a 2 hour period each day.

Working Conditions: Most work in the 'informal' sector (unregulated), which means low pay, long working hours and dangerous working conditions. These conditions exist due to extreme poverty, and the need for any work to earn a wage.

Rapid Expansion: Major strain on infrastructure and services. Ensuring a reliable electric supply and adequate water supplies is difficult. No waste collection = 800 million tonnes of untreated sewage dumped Mithi River.

Contrasting Qualities of Life (QOL)

Mumbai is a globally important megacity, but falls short in terms of quality of life. Mumbai has a poor level of infrastructure when compared with megacities in other emerging Asian economies.

Why is QOL so low in Mumbai?

Factor	Effect
Inefficient Government (political, economic)	The government is ineffective. Housing projects take a long time to develop, with a lack of sanitation systems being a major hold up.
Rent Controlled (economic)	Limits put on how much rent can cost. This discourages the property owner from investing in the property as they cannot make as much profit.
Corruption (economic, social)	Housing that is redeveloped is often sold to developers that build expensive properties, far out of reach of most local Mumbai residents.

Top Down Development

The Mumbai Monorail

Definition = Large, expensive infrastructure projects often funded by governments or FDI.

Why a monorail?

- ✓ Monorails are a form of public transport, reducing the congestion of cars.
- ✓ Green transport – Reduction in total emissions due to fewer cars generating atmospheric pollutants.

In 2005, the Mumbai government agreed to invest £310 million pound in a 9km stretch of Monorail.

Tickets are cheap (10p per person), but the route DOES NOT travel through the main area of the city. As a result, only 15,000 journeys are made each day, most of these being tourists!!!

Conclusion: The monorail is arguably an attention grabbing prestige project, designed to impress other countries by showing how developed and futuristic Mumbai is. This is FAR from the truth!

Are they the solution to Mumbai's development crisis?

Key Terms		
1	Missionary	a person sent on a religious mission, especially one sent to promote Christianity in a foreign country
2	Catalan Atlas	a mediaeval world map created in 1375 that has been described as the most important map of the Middle Ages.
3	Silk Roads	A network of trade routes connecting the East and West, and was central to the economic, cultural, political, and religious interactions.
4	Timbuktu	Centre point of the Malian Empire.
5	Mansa	Emperor/Leader
6	Mansa Musa	The ruler of Mali from 1312-1337. Was one of the most significant people in expanding Mali's wealth.
7	Hajj	Pilgrimage to Mecca for Muslims.
8	Uzama	Village chiefs in Benin
9	Oba	King/ruler
10	Edo	A member of people inhabiting Benin
11	Urban structures	Use of land, connections between areas in that land and how accessible it is
12	Administration	The management of a government.
13	Benin Bronzes	Idol representing the power and authority of the king in the Benin Empire.
14	'Golden Age'	An age in history in which society prospers economically, socially and culturally.
15	Cowrie Shells	Shells used as a form of currency. These were extremely valuable.

Key Terms		
16	Guilds	A medieval association of craftsmen or merchants, often having considerable power.
17	Copper Manilas	Open-ended copper rings used for currency.
18	Chiefs	Leaders in the hierarchy of the Benin kingdom. This consisted of many different levels including palace chiefs and town chiefs.
19	Sumptuary laws	Laws which controlled what the people of Benin could access, make and use.
20	Benin Walls	Defence walls that surround the city of Benin. These covered a distance of 16 000km and was the second largest man made wall.
21	Divine power	Power given to the Oba from God. This made the Oba above all others in the kingdom

Key Terms		
1	Slave	A person who is property of another and is forced to obey them.
2	Trade triangle	A three part trading journey. 1. European ships took cloth, guns, iron pots, swords to Africa and exchanged them for African slaves. 2. Ships loaded with slaves crossed the Atlantic to America were they were sold. 3.Ships loaded with sugar, cotton, tobacco returned to Europe.
3	Middle Passage	The term given to the slave journey from West Africa to the Americas. The journey took 8-12 weeks. 1 in 4 died on the journey.
4	Trans-Atlantic	Going across the Atlantic ocean.
5	Shackles	Iron chains used to fasten the legs or hands of a slave or prisoner.
6	Branding	To mark a person or animal with a hot iron to show ownership.
7	Cargo	Goods carried for trade
8	Auction	Slaves were sold to the highest bidder.
9	Dysentery	A nasty form of diarrhoea that killed many Africans on the journey.
10	Plantation	A large farm that slaves worked on to produce cotton, tobacco and sugar.
11	Underground Railroad	The network of routes that helped slaves escape. Conductors helped the slaves who were referred to as passengers to escape. Between 40,000 and 100,000 slaves managed to escape to the northern states of America or Canada using the Underground Railroad.
12	Abolition	the act of putting an end to something by law e.g. slavery.
13	Abolitionist	Someone who campaigns for the ending of slavery.
14	Petition	A list of requests signed by many people.
15	Popular movement	Where a large proportion of the general public support a cause.

Key people		
1	Olaudah Equiano	A freed slave who moved to London and wrote book detailing his experiences as a slave.
2	Toussaint Louverture	A former slave who led the successful slave revolt in Saint-Domingue/Haiti.
3	Granville Sharp	The lawyer who founded the Abolition Committee.
4	Thomas Clarkson	The abolitionist who dedicated his life to raising awareness of, and campaigning against, slavery
5	William Wilberforce	The abolitionist who fought for abolition in parliament, introducing a bill that helped to abolish the transatlantic slave trade.
6	Hannah More	An abolitionist who produced plays and poems, helping to win popular support against the slave trade.
7	Harriet Tubman	She was born a slave in 1820. In 1849 she ran away. The Underground Railroad helped her to reach Canada. She became a conductor and made 19 journeys back to Maryland to help slaves escape. She led 300 people to safety.

Key events		
8	1562	Sir John Hawkins was given permission by Elizabeth I to begin transporting captured African slaves to America. There they were sold . He is called the "father of the slave trade".
9	1781	The Zong massacre was the killing of 133 African slaves by the crew of the British slave ship Zong. They were thrown overboard so that the ship owner could claim compensation from his insurance.
10	1787	The Society for the Abolition of the Slave Trade was set up in London.
11	1804	Haiti was named by slaves who had rebelled against their masters led by Toussaint Louverture.
12	1807	The Slave Trade was abolished in England.
13	1833	Slavery was abolished in the British Empire. This meant that trans-atlantic slavery has ended, but other forms of slavery continue to this day.
14	1865	Slavery was abolished in America.

Abolition of the slave trade in Britain
ABOLITIONISTS: Abolitionists were British people committed to ending slavery. Olaudah Equiano, an ex-slave, toured the country giving speeches about the terrible things he had seen. William Wilberforce, an MP, helped persuade Parliament.Thomas Clarkson collected evidence and spread messages and Granville Sharp fought the case in law i.e Zong
ECONOMICS: By the early 19th Century, slavery was not as profitable as it had been before. Sugar prices dropped and British merchants could get it more cheaply from other colonies, like India. They did not need slaves to continue making money.
RESISTANCE: In the 1790s, enslaved people in the French colony of Haiti rose up and killed their white masters before setting up an independent country. The British wanted to avoid the same thing happening to them in colonies such as Jamaica.

Key Terms		
1	American Civil War	A war waged between the North (union states) and the South (confederacy) from 1861-1865
2	Emancipation Proclamation	Released by Abraham Lincoln which made slavery in the US illegal.
3	Segregation	An action where things can be separated, in this instance, groups of people.
4	Ku Klux Klan	A racist organisation formed in 1866 but by 19 25 it had 5 million members. They killed Africa n Americans in the southern states of Americ a.
5	Lynching	Murder of African-Americans, sometimes in public, for violating racial codes operating in the southern states.
6	Sharecropper	Farmer who rented land and paid for it though a share of the crop—often cotton
7	Bigotry	Intolerance against people who may have a different opinion compared to themselves.
8	'Jim Crow' laws	Named after a fictional character in the popular minstrel shows that made fun of black people. These laws enforced the strict segregation of the races and rigidly maintained the inferior status of black citizens.
9	Literacy Tests	Very complex tests which African-Americans were forced to pass in order to register to vote.
10	Grandfather Clauses	Only if your grandfather was registered to vote, could you register. Used to block African-Americans.
11	13th Amendment	Abolished (ended) slavery in the US
12	14th Amendment	This said black people were citizens
13	15th Amendment	This said black people could vote

	Key ideas
1	**Segregation** In many of these states discrimination was not just commonplace - it was legal. States such as Alabama introduced a series of laws to keep the races separated and the black population under control. These measures were nicknamed the 'Jim Crow' laws. Typical laws included: - Public transport waiting rooms were strictly segregated. - Places open to the public such as shops, hotels, cinemas, - theatres and libraries had to provide separate rooms and facilities for the different races.
2	**Education** Legally, black children could be educated in separate schools, so long as the schooling was of an equal educational standard. In reality, schools for black Americans were far from equal, and the quality of education provided was inferior. In 1896, the Supreme Court upheld that this policy was legal and fair. - In most of the Southern states, inter-marriage between blacks and whites was illegal.
3	**Voting rights** Very limited in the south, as Grandfather Clauses and literacy tests were introduced stop the registration of African Americans. - African-Americans largely did menial and poorly paid work—as sharecroppers or domestic servant
4	**Violence and intimidation:** It was virtually impossible for African- Americans to challenge segregation in the South. To do so ran the risk of serious violence at the hands of white racists, particularly the Ku Klux Klan. In the years after World War I, there had been a major revival in the strength of the Ku Klux Klan, the most well known of the racist organisations. By the mid-1920s, the Klan had over 100,000 members across the South and had begun to extend its influence into Northern and Western states. Its campaigns of hate and violence intensified and Klan violence, beatings, burnings, brandings, attacks with acid and lynching increased rapidly. In 1919, 70 black Americans were lynched, 10 of them former soldiers.

Key Terms		
1	Civil Rights Movement	To achieve equality between white and Black people in the 50s and 60s in America
2	Civil Rights	The rights an individual is entitled to - political and social freedom and equality.
3	Supreme Court	Highest court of law in the United States
4	NAACP	National Association for the Advancement of Colored People
5	SCLC	Southern Christian Leadership Conference
6	CORE	Congress on Racial Equality
7	SNCC	Student Non-Violent Coordinating Committee
8	Rosa Parks	Civil Rights activist who refused to move seat on a bus. This lead to the Montgomery Bus Boycott.
9	Martin Luther King	Figurehead and adopted leader of the Civil Rights movement. Promoted passive resistance.
10	Malcom X	Civil rights fighter who believed in violent active resistance in fighting for the rights of black Americans

	Significance of Martin Luther King
1	Martin Luther King Jnr was an American campaigner for the fair and equal treatment of all people and an end to racial discrimination. -His father was the pastor of the Ebeneezer Baptist Church in Atlanta, Georgia, USA
2	In December 1955, in Montgomery Alabama, Rosa Parks, a black woman, was arrested for failing to give up her bus seat to a white man. King, having become a minister in the city, was appointed president of the Montgomery Improvement Association which led the boycott of the Montgomery bus services
3	King was a very powerful speech maker. -His most famous I Have A Dream speech was delivered to an audience of 250,000 people during the March on Washington. -King led other important events such as the Selma March and set up the Southern Christian Leadership Conference (SCLC)

	Key events in 1950's
1	**Brown vs Board of Education 1954**: On May 17, 1954, the Supreme Court ruled that "separate but equal" public schools for different races were unconstitutional, following a legal challenge by the National Association for the Advancement of Colored People (NAACP).
2	**The murder of Emmett Till 1955:** Fourteen-year-old Emmett Till was visiting relatives in Money, Mississippi, on August 24, 1955, when he reportedly flirted with a white cashier at a grocery store. Four days later, two white men kidnapped Till, beat him and shot him in the head. The men were tried for murder, but an all-white, male jury acquitted them. The nation was shocked by these events.
3	**The Montgomery Bus Boycott 1955:** On December 1, 1955, four days before the boycott began, Rosa Parks, an African-American woman, refused to give up her seat to a white man on a Montgomery bus. She was arrested and fined. The boycott of public buses by African Americans in Montgomery began on the day of Parks' court hearing and lasted 381 days. Montgomery's buses were then officially desegregated.
4	**Little Rock, Arkansas 1957:** Nine black students enrolled at formerly all -white Central High School in Little Rock, Arkansas, in September 1957, testing Brown vs Board of Education. On September 4, 1957, the first day of classes at Central High, Governor Orval Faubus of Arkansas called in the state National Guard to bar the black students' entry into the school.

