YEAR 9 KNOWLEDGE ORGANISER
TRINITY TERM 2020/21

Trinity

Name:

Family Group:

INSIGHTFUL

INDEPENDENT

RESILIENT

REFLECTIVE

KNOWLEDGEABLE

OPEN MINDED

COURAGEOUS

PRINCIPLED

CARING

LEARNING - LOVING - LIVING

CONTENTS PAGE

GENERAL INFORMATION

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

HOMEWORK EXPECTATIONS

EACH NIGHT you should spend *at least* **1 hour** per night on homework.
3 subjects per night x 20 minutes per subject= 1 hour. Use the homework timetable as a guide to what subjects to complete each night.

Complete all work in your exercise book and make sure you bring your knowledge organiser to school EVERYDAY (in your coloured folder).

Every FRIDAY morning the week's worth of KNOWLEDGE ORGANISER homework will be checked in Family Group time and detentions issued for work not complete, or not up to standard.

SUBJECT HOMEWORK

All 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.

Individual subject teachers will also assign homework to students on Microsoft Teams and Weduc.

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 9	Subject 1	Subject 2	Subject 3
Monday	Maths	Option A	Option C
Tuesday	English	Option B	Option C
Wednesday	Maths	RE	Option D
Thursday	English	Science	Option A
Friday	Maths	Science	Option B

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	

HOMEWORK CHECKLIST

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Half term						

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6

Here are some activities that you can try at home with your knowledge organiser to help revise. There are even more strategies on page 3.

Copyright © 2018

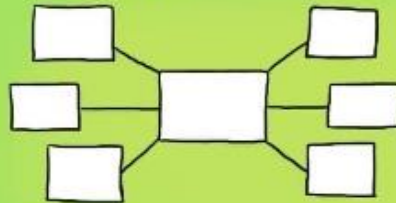## 4 Methods of Retrieval Practice
@ImpactWales

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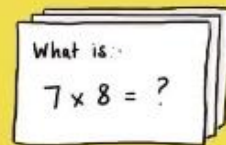
QUIZZING
Create practice questions on a topic. Swap your questions with a partner & answer.

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?

What is:
7 × 8 = ?

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.

| Definition | Draw a picture |
| Examples | Topic | Non-examples |
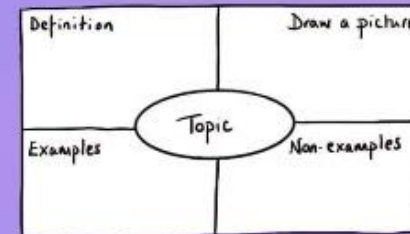
You can use knowledge organisers to learn new vocab & make links in between subjects or ideas.

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

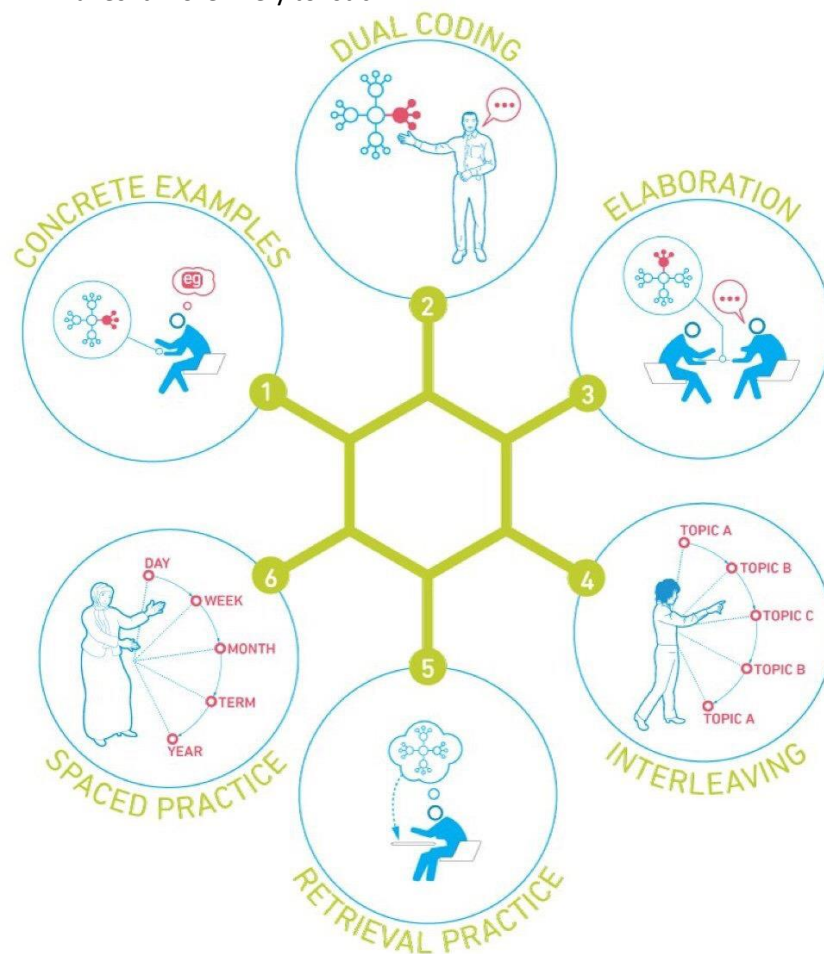When you're studying, try to think about how you can turn ideas you're learning into concrete examples. Making a link between the idea you're studying and a real life example, concrete example, can help students understand abstract ideas and make it 'stick'.