	Key events in 1960's
1	**Sit-Ins 1960** Began at a lunch counter in Woolworth's in Greensboro when four students refused to move from whites-only seats. The movement rapidly spread and led to the formation of SNCC. Much desegregation followed.
2	**Freedom Rides 1961** Members of CORE rode the Greyhound bus route through the south to see if previously agreed desegregation was being followed. The bus was firebombed as Freedom Riders were viciously attacked at Birmingham.
3	**Birmingham, Alabama 1963** King and SCLC led a series of events in this highly-segregated city. Teenagers were used in some marches and were attacked by police using dogs and high-pressure fire hoses. King was arrested and locked up in prison. Contributed to passage of 1964 Civil Rights Act
4	**March on Washington 1963** 250,000 people, about one-fifth of them white, came to listen to speakers, including King's famous 'I Have a Dream speech. Parts of the event were filmed live on TV.
5	**Freedom Summer 1964** Civil Rights workers went to Mississippi to help African-Americans to register to vote. Three of them were murdered, leading to an FBI investigation.
6	**Selma 1965** A march from Selma to Montgomery, led by King, to campaign for African-American voting rights. Stopped by police, who used great violence on protesters. Contributed to passage of 1965 Voting Rights Act.

The origins and meanings of sin

Sin

- According to Christian belief, sin separates humans from God, bringing lasting punishment. God gave humans free will so it is up to humans to decide for themselves how to behave, ie in an evil or good way.
- Christians believe that only God can rectify the problem of humans being full of sin. To do this, he offered salvation through the sacrifice of Christ.

Original sin

- Many Christians believe all humans are descended from Adam and Eve, which means that they all have the ability to disobey God. Original sin occurred when Adam and Eve were tempted and committed the first (original) sin.
- Genesis 3 tells the story of how sin first entered the world when Adam and Eve were tempted by the Devil in the Garden of Eden. They ate an apple from the Tree of Knowledge after God had instructed them not to, and for this they were banished from the garden. Evil had now entered the world - this is known as the Fall.

- Catholics believe that all humans are born with original sin as a result of the fall of Adam and Eve. This means that all humans are born with the urge to sin and disobey God. Pope Paul VI consolidated the Catholic Church's standpoint on original sin, stating that through Christ's death on the cross, all are redeemed from original sin. The Church teaches that original sin can be removed and cleansed through baptism. This is why the majority of Catholics are baptised as infants.

"When the woman saw the fruit of the tree she took some and ate it. She also gave some to her husband and he ate it. Genesis 3:6"

- In Christian teaching, the sinfulness of Adam and Eve caused a separation from God that could result in humanity's eternal punishment. God has given humanity the opportunity to make this right through the incarnation and sacrifice of God the Son. Through faith and good works, humanity can be saved from eternal punishment and separation from God.

Salvation

Following the mistake made by Adam and Eve, which led to evil entering the world, God offered **salvation**. This means human souls can be saved from eternal punishment (or separation from God) and are allowed to enter Heaven (and be in the presence of God).

In order for this salvation to happen, God set a process in motion:

- God gave his only son, Jesus, so that all humans could be saved.
- Jesus was a perfect human - he had no sin.
- God placed the sins of the world upon him at his crucifixion.
- Jesus' actions meant that there was **reconciliation** between God and humanity - his death atoned or made up for human sin.

Christians believe that this process shows how loving God is as he gave his only son to save humanity. It also shows that he is able to forgive humans.

Holy Week – What happened to Jesus?

According to the **gospel** writers, the events surrounding Jesus' death and **resurrection** took place during the last week of his life in Jerusalem. This week began on the Sunday that Jesus rode into the city in triumph and ended with his resurrection a week later. In the Christian calendar, this week is known as 'Holy Week' and it is the last week of **Lent**.

In some churches there are daily services held during Holy Week, others will focus on the main events: palm Sunday, Maundy Thursday, Good Friday, Holy Saturday and Easter Sunday

Why was Good Friday important?

It was a good day – it shows God's love for us and the world

Through his sacrifice he bridged the gap between God and man

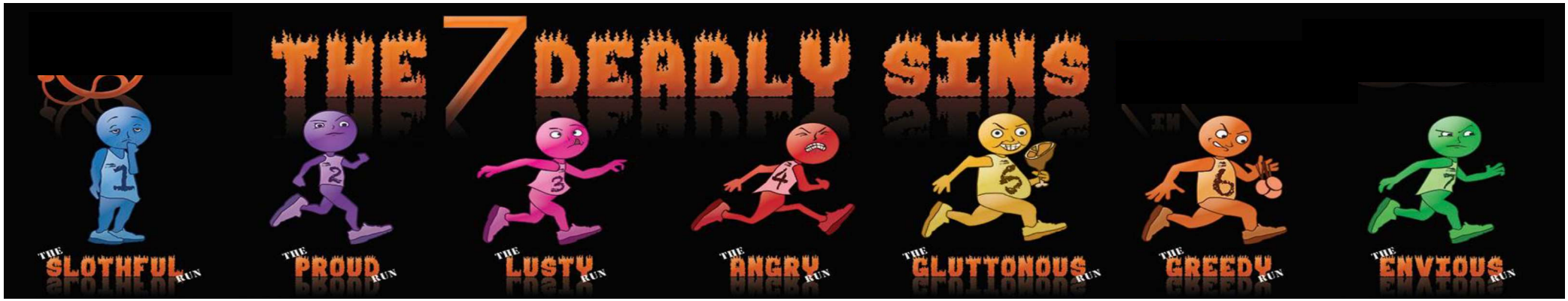
Jesus sacrificed his life for of us so we can become closer to God

Jesus' suffering teaches Christians to bear their own suffering without complaint.

It is the most important event as the cross became the most important universal symbol - some believe it is a sad reminder and some believe it is a happy reminder

Stations of the cross:

7 deadly sins



Key quotes	
	The Lord is my shepherd, I lack nothing. Psalms 23:1
	The Lord is my rock, my fortress and my deliverer Psalm 18:2
	The LORD is my light and my salvation. Psalm 27:1
	'I am the way the truth and the life ' John 14

Seven 'signs' in John's Gospel of Jesus divinity	
Feeding the crown in Galilee	Jesus was teaching a large crowd of people on the shores of Lake Galilee. The people were tired and hungry and the disciples were concerned. A boy gave Jesus his meal of five small loaves and two fish. Jesus took the food, blessed it, and his disciples handed it out to the people. Everyone had enough to eat, and everyone was satisfied
Raising Lazarus to life	Lazarus, a friend of Jesus, fell ill and died. Jesus promised Lazarus's sisters that he would save him. When Jesus arrived at their house in Bethany he found that Lazarus had been dead and in a tomb for four days. Jesus was greatly moved. He asked to see the tomb and ordered the stone at the entrance to be moved away. He thanked God and called to Lazarus, who appeared, walking and alive, at the entrance to the tomb.
Healing the paralysed man	Jesus was in Jerusalem, near the Sheep Gate of the city. He went to a pool called Bethseda, where crippled, paralysed and blind people were to be found. He met a man who had been paralysed for 38 years. Jesus commanded him to walk, and the man picked up his mat and walked for himself.
Changing water into wine	At a wedding party, the wine had run out. Jesus called for ceremonial jars to be filled with water. When the guests tasted the water it had turned into wine.
Healing the royal official's son	A royal official begged Jesus to save his son, who lay dying in another town. Jesus informed him that his son was healed, even though he had not seen the boy. When the official reached him, he was amazed to find his son was indeed healed.
Walking on the Sea of Galilee	Jesus' disciples were sailing on Lake Galilee. A storm arose and they were afraid. They suddenly saw Jesus walking towards them on the surface of the water. He entered the boat and it returned safely to shore.
Healing the blind man	In Jerusalem, Jesus came across a man who had been blind since birth. He spat in the mud, mixed the mud and put it on the man's eyes. He could see for the first time. Jesus told his followers that as well as physical blindness there was also spiritual blindness, which he could also cure.

Key Words	
Incarnation	Literally 'in flesh', belief that God took on human form in the person of Jesus
Christ	Literally means 'Anointed One' in Greek; the Hebrew equivalent is Messiah. The leader promised by God to the Jews; Christians believe Jesus to be the Christ.
Holy	Separate and set apart for a special purpose by God
Grace	The unconditional and generous love that God shows to people who do not deserve it.
Holy Spirit	The third Person of the Trinity; believed to be present with believers since Pentecost and active on earth.
Jesus	Believed by Christians to be the Son of God, he was a first century Jewish teacher living and travelling in Palestine/Israel.
Omniscient	Knowing everything; a quality of God

BASIC RULES

1. How do you start a football match? The football game is started by a kick off in the centre of the pitch.

2. What's the number of players on each side during a professional match? In a full sided game each team consists of 11 players.

3. What happen when the ball goes off at the side of the pitch? If the ball goes off the side of the pitch it is a throw in to the team that didn't touch the ball last.

4. What happen if the ball goes off at the end of the pitch?
If the ball goes off the end of the pitch it is a corner or a goal kick depending who the ball touched last.

KEY TERMINOLOGY

4. What is meant by the term offside?
If a player is past the opponent's last defender and in the opposition half when the ball is passed they are offside and an indirect free kick is awarded to the opposition team.

5. What is meant by the term corner kick?
A free kick taken from the corner of the field by an attacker. The corner kick is awarded when the ball has passed over the goal line after last touching a defensive player. The shot is taken from the corner nearest to where the ball went out.

6. What is meant by the term marking?
This is where you mark someone on the other team when they have the ball in order to make it harder for them to make a pass or to get free into a space to receive the ball.

7. What is meant by the term VAR?
The video assistant referee (VAR) is a match official in association football who reviews decisions made by the head referee with the use of video footage and a headset for communication.

TEACHING POINTS & STRATEGIES

8. What are the teaching points for the SHORT PASS?
- Non kicking foot next to the ball
- Use the side of the kicking foot to contact the ball following a short back swing
- Keep head over the ball to improve accuracy and ensure ball stays on the ground
- Follow foot through to generate more power

9. What are the teaching points for SHOOTING?
- Non kicking foot next to the ball
- keep body balanced
- head slightly over the top of the ball
- use side foot for placement or top of the foot for increased power
- flex leg back further when preparing to strike to the football for increased power
- aiming for the area of the goal that the goalkeeper is least likely to save the ball.

10. What is POSSESION FOOTBALL?
Possession football is when teams attempt to hold onto the ball for as long as possible, at all times choosing the easiest possible pass (hence the many times you see defenders passing the ball along the defensive line).

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11. What is a COUNTER-ATTACK?
Counter attacking football is withdrawing your team into your own half, but keeping a man or two further up the pitch, the goal is to take the ball off the opponent while they have players committed to the attack and thus out of position. Once you have the ball in your own half, you have more space to deliver a through-ball for your strikers, who will be lurking around the halfway line and will have fewer players to negotiate.

FULL FOOTBALL POSITIONS

1. Goalkeeper
2. Wing-Back
3. Full-back
4. Sweeper
5. Centre-back
6. Defensive midfielder
7. Winger
8. Central Midfielder
9. Striker
10. Attacking Midfielder
11. Forward

What is the aim of a rugby game? - The aim of the game is very simple.

- Use the ball to score more points than the other team.
- You can run with the ball, kick it and pass it, but passing forwards is not allowed.
- Rugby is a contact sport, so you can tackle an opponent in order to get the ball, as long as you stay within the rules.

Can you tackle in rugby?

- Tackling is the only way of legally bringing down your opponent in rugby union.
- There are certain laws on how to tackle and if these are not adhered to, penalties will follow.

What is a maul in rugby?

The maul is about physical strength and power.

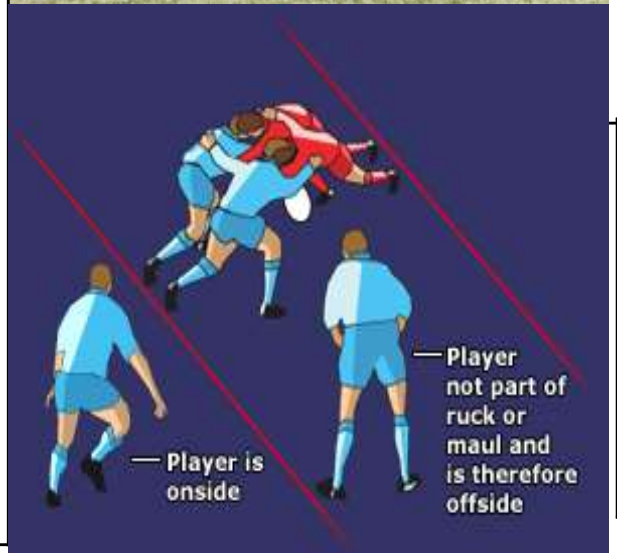
The maul is when at least three players from either side are in contact together, challenging the player with the ball, moving towards a goal line. But what makes the maul different to the ruck is the ball is not on the ground but in hand.

What is the job of the wing?

Like in football or netball the wing Plays out wide on the side of the pitch, the winger is a team's finisher in attack. A winger is also often the last line of defence when they don't have the ball and as such, pace is their major resource.

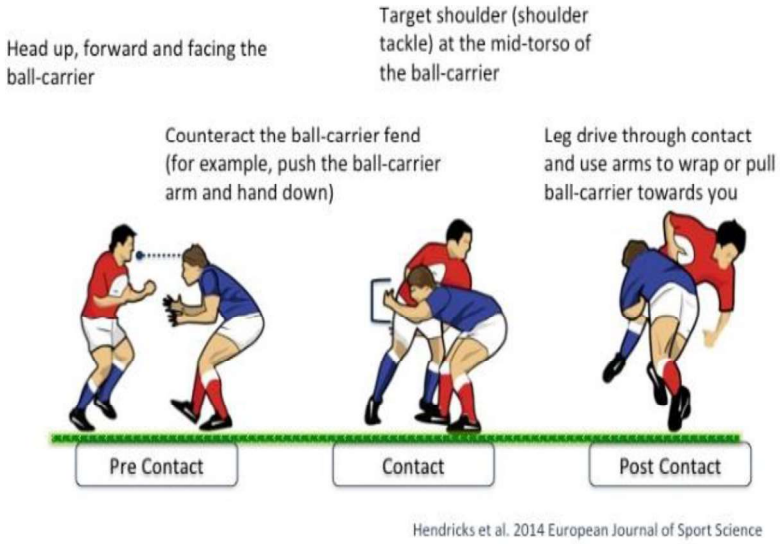
How can you score points? - There are several ways to score points.

- A try - five points are awarded for touching the ball down in your opponent's goal area.
- A conversion - two points are added for a successful kick through the goalposts after a try



. How long does a rugby match take? - A game of rugby has two periods of 40 minutes each.

- The game is started by a place kick or a drop kick from the middle of the halfway line.



Hendricks et al. 2014 European Journal of Sport Science

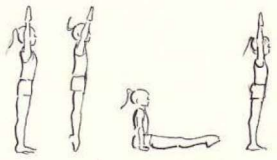
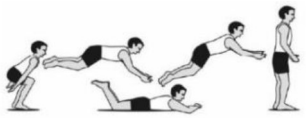
What is the role of a flanker in rugby?

Each team of 15 players includes two **flankers**, who play in the forwards, and are generally classified as either blindside or open side **flankers**, numbers 6 and 7 respectively. The name comes from their position in a scrum in which they 'flank' each set of forwards.

How do you dropkick a Rugby ball?

Hold the ball in two hands, pointing downwards.

As you step forward with your non-kicking foot, strike the ball on the bounce.

Straddle jump: **Keep upper body and head as still as possible **Point your toes.	As you take off, legs apart and extend to your sides at 90 degrees and horizontal. Your arms follow your legs, straight. Upper body and head stay as still as possible. Toes pointed and eyes forward.	**How to be safe and successful:** - Stay on the cross (center of trampoline), - Keep body tension, - Gain maximum height in the air – this makes it easier to perform the skills, - Point toes when jumping, - Keep head and eyes forward focusing on a point in front of you.
Tuck jump: **Keep upper body and head as still as possible **Point your toes.	As you take off, bring your arms away from your sides and extend in front of you to elevate quickly. As you reach max height bring your knees in tight to your chest. Bring arms down to touch shins.	
Pike jump: **Keep upper body and head as still as possible **Point your toes.	As you take off, keep your legs together and straight and extend in front of you. Knees should be straight with both knees and feet together. Straighten arms out forward towards knees.	
Seat drop: **Keep upper body and head as still as possible **Point your toes.	As you take off, bring your arms away form your sides and extend them out in front of you and elevate them quickly above your head. Tilt your pelvis up slightly and legs straight. As you begin to loose height, bring your arms down to make contact with the bed just behind your bottom and extend feet forward.	
Swivel hips: **Keep upper body and head as still as possible **Point your toes.	Seat drop as above – except you do a half twist in the air and complete another seat drop before returning to feet.	
Front drop: **Keep upper body and head as still as possible **Keep your eyes focused towards wall in front – do not look down.	As you take off, bring your arms away from your sides and tem in front of you and elevate arms quickly above head. Hold this position and push hips back as you gain height. As you begin to loose height bend arms down to form a diamond shape with hands overlapping in front of face. Legs slightly bent at knees. Bounce back up.	

Routine 1:
Full twist
Tuck jump
Swivel hips to feet
Pike jump
Straddle jump
Half twist

Routine 2:
Tuck jump
Straddle jump
Seatdrop to feet
Half twist
Seat drop to feet
Pike jump
Full twist

Routine 3:
Half twist
Straddle jump
Swivel hips to feet
Tuck jump
Seatdrop to feet
Pike jump
Full twist

Routine 4:
Straddle jump
Swivel hips to feet
Pike jump
Front drop to feet
Full twist
Tuck jump
Straddle jump

1	Hardware	Understand the function of the hardware components of a computer system
2	CPU	Understand the function of the hardware components of a computer system (CPU, main memory, secondary storage, input and output devices) and how they work together
3	Memory	Understand the function of different types of main memory (RAM, ROM, cache)
4	Secondary storage	Understand the concept of storing data in the 'cloud' and other contemporary secondary storage
5	Input process output	Understand the input-process-output model
6	Von-Newmann Model	Understand the concept of a stored program and the role of components of the CPU (control unit (CU), arithmetic/logic unit (ALU), registers, clock, address bus, data bus, control bus) in the fetch-decode-execute cycle (the Von Neumann model)
7	Software	Know what an operating system is and how it manages files, processes, hardware and the user interface
8	Logic gates	Be able to construct truth tables for a given logic statement (AND, OR, NOT)

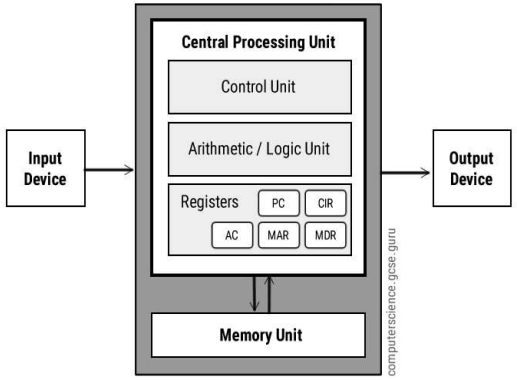
Hardware
- Definition
- Input devices
- Process Devices
- Storage devices
- Output devices
- Von Neumann Architecture

Input Devices
Move data into the computer
- Keyboard
- Mouse
- Touch screen
- Microphone
- Camera
- Sensor
- Bar code scanner
- Foot mouse
- Accelerometer
- GPS
- Braille keyboard

Secondary Storage
Magnetic hard disk
Optical disk
Flash memory
Cloud Storage
Non-volatile
Internal/Removable
Considerations for selecting storage:
Capacity / Speed / Portability / Durability / Reliability

Output devices
Move data out of the computer
Monitor
Printer
Plotter
Speakers
Actuators
LEDs

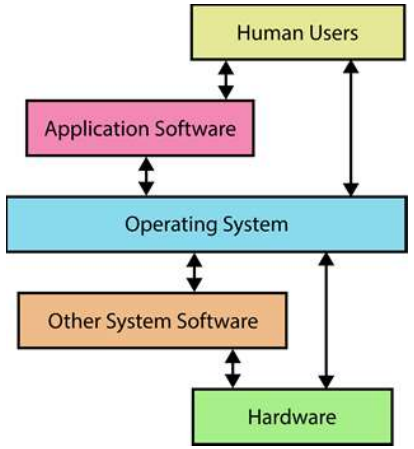
Von Neumann Architecture



Von Neumann Architecture is based on the stored-program computer concept, where instruction data and program data are stored in the same memory.

System Software

- Software that controls the hardware: OS and Drivers



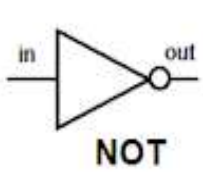
Types of Software
- **Applications**: Software for the End-User
  - Word processor
  - Spreadsheets
  - Image Editor
  - SIMS
  - Ticket booking system
- **Utilities**
  - Antivirus
  - Firewall
  - System clean up
  - Defragmentation
  - Task Manager

Operating Systems
Mac OS X
Linux
Windows
Android (based on Linux)
iOS

Operating Systems
An operating system is software that manages computer hardware and software. It supplies an interface for the user and important utilities for managing the computer.

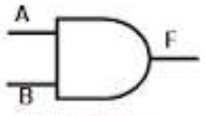
Graphical User Interface (GUI)
The OS on most computers and **smartphones** provides an environment with tiles, icons and/or menus. This type of interface is called the graphical user interface (GUI) because the user interacts with images through a mouse, keyboard or touchscreen.