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.

Act One Summary: Engagement celebration interrupted by Insp. Mr.B and Sheila reveal links to Eva.

Who	What	Notes
Stage directions	Dinner jackets, large surburban house, port, champagne	Extreme opulence. Insular existence divorced from reality of poverty and lower class struggles
Birling	We're in for a time of steadily increasing prosperity	Birling is pontificating about the future, believing that he is infallible. Priestley uses dramatic irony to accentuate B's ignorance, arrogance and pomposity.
Birling	A hard-headed practical man of business	'hard-headed': B means that he is resilient and powerful. Audience a reminded of his stubborn and ignorant nature. B is an arch-capitalist
Birling	Sees his daughter's marriage as a business transaction	Callous, dehumanizing: subjugation of women even prevalent in upper classes
Birling	The Titanic……unsinkable, absolutely unsinkable	Pomposity. Titanic is metaphor for arrogance of upper class
Birling	The way some of these cranks talk and write now, you'd think everybody has to look after everybody else, as if we were all mixed up together like bees in a hive-community and all that nonsense	B uses derogatory and dismissive language (cranks). B is dogmatic and supercilious. B has disdain for socialism (it would remove his hierarchical advantage!) B wants a stratified, atomized society.
Insp.	One person and one line of enquiry at a time	authoritative and in command
Birling	She'd had a lot to say-far too much-so she had to go of course.	authoritarian: lacks compassion. Eva wanted small pay rise. B is callous and ruthless. women have no voice in society
Birling	It's a free country I told them	Arrogance: not free! Free if rich and male. no welfare state, no universal suffrage until 1928!
Insp.	They might. But after all it's better to ask for the earth than to take it	criticizing B's (and upper class) greed.
Sheila	But these girls aren't cheap labour-they're people	disagrees with B: generation gap. Priestley is optimistic about future 'younger ones' are more compassionate. S is first to change.
Sheila	But I felt rotten about it at the time and now I feel a lot worse	repentant, remorseful, penitent. S had Eva fired because S was jealous. S abused her power and influence. S lives insular life: no clue about the Eva's desperate plight
Sheila	It's the only time I've ever done anything like that, and I'll never, never do it again to anybody	'only time': was she emulating parents' callous behaviour? S represents promise of better future: compassionate/socialist

Act Two Summary: Gerald and Mrs.B reveal links to Eva

Who	What	Notes
Insp.	You see, we have to share something. If there's nothing else, we'll have to share our guilt.	Birlings are immoral. They have contempt for collective responsibility.
Insp.	We often do on the younger ones. They're more impressionable	generation gap
Sheila	He's been steadily drinking too much for the past few years	dysfunctional relationship with B. Hedonistic life of privilege and entitlement. Wealth has corrupted him: hypocrisy! (B and Mrs.B think poor are degenerate and immoral!)
Gerald	She looked young and fresh and charming	G objectifying Eva. complimentary but he exploits her desperation
Gerald	I didn't install her there to make love to her	Denial suggests guilt: G's infidelity is evidence of his immorality. Sordid
Birling	Defends Gerald's infidelity	Cares more about merger? Genuinely thinks this is ok? Immoral!
Gerald	I didnt feel about her as she felt about me	Disparity between G and Eva: G exploits Eva and abuses his position of privilege and power
Gerald	I insisted on a parting gift of enough money-though it wasn't much-to see her through to the end of the year	Transactional relationship: money used to assuage guilt. hints at prostitution/dehumanisation
Insp.	She felt that there'd never be anything as good again for her-so she had to make it last longer.	Eva's desperation. Eva is exploited by G.
Insp.	(massively) Public Men, Mr.Birling, have responsibilities as well as privileges.	Insp. admonishes B. B was Lord Mayor but only for fame and prestige. Like Mrs.B (charity role is for power and fame not compassion.
Mrs.B	Girls of that class	Mrs.B stereotyping the poor as degenerate and immoral. Irony is that she is the immoral one!
Mrs.B	You know of course that my husband was Lord Mayor only two years ago	Attempting to intimidate Insp. superciliousness
Mrs.B	She impertinently made use of our name	'impertinently': supercilious and haughty! Irony: Mrs.B condemns father (Eric) hypocritical: won't punish her own son!
Mrs.B	She was claiming elaborate fine feelings and scruples that were simply absurd for a girl in her position.	Dehumanizing lower class. callous.
Birling	Cares only about reputation and 'inquest' not death of Eva	

Act 3 Summary: Inspector's final admonishment and exit. Aftermath: was it real? does it matter? Young are changed. Old refuse to accept responsibility.