Logic Gates: Logic Statements: Truth Tables



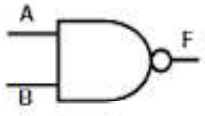
NOT

Input	Output
I	F
0	1
1	0



AND

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

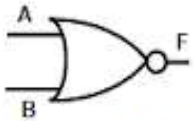


NAND

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

OR

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



NOR

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

Functions of the Operating System
interface - provides a user interface so it is easy to interact with the computer
manages the **CPU** - runs applications and executes and cancels processes
multi-tasks - allows multiple applications to run at the same time
Manages Memory - transfers programs into and out of memory, allocates free space between programs, and keeps track of memory
Manages Peripherals - opens, closes and writes to peripheral devices such as storage attached to the computer organises - creates a file system to organise files and directories
Security - provides security through user accounts and passwords
Utilities - provides tools for managing and organising **hardware**

An **input** device is any piece of computer **hardware used to provide data to a computer system**. Examples include: keyboard, mouse, scanner digital camera, webcam

Hardware
- Definition
- Input devices
- Process devices
- Storage devices
- Output devices
- Von Neumann architecture

Central Processing Unit (CPU)
- Arithmetic & logic unit
- Control unit
- Registers (Memory Unit)
- Fetch-decode-execute
- Buses and their purposes
- The boot sequence

Features Affecting Performance:
- Clock speed (MHz, GHz)
- Cache memory
- Multiple cores

Memory Purpose
Random Access Memory (RAM) (Volatile-loses its contents when the computer is switched off)
Read Only Memory (ROM)(Non-volatile – no lose contents when switched off)
Virtual memory is hard disk
Flash memory is USB stick

1	Binary conversion	Understand that computers use binary to represent data (numbers, text, sound, graphics) and program instructions
2	Integers	Understand how computers represent and manipulate numbers (unsigned integers, signed integers (sign and magnitude, two's complement))
3	Binary conversion	Be able to convert between binary and denary whole numbers (0–255)
4	Binary arithmetic	Understand how to perform binary arithmetic (add, shifts (logical and arithmetic))
5	Data size	Understand how to convert between the terms 'bit, nibble, byte, kilobyte (KB), megabyte (MB), gigabyte (GB), terabyte (TB)'
6	Storage	Understand that file storage is measured in bytes and be able to calculate file sizes

Decimal	Binary	Hexadecimal
0	0000	0
1	0001	1
2	0010	2
3	0011	3
4	0100	4
5	0101	5
6	0110	6
7	0111	7
8	1000	8
9	1001	9
10	1010	A
11	1011	B
12	1100	C
13	1101	D
14	1110	E
15	1111	F

Binary arithmetic

There are four rules that need to be followed when adding two binary numbers. These are:

- 0 + 0 = 0
- 1 + 0 = 1
- 1 + 1 = 10 (binary for decimal 2)
- 1 + 1 + 1 = 11 (binary for decimal 3)

Binary shifts

Binary numbers are multiplied and divided through a process called shifting.

Multiplication

To multiply a number, a binary shift moves all the **digits** in the binary number along to the left and fills the gaps after the shift with 0:

Negative numbers: Sign and magnitude

Computers sometimes need to work with **negative numbers**.

Integers can be encoded so that they can be positive or negative numbers. Integers that can be either positive or negative are **signed** numbers.

8-bit pattern, the first bit would be used to indicate positive or negative.**0** can indicate a **positive** number and a **1** can indicate a **negative** number.

10001001 could represent -9:

The first bit, **1**, indicates a **negative** number

The other seven bits indicate the number, 0001001 = 9

Example: 10011000 (denary 152) ÷ 2

128	64	32	16	8	4	2	1
1	0	0	1	1	0	0	0
128	64	32	16	8	4	2	1
0	1	0	0	1	1	0	0

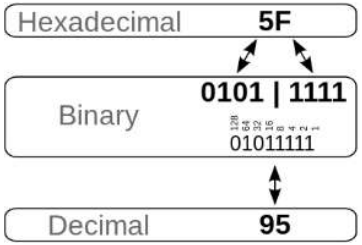
The table below outlines the relationship between bits (smallest) and terabytes (largest):

Size	Equal to
8 bits	1 byte
1024 bytes	1 kilobyte
1024 kilobytes	1 megabyte
1024 megabytes	1 gigabyte
1024 gigabytes	1 terabyte

- A ***Left Logical Shift*** of one position moves each bit to the left by one. The vacant least significant bit (LSB) is filled with zero and the most significant bit (MSB) is discarded.
- A ***Right Logical Shift*** of one position moves each bit to the right by one. The least significant bit is discarded and the vacant MSB is filled with zero.

Number Bases

- Binary – base 2
- Denary – base 10
- Hexadecimal – base 16



Using Binary

- Why? (transistors etc.)
- Binary to denary
- Denary to binary
- Sign and Magnitude
- 2's Complement

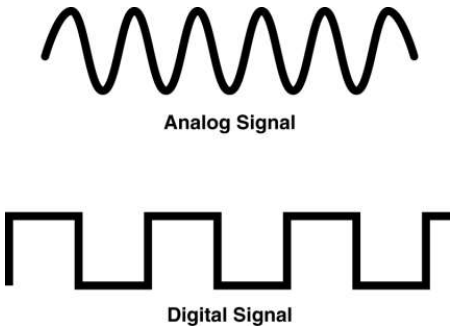
Opcode	The part of an instruction that tells the CPU the operation to be Executed.
Operand	The part of the instruction thattells theCPU that data or which to Apply the opcode.

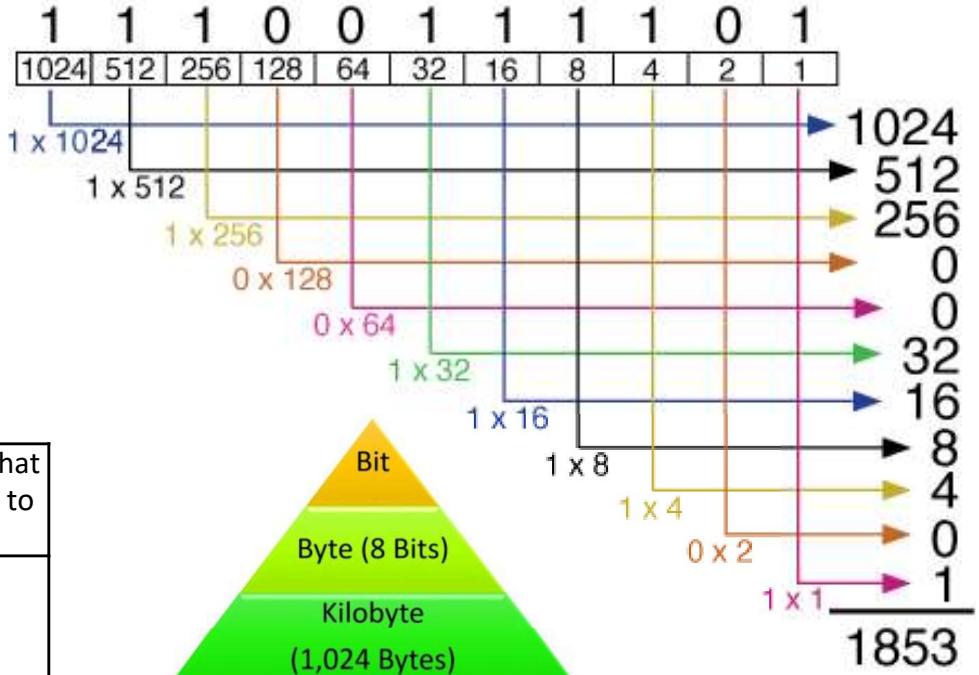
Binary Manipulation

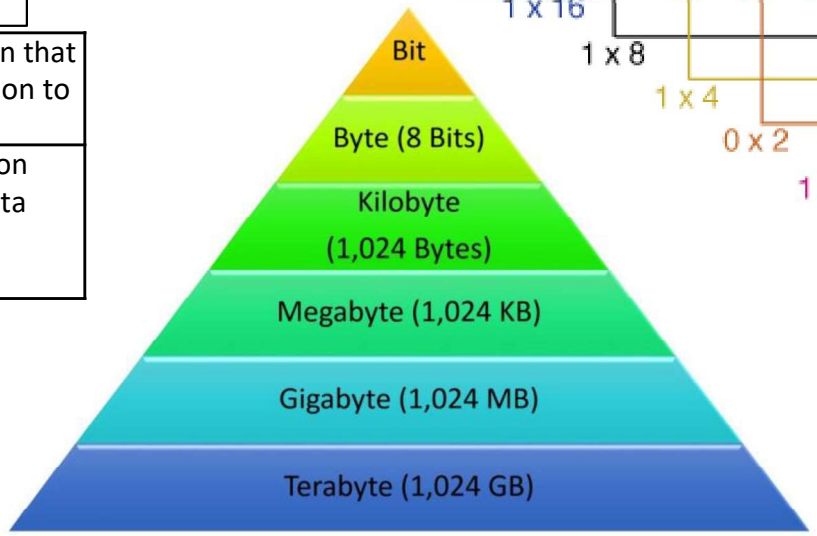
- Addition
- Subtraction
- Logical Shifts
- Arithmetic Shifts

Sound

- Analogue to Digital
- Metadata
- Sample rate & bit depth
  - Quality of sound
  - File size
- Bit rate

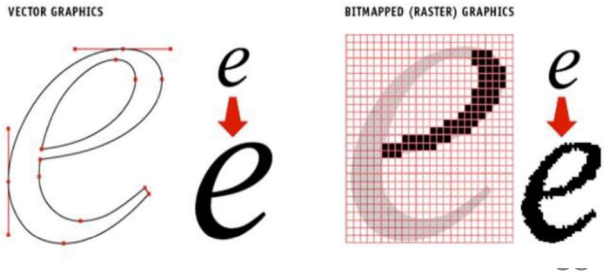






Images

- Stored in binary
- Metadata
- Bitmap images
  - Pixels
  - Colour depth
  - Resolution
- Vector images
- File sizes



Devised: Explanation

Devising is a way of creating a drama without starting with a script. It usually begins with an idea and a stimulus. Actors and designers research, improvise, develop and shape scenes until they have a drama ready for an audience. The play you create will use either the techniques from a theatre practitioner (e.g. Brecht or Stanislavski) or in the style of a theatre genre (e.g. Physical Theatre or Theatre in Education). You will research your chosen topic, create a performance and document the development in a devising log portfolio. You will then write an evaluation of the final performance. This knowledge organiser will focus on Theatre in Education.

Higher Level Challenge

In order to gain the most marks in your performance exam and your portfolio remember to consider and refer to the following contexts:

- **Social Context:** A social setting or environment which people live.
- **Historical Context:** A part of history which has happened (this could be when the play was set)
- **Political Context:** The political party in power at the time and how this impacted on society.
- **Cultural Context:** How culture can effect behaviour, choices and decisions for characters.

Devised: How Assessed

Performance

A performance live on stage which is designed to realise your original intentions.

Devising Log : Portfolio

A record of the creation and development of your ideas to communicate meaning through and the development of your play.

Devising Log: Evaluation

An analysis and evaluation of your individual contribution to the devising process and the final devised piece.

Theatre in Education: A Brief History

After the Second World War, people became aware that drama or theatre techniques might be useful as a way of fostering effective learning in schools. This is known as Theatre in education or 'TIE' for short. Brian Way, who founded the Theatre Centre in 1953, was an early practitioner, and influenced the team, including Gordon Vallins, who established TIE at the Belgrade Theatre, Coventry in 1965. Their work was so influential that it spread nationwide.

The idea of a high impact performance for a specifically targeted school audience became hugely popular. Because the audiences are small, they can be encouraged to participate through work in role and through debate. Projects can be supported with resource materials and training or support for the students' teachers.

Originally, a Theatre in education project would probably be centrally funded. These days, companies have to seek their funding from individual schools so they have to provide the product the schools want.

Theatre in Education: Definition

Theatre in Education (also called T.I.E.) is a play with an educational focus designed to teach school audiences (or other groups) about a certain issue or topic.

You may have seen a Theatre in Education play in your school. They cover topics such like the following:

- Stranger Danger
- Road Safety
- Internet Safety
- How to tackle bullying

The main elements

It's important for you to remember the following characteristics that typify T.I.E.:

- There is a clear aim and educational objective running throughout.
- A small cast so actors must be versatile and often have to multi-role.
- A low budget so actors often play instruments too.
- The production must be portable so the design is simple and representational.
- They explore issues from various viewpoints, so we can see the effect of an action upon a range of people.
- There is some level of audience involvement.
- They are rarely wholly naturalistic because direct address or narration is used to engage the audience.
- The costumes are simple and representational, especially if actors have to multi-role.
- They may include facts and figures to educate the audience.
- They may have a strong message or moral running throughout.

Have you got an important message to teach an audience? Turn over to find out how to make your own Theatre in Education Play.

Planning a T.I.E. Performance

When planning a Theatre in education piece companies must take into account:

The **age** and **size** of the **audience**. The performance needs to suit the audience.

The **venue**, its **size** and **facilities** such as lighting and whether there are any particular restrictions, eg they might not be allowed to tap dance as taps would damage the floor.

Health and Safety issues. They'll probably have to complete paperwork for this. It could cover anything from risk assessment for the journey to the venue, to checking there are no asthmatics in the audience if they plan to use dry ice.

Teaching and Learning Objectives. What they have been asked to do and how they can deliver what's required.

Ideas for Engaging a Young Audience

A Quest

A quest is a concept all will recognise and is familiar from superhero stories and fairy tales. Somebody needs to be rescued, evil must be defeated or there is treasure to discover. If you're going to involve a large group of children it's probably best to have a number of mini missions that they can be a part of, leading up to the final triumph. You could set a challenge involving number tasks for five-year-olds to solve. It's a good idea to include a little art work with this age group, if the size of the group and the time available allow this. Art work would sustain engagement and help them see where their imagination is taking them.

A modern fairy story for 7 to 11-year-olds

Children in this age range will be familiar with most of the well-known fairy tales and many of them will have come across the idea of adaptation. Your task will be to take them a little further with the story so that they see its structure and the ideas it contains. Cinderella is a story about bullying being punished. That's readily transferable, as is the ball or party idea. Maybe the prince took a photo of Cinderella on his mobile phone and is trying to find her on social media networks. The ugly sisters could go online and pretend that they are Cinderella which could serve as a warning to children that online interaction can be dangerous.

Theatre in Education Skills

Target Audience

It is important that the creators and performers in a T.I.E. play know exactly who their audience are so that the materials they produce are appropriate and beneficial for the specific audience.

Specific Message

T.I.E. plays must have a specific message that they are teaching the audience.

Facts

T.I.E. plays are designed to educate the audience about a specific topic. It is therefore essential that the information given out is accurate. Facts can be used to help devise the play and they should also be included within the performance

Communal Voice/Chorus

Chorus is when the performer use the same movement and say the same lines. Communal voice is a variation of Chorus used in T.I.E. The performers speak with 'one voice' and usually reinforce the message of the play.

Where to get help.

At the end of watching a T.I.E. play, the audience should know what to do if they face a similar situation to the characters in the play. Where do they go for help/support?

Directly Engaging the Audience:

1. **Direct Address** – The actor or character breaks the forth wall and speaks directly to the audience.
2. **Forum Theatre** – The audience are given tasks to do which involve them within the performance.

Episodes

A series of scenes which can be related or unrelated.

Placards/PowerPoints

A placard is a sign presented onstage. Using placards might be as simple as holding up a card or banner. Multimedia or a PowerPoint slideshow can also be used for this effect. For example Scene One – The Bad News

Narration

Narration is used in T.I.E. to guide the audience through the plot. There are two types of narration as follows:

1. **In role**
   The character narrates in first person For example "My name is Little Red Riding Hood. I live in the forest".
2. **Third Person/Out of role/All Knowing**
   Commenting upon a character as an actor is a clear way of reminding the audience of theatricality. The narrator speaks in third person. For example "This is Little Red Riding Hood.. She lives in the forest".

Stereotypical characters

These are easily recognisable stock characters. They are often exaggerated and represent a type of character rather than a specific individual. For example, the mum, the teenager, the teacher.

Multi-roling

Multi-roling is when an actor plays more than one character onstage. The differences in character are marked by changing voice, movement, gesture and body language but the audience can clearly see that the same actor has taken on more than one role. This means the audience are more aware of the fact that they are watching a presentation of events. Cross-sex casting is also possible in Epic theatre as we don't need to suspend our disbelief.

Split-role

This is where more than one actor plays the same character. For instance, the actor playing the main character might rotate from scene to scene. This keeps that character representational and inhibits emotional involvement and attachment on the part of the audience.

Basic Set, Props, Lighting and sound

T.I.E. has to travel to a variety of performance venues. Therefore actors use minimal set and props. They usually carry their own sound equipment with them and rarely use stage lighting.

Song /Dance/Movement

Song, dance and movement are often used in T.I.E. plays to engage the audience and make the performances more visually/orally interesting.

Physical Theatre: Explanation

The Nature of Physical Theatre
At its simplest, you could define Physical Theatre as a form of theatre that puts emphasis on movement rather than dialogue. But remember there are a huge number of variations as the genre covers a broad range of work. But essentially Physical theatre is anything that puts the human body at the centre of the storytelling process. As a result it's often **abstract** in style, using movement in a **stylised** and **representational** way. With the expression of ideas choreographed through movement, such performers use very little or no dialogue at all.

Physical Theatre Key Words

Abstract: To perform in a way that is not like real life.
Stylised: Non-realistic performance
Representational: Symbolic
Exaggerate: To perform in a larger than life way. Over emphasize movement and speech.
Narrated Action: To perform the actions whilst a narrator orates (speaks)
Combined Art Forms:
Physical theatre includes elements of dance, music, visual arts, spoken word and mime

Rehearsal Techniques

- **Bigger Bigger Bigger**
  Rehearse one scene several times increasing the energy in gesture/movement, exaggeration of facial expression and volume
- **Non-Verbal Body Language**
  Perform a scene without speaking. Create meaning through mime.

- **Hot-Seating**
  An actor sits in the hot-seat and is questioned **in role.** They spontaneously answer questions.
- **Role on the Wall**
  Draw an outline of your character. Annotate it to reflect the character's thoughts, feelings, fears, circumstances etc.

- **Inner Thoughts**
  Whilst rehearsing a scene, one person will shout "Freeze, inner thoughts". The actor should freeze and spontaneously say out loud what the **character** is thinking.
- **Conscience Corridor**
  Performers make two lines facing each other. The **protagonist** poses a question. Actors on each side of the corridor give reasons for and against.

Body Language Key Word

This is what your character's movements and way of using their body says about them. A character who is very nervous and stressed may fidget a lot or have their shoulders hunched up tight to indicate tension.

Key Words
Movement: e.g. rushing in or stamping their foot excitedly.

Stance: How the character stands.

Gait: The way the character walks.

Posture: How the character stands or sits e.g. slouch or straight.

Proxemics: The space between the characters creates meaning. e.g. **distance** may mean enemies and **contact** may mean intimacy

Levels: Suggest status e.g. a dominant character may be higher up

Use of space: The character can demand a lot of space or hide in a small corner.

Physical Theatre: Performance Skills

Physicalisation of Set:
Using the body to create objects on the stage

Physicalisation of Emotions:
Using the body to symbolise emotions

Mask:
Concealed facial expression so meaning created through movement and body language

Power of the Hand:
Symbolic fight in which person A extends hand into face of person B and controls their movement

Mirroring: Copying the movement of a partner in complete unison

Unison:
Moving together in time

Formations:
Shapes line, triangle, square etc

Proxemics:
Distance between characters suggests meaning

Character:
Physicality and actions to create person

Contact work:
Holding or making physical contact with others

Dynamics:
Speed and energy of the movement

Focus:
Where your eyes should be focused during play.

KEYWORDS
1- Chord: 2 or more notes played simultaneously.
2- Chord Progression: Movement from chord to chord.
3- Cadence: the two chords at the end of a musical phrase.
4- Riff: short repeated phrase in popular music.
5- Melody: the main tune of a song.
6- Phrase: a short musical passage; a musical sentence.
7- Bass: the lowest part of a piece, often providing harmonic support.
8- Key: group of pitches, or scale, that form the basis of a piece.
9- Modulation: Change from one key to another.
10- Scale: an arrangement of the notes in any system of music in ascending or descending order of pitch.
11- Key Signature: any of several combinations of sharps or flats after the clef at the beginning of each stave, indicating the key of a composition.

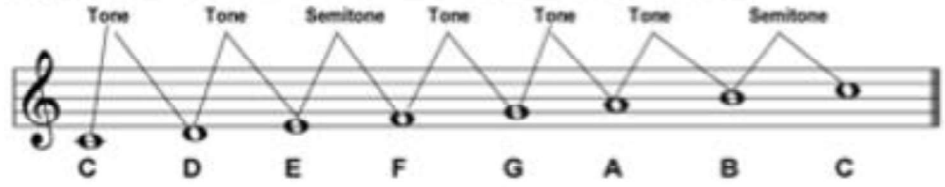
1. MAJOR CHORD PROGRESSIONS

MAJOR SCALES

I	ii	iii	IV	V	vi	vii°
Major	Minor	Minor	Major	Major	Minor	Diminished
A	B	C#	D	E	F#	G#
B	C#	D#	E	F#	G#	A#
C	D	E	F	G	A	B
D	E	F#	G	A	B	C#
E	F#	G#	A	B	C#	D#
F	G	A	Bb	C	D	E
G	A	B	C	D	E	F#

2. Major Scales

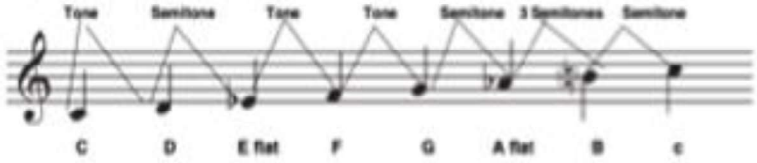
The pattern of tones and semitones shown below is the same for all major scales.



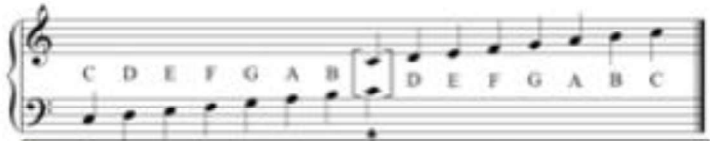
The distance from the bottom C to the top C is called an **OCTAVE**

3. Minor Scales

The pattern of tones and semitones shown below is the same for all minor scales.

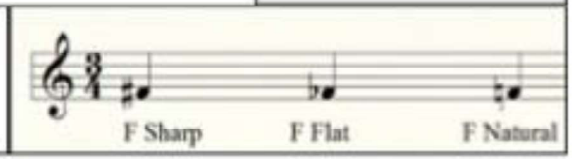


The distance from the bottom C to the top C is called an **OCTAVE**



4: |__OCTAVE_____ ___ OCTAVE _____|
An Octave is the distance of 8 notes – from 2 different notes with the same name (C to C)

5: Accidentals: symbols applied to notes which change the normal pitch of that note:



Blues

Set Works:
Good Mornin' Blues, Leadbelly
Kind Hearted Woman, Robert Johnson Jnr
I got the Blues, Sam Myers

Musical features: 12 bar blues chords; Walking bassline; AAB melodic structure; Improvisation; blues scale

The blues is the name given to a style of music created by African Americans at the end of the 19th century. Blues music was originally performed by one singer accompanied by a guitar or banjo.
Until the end of the 19th century, America was largely a rural community. In the early 20th century large numbers of people started to move to industrial cities.
After the Civil War and the emancipation of slaves, the blues spread, together with the people who sang and played it. Many former slaves moved from the cotton fields of the southern states to northern cities such as Chicago and Detroit, where the blues became hugely popular.

KEYWORDS

1-12-bar Blues – A chord structure of 12-bars using chords I, IV and V.	**7- Syncopation –** playing on/stressing the weak beat.
2- Chord – 2 or more notes played simultaneously.	**8- Off-beat –** playing on the unaccented notes in a bar.
3- Walking Bassline – a bassline that moves by step.	**9- Introduction** – the first section of a piece before the verse starts.
4- Swung rhythm – a rhythm that emphasizes the first pair of quavers.	**10- Coda** – the ending section of a piece.
5- Blues Scale – a scale with a flattened 3rd, 5th and 7th.	**11- Vamp** – a repeated, improvised accompaniment based around the chords.
6- Improvisation – making something up on the spot, within a given structure.	**12- Guitar TAB** –musical notation indicating fingering rather than musical pitches.

Year 8 Music – M2: Blues & Jazz

Chord sequence:

1. C	2. C	3. C	4. C
5. F	6. F	7. C	8. C
9. G	10. F	11. C	12. C

C = G E C F = C A F G = D B G

POINT: Tell us something about the musical features of the Blues.
EVIDENCE: Where do you see/hear this in a musical example?
EXPLANATION: How does the evidence/example demonstrate your point?
LINK: Why? What effect does this have? What are the composers intentions?How does this link with what we know about the genre?

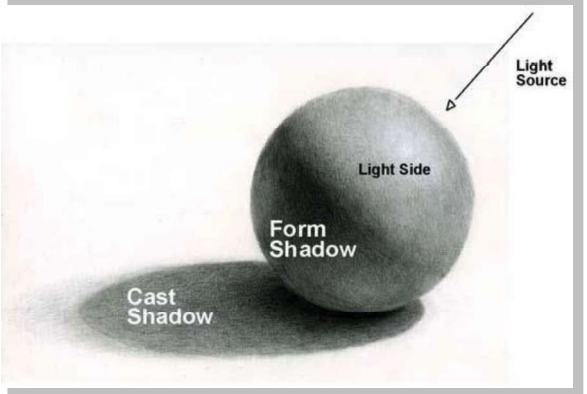
A. Key Terms

Keyword	Description
1. Tone	This refers to the lightness or darkness of something. This could be a shade or how dark or light a colour appears. Tones are created by the way light falls on a 3D object. The parts of the object on which the light is strongest are called **highlights** and the darker areas are called **shadows**.
2. Texture	This is to do with the **surface quality** of something, the way something feels or looks like it feels. There are two types of texture: **Actual texture** really exists, so you can feel it or touch it; **Visual texture** is created using marks to represent actual texture.
3. Pattern	A design that is created by repeating lines, shapes, tones or colours. The design used to create a pattern is often referred to as a **motif**. Motifs can be simple shapes or complex arrangements
4. Media	The materials and methods used to produce a piece of art or design.
5. Composition	how objects or figures are arranged in the frame of an image
6. Annotation	Key information alongside your work. A record of your experiences, thoughts and emotions connected to an image.
7. Refinement	Developing your idea or image

B. Command Words

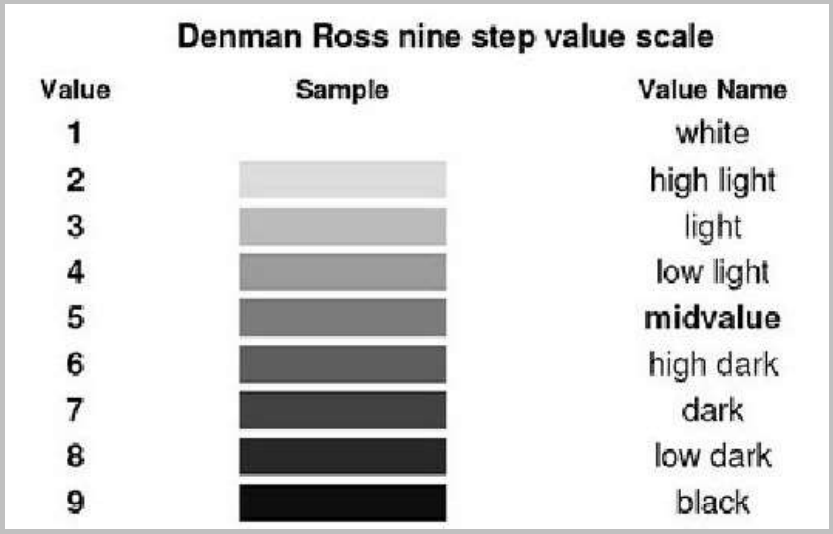
Keyword	Description
8. Study	To examine, consider, investigate, research and show an in-depth understanding of what you have found or experienced.
9. Explore	To investigate, examine and look into with an open mind about what might be found and developed.
10. Create	To conceive, make, craft or design something new or invent something.
11. Analyse	To examine in depth, study thoroughly, question, investigate and consider your own opinion or visual investigation of something

D. Tonal Shading



13. **Cast Shadow:** The shadow created by an object
14. **Form Shadow:** The shadow on an object
15. **Light Side**: The area of an object with the most light
16. **Light Source**: The Direction of the light in an image.

C. Value Scale



12. This is called a **tonal scale.** You will need to identify different light and dark values.

Key words: Nutrients and Eatwell Guide — Week 1

1. **maintenance –** to keep the body in good health working.
2. **Nutrients –** Chemicals in food that give nourishment.
3. **Energy –** the strength needed for physical effort. Energy is provided by macronutrients in the diet.
4. **Energy balance –** Eating the right amount of food to maintain body weight.
5. **Basal metabolic rate (BMR)** - the rate at which a person uses energy when resting
6. **Kilocalories (kcal) –** a unit of measurement for energy in food.
7. **Immune system –** the body's defence against infectious diseases
8. **Clotting –** the process that blood undergoes to prevent bleeding
9. **Antioxidant –** a molecule that is able to stop the oxidation process in other molecule
10. **Haemoglobin –** a protein responsible for transporting oxygen in the blood
11. **Saturated fats –** Type of fat mostly from animal sources
12. **Absorb –** to take in or soak up
13. **Diabetes–** a condition that causes a person's blood sugar level to become too high.
14. **Obesity–** diet related disease where the body contains too much stored fat.
15. **Cardiovascular disease (CHD)**- The narrowing of the arteries that supply your heart with oxygen rich blood, due to the build up of fatty deposits within the artery walls

The Eatwell Guide is the UK Healthy Eating Model. It shows what we should eat as a balanced diet. The size of the sections represents the proportion of our diet that particular food group should make up.

Week 2

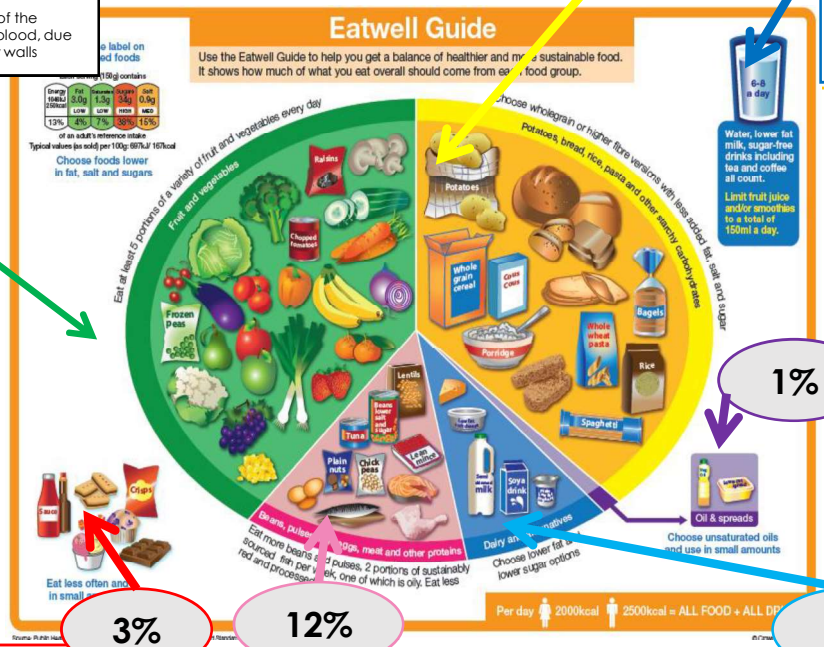
1. Starchy Foods
2. Provide slow release carbohydrate used by the body for energy
3. Choose wholegrains for increased fibre (good digestion, reduced risk of heart disease)

37%

Water Intake
A balanced diet must include water, it is required for nearly all brain and other bodily functions

39%

Fruits & Vegetables
1. Eat 5 portions a day!
2. Choose a variety
3. Provides fibre for healthy digestion
4. Provides vitamins and minerals



1%

Fats, Oils & Spreads
1. Provide fat soluble vitamins A,D,E & K
2. Are high in calories & energy so keep use to a minimum
3. choose unsaturated oils like olive oil

3%

Food high in sugar are saturated fats are not part of a healthy diet and should be eaten in moderation
1. increased risk of weight gain/obesity
2. diabetes
3. tooth decay cardiovascular disease (CHD)

12%

Beans, Pulses, Eggs, Meat, Fish
1. Provide protein for growth, repair and maintenance of body cells
2. Choose a combination of plant proteins
3. Avoid eating too much processed meat like bacon and sausages

8%

Dairy Foods
1. Provide calcium for healthy bones, teeth and nails
2. The body needs Vitamin D to absorb calcium effectively

Week 3

Nutrient	Function in the body
1. Macronutrient: Carbohydrates (Starch, sugar, fibre)	Needed by the body because they are the main source of energy in the body for movement. Needed by the body for digestion. (fibre)
2. Macronutrient: Protein	Needed by the body for growth Repair the body when it is injured Gives the body energy (only if the body doesn't have enough carbohydrates)
3. Macronutrient: Fat	Insulates the body from the cold and provides a 'cushion' to protect bones and organs such as the kidneys The body breaks down the fat stores to release energy Vitamins A, D, E and K are fat soluble vitamins so are stored in our body fat and released when needed.
1. Micronutrient: Vitamin A	Maintains normal vision Good maintenance of skin and the mucus membranes Helps with a healthy immune function **Fat soluble**
2. Micronutrient: Vitamin D	Absorption and use of calcium Maintenance and strength of bones and teeth **Fat soluble**
3. Micronutrient: Vitamin E	Antioxidant that helps protect cell membranes Maintains healthy skin and eyes **Fat soluble**
4. Vitamin K	Normal clotting of the blood Fat soluble
1. Micronutrient: Vitamin B complex	Healthy nervous system Energy release from foods **Water soluble**
2. Micronutrient: Vitamin C	Absorption of iron Production of collagen that binds connective tissues An antioxidant **Water soluble**
1. Mineral Calcium	Strengthens bones and teeth Bones are able to reach peak bone mass Clots blood after injury Promotes nerves and muscles to work properly
2. Mineral Iron	Supports the production of haemoglobin in red blood Helps transport oxygen around the body Vitamin C is required for absorption of iron

	Keyword	Definition
1	Gluten	A protein found in wheat flours, that makes the dough elastic
2	Coeliac disease	An intolerance to Gluten which causes the inflamation of the intestine walls and damage them making nutrient absorbtion more difficult for the body
3	Amylase	Releases when starch is heated and enables sauces to thicken
4	Viscosity	The thicknes of a liquid
5	Gelatinisation	When starch particles swell and burst, thickening a liquid
6	Durum wheat	A yellowy, high-protein wheat that is grown especially for making pasta
7	Milling	The process which separates the different parts of the grain
8	Semolina	A coarse-ground flour which comes from wheat
9	Whole grain	The whole seed in its natural state, none of the layers have been removed
10	Gluten -free	Products which does not have any wheat, rye, barley and sometimes oats
11	Al dente	'Firm to the bite' describes the texture of pasta
12	Extraction Rate	The keyword for how much of the original wheat grain is in the flour and used in products
13	Fermentation	A chemical breakdown of sugar to acid, gas or alcohol by bacteria, yeasts or other microorganisms
14	Proving	When bread is left to rest in a warm, damp environment to enable fermentation
15	Germ	Part of the grain which provides fat and B vitamins, it is also used to grow new plants
16	Glutenin and Gliadin	The two names of the proteins which are kneaded and stretched in the production of bread.
17	Harvesting	The process of gathering or reaping crops
18	Knocks back	To re-knead the dough which knocks out some of the carbon dioxide allowing the yeast to produce more carbon dioxide
19	Starch	A polysaccharide and a complex carbohydrate
20	Strong flour	A type of flour with the highest gluten content
22	Unleavened	Refers to bread, cake and biscuits made without raising agents
23	White flour	Contains just the endosperm, the bran and the germ have been removed
24	Yeast	A microorganism belonging to the fungi family, made up of single oval cells that reproduce by budding, this means they multiply and the one cell divides into two
25	Weevils	Tiny black bugs that can live and breed in flour

Week 4

Week 5

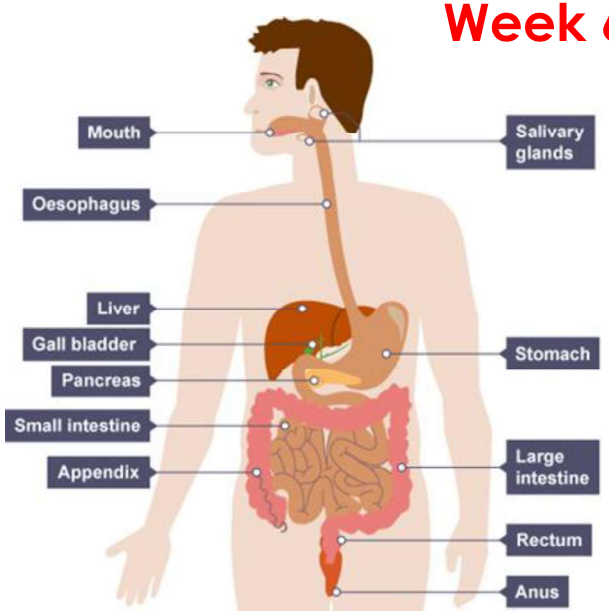
Week 7

Key questions:

- Name 2 properties of gluten that give bread its unique texture
- What needs to be added to glutenin and gliadin to make gluten?
- Describe the energy balance in one sentence.
- Name three enzymes that are involved in human digestion;
- Draw a flowchart to show how food passes through the digestive system, ensuring that each organ and stage is properly labelled.
- Where is pasta thought to have its origins?
- When making a white sauce, the starch grains in the flour swell and thicken the sauce. Name the process and describe how it happens with the aid of diagrams.
- Can you explain why sauces are used in the production of recipes/meals?

The digestion process

Week 6



The gastrointestinal (GI) tract comprises:

- Mouth and salivary glands;
- oesophagus;
- stomach;
- small intestine – duodenum, jejunum and ileum;
- liver and gall bladder;
- pancreas;
- Large intestine (or colon)
- rectum
- anus.

MATERIALS AND SOLDERING PROCESS

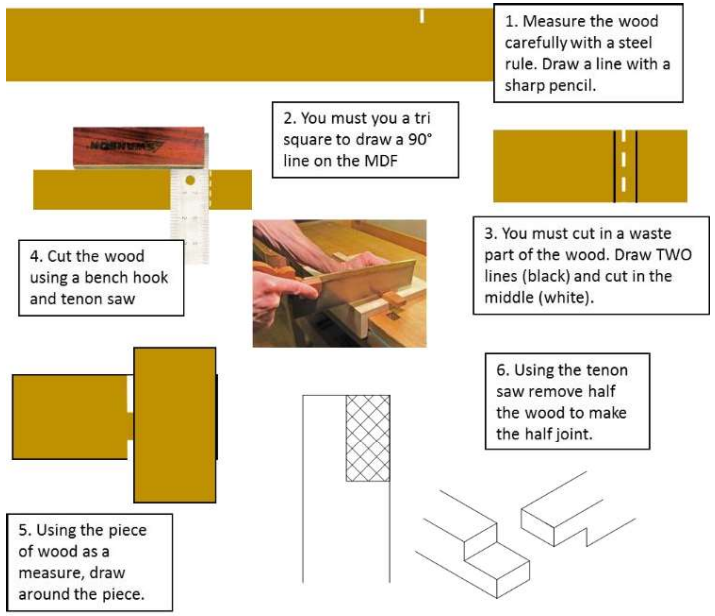
M1 Manufactured— make (something) on a large scale using machinery.

M2 Switch— a device for making and breaking the connection in an electric circuit.

M3 Battery—a container in which chemical energy is converted into electricity and used as a source of power.

M4 Motor— a machine, especially one powered by electricity that supplies motive power for a device with moving parts.

S1 Strip the wires—Use the wire strippers to remove the insulating plastic



S2 Twist the wires— the cable is stranded cable—twist the wires together

S3 Solder the wires— use a bead of solder to make a permanent join.

S4 Apply tape to secure—wrap the join in electrical tape to seal.

Types Of Wood

Softwood—noun The wood from a conifer (such as pine, fir, or spruce) as distinguished from that of broadleaved trees.

Hardwood—noun The hard, compact wood or timber of various trees, as the oak, cherry, maple, or mahogany.

CAR PARTS

Axel - a rod or spindle (either fixed or rotating) passing through the centre of a wheel or group of wheels.

Chassis - the base frame of a car, carriage, or other wheeled vehicle.

Motor - a machine that supplies motive power for a vehicle or for another device with moving parts.

Properties and characteristics of materials

	Absorbency	To be able to soak up liquid easily.
	Strength	The capacity of an object or substance to withstand great force or pressure.
	Elasticity	The ability of an object or material to resume its normal shape after being stretched or compressed; stretchiness.
	Plasticity	The quality of being easily shaped or moulded.
	Malleability	To be able to be hammered or pressed into shape without breaking or cracking.
	Density	The quantity of mass per unit volume of a substance
	Effectiveness	The degree to which something is successful in producing a desired result; success.
	Durability	The ability to withstand wear, pressure, or damage.

Understand the making Process

1	Preparation	Drawing, CAD, sketches, plans.
2	Marking Out	Pencil, scribe, steel rule, tri square, marking gauge, calipers, centre punch.
3	Modification	Saw, jigsaw, scroll saw, laser cutter, pliers, hammer, drill, file, glass paper.
4	Joining	Riveting gun, spanner, screwdriver, hot glue, gun , soldering iron, nail gun.
5	Finishing	Hand sander, glass paper, disc sander, buffing wheel, polish, spray paint, varnish.

(T) TOOLS AND EQUIPMENT

Coping saw – cutting curves 	Tenon Saw – cutting straight 	Bench hook – holding wood 	Glass paper – file filing 
Hand file – rapid filing 	Pillar drill – making holes 	Steel rule – accurate measure 	Disc sander – rapid sanding 

Health & Safety Legislation

Health and Safety at work Act	Personal Protective Equipment	Manual Handling Operations	Control of Substances Hazardous to Health	Reporting of Injuries RIDDOR

M1

Y8- Relationships

Descriptions

Physical description	
alto, bajo (bastante, muy)	tall, short (quite, very)
los ojos azules (verdes, grises, marrones)	blue eyes (green, grey, brown)
el pelo largo (corto, mediano, rizado, ondulado, liso, al rape)	long hair (short, medium, curly, wavy, straight, shaved)
el pelo rubio (castaño, marrón, moreno, negro, gris, rojo)	blond hair (light brown, brown, dark, black, grey, red)
como yo, mi madre, mi padre	like me, my mum, my dad
grande, pequeño	big, small
bonito, guapo, feo	pretty, beautiful, ugly
gordo (gordito), delgado	fat, thin
de tamaño mediano/de talla mediana	medium size
pálido, moreno, bronceado	pale, dark, sun-tanned
robusto, fuerte, débil,delicado	sturdy, strong, weak, delicate
elegante, deportista	smart, sporty
Me parezco a (se parece a)	I look like... (he/she looks like..)

Character	
simpático/antipático	nice/horrible
serio/gracioso, divertido	serious/funny, fun
trabajador, estudioso/perezoso	hard-working, studious/lazy
hablador/callado	talkative/quiet
mimado, egoísta/generoso	spoilt, selfish/generous
paciente/impaciente	patient/impatient
optimista/pesimista	optimistic/pessimistic
feliz/triste	happy/sad
bueno/malo, travieso	good/bad, naughty
pesado/amable	annoying/pleasant
testarudo/acomodadizo	stubborn/easy-going
cariñoso/frío	affectionate/cold
tonto, loco, raro/inteligente	silly, mad, strange/intelligent
imaginativo, creativo	imaginative, creativo
interesante/aburrido	interesting/boring

M2

Y8- Relationships

Tiempo libre

Semana 1

¿Qué te gusta hacer?	What do you like to do
Me gusta...	I like...
Me gusta mucho...	I really like...
No me gusta...	I don't like...
No me gusta nada...	I don't like at all...
chatear	to chat online
escribir correos	to write emails
escuchar música	to listen to music
jugar a los videojuegos	to play videogames
leer	to read
mandar SMS	to send text messages

Semana 2

navegar por Internet	to surf the net
salir con mis amigos	to go out with my friends
ver la televisión	to watch TV
porque es...	because it is...
porque no es...	because it is not...
interesante	interesting
guay	cool
divertido/a	amusing, funny
estúpido/a	stupid
aburrido/a	boring

Semana 3

¿Qué haces en tu tiempo libre?	What do you do in your spare time?		
bailo	I dance	monto en bici	I ride my bike
canto karaoke	I sing karaoke	saco fotos	I take photos
hablo con mis amigos	I talk with my friends	toco la guitarra	I play the guitar

Expresiones de frecuencia	Expressions of frequency		
a veces	sometimes	nunca	never
de vez en cuando	from time to time	todos los días	every day

Semana 4

¿Qué tiempo hace?	What's the weather like?		
hace calor	it's hot	llueve	it's raining
hace frío	it's cold	nieva	it's snowing
hace sol	it's sunny	¿Qué haces cuando llueve?	What do you do when it's raining?
hace buen tiempo	it's nice weather		

Las estaciones	The seasons		
la primavera	spring	el otoño	autumn
el verano	summer	el invierno	winter

Semana 5

¿Qué deportes haces?	What sports do you do?		
Hago artes marciales.	I do martial arts.	Juego al tenis.	I play tennis.
Hago atletismo.	I do athletics.	Juego al voleibol.	I play volleyball.
Hago equitación.	I do/go horseriding.	¡Me gusta!	I like it!
Hago gimnasia.	I do gymnastics.	¡Me gusta mucho!	I like it a lot!
Hago natación.	I do/go swimming.	¡Me gusta muchísimo!	I really, really like it!
Juego al baloncesto.	I play basketball.	¡Me encanta!	I love it!
Juego al fútbol.	I play football.		

M1

Y8- Relationships

Descriptions

Avoir- To have

Avoir	To have
J'ai	I have
Tu as	You have
Il/ elle a	He/ she has
Nous avons	We have
Vous avez	You have (plural)
Ils/elles ont	They have
Être	To be
Je suis	I am
Tu es	You are
Il/elle est	He/ she is
Nous sommes	We are
Vous êtes	You are (plural)
Ils/ elles sont	They are

Une barbe	A beard
Des lunettes	Glasses
Un chapeau	A hat
Bouclés	Curly (hair)
Chauve	Bald
Mignon(ne)	Cute
Les Cheveux	Hair
Les Yeux	Eyes
Bleu(s)	Blue
Vert(s)	Green
Brun(s)	Brown
Roux	Red (hair)
Gris	Grey
Noir(s)	Black (hair)
Blond(s)	Blond
Châtain(s)	Brown (hair)
Long(s)	Long (hair)
Court(s)	Short (hair)
Lisse(s)	Straight (hair)

Être - to be

Je suis	I am
Tu es	You are
Il est	He / it is
Elle est	She / it is
Nous sommes	We are
Vous êtes	You are (plural)
Ils sont	They are (M)
Elles sont	They are (F)

Adjectifs qualificatifs	Descriptive Adjectives
amorphe	apathetic
antipathique	unlikeable
bourru(e)	rough
charismatique	charismatic
courageux(-se)	courageous
créatif(-ve)	creative
énergique	energetic
enjoué(e)	playful
extraverti(e)	extrovert
honnête	honest
impatient(e)	impatient
indiscret/indiscrète	indiscreet
infidèle	unfaithful
introverti(e)	introvert
lâche	coward
loyal(e)	loyal
malhonnête	dishonest
mignon(ne)	cute
paresseux(-se)	lazy
patient(e)	patient
persévérant(e)	persevering
sérieux(-se)	serious
sociable	sociable
sympathique	likeable
travailleur(-se)	hard-working

Personnalité	Personality
avoir de la classe	classy
avoir le sens de l'humour	have a sense of humour
bon vivant	happy-go-lucky
la mentalité	mentality
le caractère/la disposition/la personnalité	character
le comportement	behavior
le/la risque-tout/casse-cou	daredevil
personnalité antisociale	antisocial personality

M2

Y8- Relationships

Temps libre

Time Frames

Normalement	normally
Quelquefois	sometimes
D'habitude	usually
Le weekend	at the weekend
Le lundi	on Mondays
Le mardi	on Tuesdays

I.e. Le lundi j'adore faire de la natation
On a Monday I love to go swimming.

Sentence Starters

Selon moi	To me
D'après moi	To me
Je trouve que	I find that
Je dirais que	I would say that
Je pense que	I think that
À mon avis	In my opinion
Je crois que	I believe that
À mes yeux…	In my eyes

Opinions

J'aime	I like
Je n'aime pas	I don't like
J'adore	I love
Je déteste	I hate
Je préfère	I prefer

Connectives

Et	and
Aussi	also
En plus	plus
Donc	therefore
Avec	with
Parce que	because
Car	because

Future Tense

Le week-end prochain
Next weekend

Je vais jouer
I am going to play

Je vais écouter
I am going to listen

Je vais faire
I am going to do

On va…
We are going…

Past Tense

Le weekend dernier – last weekend
Hier soir = Last night
Je suis allé(e) – I went
J'ai regardé – I watched
J'ai mangé – I ate
J'ai joué – I played
J'ai fait – I did

Negatives

ne…pas = don't
ne…jamais = never
ne…plus = no longer/more

Introducing an opposing opinion

Mais – but
Cependant – However
Pourtant – However/yet
Par contre – on the other hand

Justifying Opinion

C'était – it was	**C'est – it is**	**Ce sera – it will be**
affreux – it's awful	débile – it's stupid	génial – it's great
effrayant – it's frightening	ennuyeux – it's boring	Incroyable – it's incredible
mauvais – it's bad	fatigant – it's tiring	intéressant – it's interesting
pénible – it's annoying	barbant – it's boring	marrant – it's funny
facile – it's easy	bien – it's good	chouette – it's cool

Define: *Alcohol*

While some drinks have more alcohol than others, the type of alcohol in all alcoholic drinks is the same – it's a type of alcohol called ethanol. Alcohol is a colourless, odourless and inflammable fluid.

Define: *ABV*

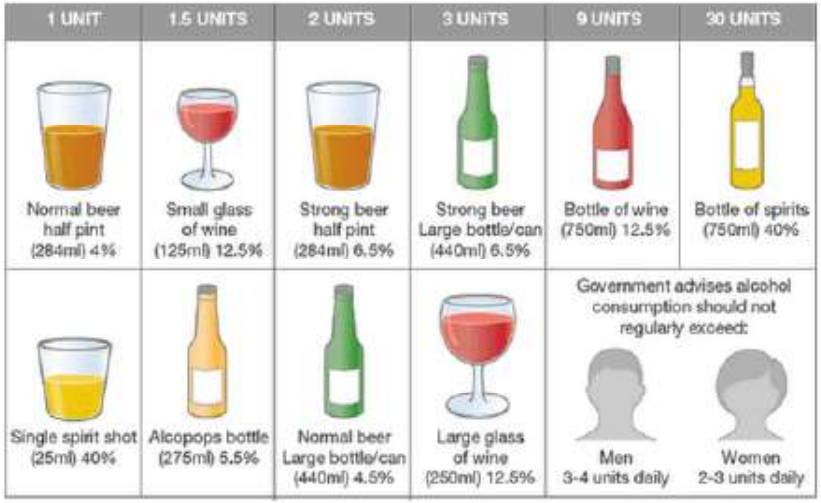
Alcohol by volume is a standard measure of how much alcohol (ethanol) is contained in a given volume of an alcoholic beverage (%).

Define: *Unit of Alcohol*

Units are a simple way of expressing the quantity of pure alcohol in a drink. One unit equals 10ml or 8g of pure alcohol, which is around the amount of alcohol the average adult can process in an hour.

Define: *Binge Drinking*

Consuming large quantities of alcohol in a short space of time. This is 8 units in a single session for men and 6 units in a single session for women.



How alcohol affects you drink by drink

Based on a standard (175ml) 13% volume glass of white wine or 4% strength pint of lager,

1 glass of white wine or a pint of lager (just over 2 units):
- You're talkative and feel relaxed.
- Your self-confidence increases.
- Driving ability is already impaired, which is why it's best to drink no alcohol if you're driving.

2 glasses of white wine or 2 pints of lager (just over 4 units):
- Your blood flow increases.
- You feel less inhibited and your attention span is shorter.
- You start dehydrating, one of the causes of a hangover.

3 glasses of white wine or 3 pints of lager (just under 7 units):
- Your reaction time is slower.
- Your liver has to work harder.
- Your sex drive may increase, while your judgement may decrease.

4 glasses of white wine or 4 pints of lager (just over 9 units):
- You're easily confused.
- You're noticeably emotional.
- Your sex drive could now decrease, and you may become less capable.

How to Calculate Units of Alcohol

Strength (ABV) x volume (ml) ÷ 1,000 = units

For example, to work out the number of units in a pint (568ml) of strong lager (ABV 5.2%): 5.2 (%) x 568 (ml) ÷ 1,000 = 2.95 units

Alcohol and the Law

It is against the law
- To sell alcohol to someone under 18 anywhere.
- For an adult to buy or attempt to buy alcohol on behalf of someone under 18.
- For someone under 18 to buy alcohol, attempt to buy alcohol or to be sold alcohol.
- For someone under 18 to drink alcohol in licensed premises,
- For an adult to buy alcohol for someone under 18 for consumption on licensed premises,
- To give children alcohol if they are under five.

It is not illegal:
- For someone over 18 to buy a child over 16 beer, wine or cider if they are eating a table meal together in licensed premises at the discretion of the manager.
- For a child aged five to 17 to drink alcohol at home or on other private premises.

Signs of Alcohol Addiction

It can be tricky to spot the signs of alcoholism as alcoholics can be secretive about it and can become angry if confronted. Some signs and symptoms can include:
- A lack of interest in previously normal activities
- Appearing intoxicated more regularly
- Needing to drink more in order to achieve the same effects
- Appearing tired, unwell or irritable
- An inability to say no to alcohol
- Anxiety, depression or other mental health problems
- Becoming secretive or dishonest

Who Can you turn to for help and Support

Parents or trusted family members	School Safe Guarding Team or any member of staff.
Your GP or Practice Nurse.	
Drink Aware	**0300 123 1110 (weekly 9am - 8pm, weekends 11am - 4pm)** https://www.drinkaware.co.uk
Al-Anon Family Group	0800 0086 811 from 10 am - 10 pm, 365 days a year https://www.al-anonuk.org.uk/
AddAction	https://www.addaction.org.uk – Webchat facility

Define: *Platonic Relationship*

A friendship or relationship where there is no romantic, intimate or sexual feelings.

Friends and Colleagues.

Define: *Intimate Relationship*

A relationship which can include a sexual attraction and sexual activity.

Boyfriend. Girlfriend, Married Couples

Define: *Familial Relationship*

A relationships with someone who has a blood, kinship or legal tie to you.

Parents, Siblings etc.

Define: *Toxic Relationship*

A relationship that has a negative impact on your mental health and self esteem.

What makes a good friend?

Good friends make you feel good	Good friends say and do things that make you feel good, giving compliments and congratulations and being happy for you.
Good friends listen	A good friend allows you to talk and doesn't interrupt you. They're interested in what you have to say.
Good friends support each other	If you're feeling down, a good friend will support you. If you need help, a good friend will try to help you out.
Good friends are trustworthy	If you tell a good friend something private, they won't share it. You can trust a good friend not to be judgmental.
Good friends handle conflict respectfully and respect boundaries	A good friend will tell you if you've done something to hurt them. If you tell a good friend they've hurt you, they'll be sorry and won't do it again.
Friends not followers	In the digital world you can feel under pressure to have a lot of friends and followers. Remember that you only need a small circle of friends to be happy.

Good friendships go both ways

Signs of a Toxic Friendship

Sometimes people who claim to be your friends can show bullying behaviour. This is sometimes called a 'frenemy' but is a type of toxic relationship. You can spot them by:

- They might say "brutally honest" things to you which are unkind or hurtful
- Put pressure on you to do things you don't want to do
- Be manipulative (e.g. 'If you were my friend you would...')
- Put you down
- Laugh at you, or encourage others to laugh at you
- Talk about you behind your back
- Deliberately exclude you from group chat and activities
- Take the "banter" too far
- Share things about you online
- Make you feel bad about yourself

What to do if you are in a toxic friendship

- **Remember: the problem isn't you:** Hold on to that thought. Their behaviour might make you feel bad, but they need to change, not you.
- **Talk to them about how their behaviour makes you feel:** Explain calmly and without accusation. Be specific, Tell them what you'd like to happen moving forward. Their response will tell you a lot, sometimes our behaviour hurts others without us realising.
- **If they apologise, give them another chance:** If they mean it, they'll change their behaviour and stop making you feel bad. However, sometimes frenemies might apologise insincerely, and their behaviour afterwards won't change. If they're still making you feel bad despite what you've told them, it's time to move on.
- **Make new friends:** Moving on can be scary, but you deserve people in your life who support you and make you feel good about yourself. See our guide to making new friends for help.
- **Don't retaliate:** It can be tempting to encourage others to exclude your former frenemy, or to put them down behind their back. Don't do this: you're only showing the same behaviour you found difficult in them.