Who	What	Notes
Eric	I'm not very clear about it, but afterwards she told me that she didn't want me to go in but that-well, I was in that state when a chap easily turns nasty-and I threatened to make a row.	Threatened violence to get sex. Alcoholic, hedonistic life free from responsibilities.
Eric	Steals money from dad	Steals to help but stealing is wrong.
Eric	Castigates Mrs.B for killing Eva	Defiance: break from expected obedience to elders. E is incredulous at Mrs.B's callousness
Eric	You're not the kind of father a chap could go to when he's in trouble	Dysfunctional relationship with B. B focused on business, ignoring family
Insp.	But each of you helped to kill her. Remember that	Collective responsibility.
Insp.	There are millions and millions and millions of Eva Smiths and John Smiths still left with us, with their lives, their hopes and fears, their suffering and chance of happiness, all intertwined with our lives, and what we think and say and do. We don't live alone. We are members of one body. We are responsible for each other. And I tell you that the time will soon come when, if men will not learn that lesson, then they will be taught it in fire and blood and anguish.	Marginalized are the majority (repetition of 'millions'). lower class life is precarious ('still'). omnipresence of suffering. biblical rhetoric (tricolon at end), hinting at WW1. compare speech with B and Mrs.B's antithetical views.
Eric	The money's not the important thing. It's what happened to the girl and what we all did to her that matter. And I still feel the same about it, and that's why I don't feel like sitting down and having a nice cosy talk.	E is remorseful, like S. criminality is irrelevant: they have a moral duty to others
Eric	We did her in alright	Accepts responsibility.
Ending	is it a hoax? was Eva real? does this matter?	E and S have changed: remorse, responsibility, guilt. MrsB and B only care about reputation and scandal. Mrs.B and B mock E and S for being gullible. Ending=final phone call: inescapability and absolute necessity of change.

Important Ideas

Addition/ Subtraction Laws

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

Order of operations (R)

Brackets Operations in brackets are calculated first

Indices e.g. powers, roots,

Multiplication/ Division
They are carried out in the order from left to right in the question

Addition/ Subtraction
They are carried out in the order from left to right in the question

Zero and negative indices

$$x^0 = 1$$

Any number divided by itself = 1
$$\frac{a^6}{a^6} = a^6 \div a^6$$
$$= a^{6-6} = a^0 = 1$$

Negative indices do not indicate negative solutions

$$2^2 = 4$$
$$2^1 = 2$$
$$2^0 = 1$$
$$2^{-1} = \frac{1}{2}$$
$$2^{-2} = \frac{1}{4}$$

Looking at the sequence can help to understand negative powers

Powers of powers

$$(x^a)^b = x^{ab}$$

$$(2^3)^4 = 2^3 \times 2^3 \times 2^3 \times 2^3$$

The same base and power is repeated. Use the addition law for indices

$$(2^3)^4 = 2^{12} \longleftarrow a \times b = 3 \times 4 = 12$$

NOTICE the difference

$$(2x^3)^4 = 2x^3 \times 2x^3 \times 2x^3 \times 2x^3$$

The addition law applies ONLY to the powers. The integers still need to be multiplied

$$(2x^3)^4 = 16x^{12}$$

Subtract directed numbers

● = -1
○ = 1
Representations

Representation for calculation

"Subtract" — means take away or remove

2 - -1 = 3
Take away one ●
Start with the representation of 2
= 3

2 - -3 = 5
= 5

Generalisation
- - - = +

Multiply/ Divide directed numbers

-3   -3

Two representations of the same calculation
2 x -3 = -6

Negative, Negative calculation
-2 x -3
This is the negative of 2 x -3
The act of making counters into their negative is turning them over
-2 x -3 = 6

Divisions are the inverse operations

Estimate the calculation

Round to 1 significant figure to estimate

$$4.2 + 6.7 \approx 4 + 7 \approx 11$$ This is an **overestimate** because the 6.7 was rounded up more

The equal sign changes to show it is an estimation

$$21.4 \times 3.1 \approx 20 \times 3 \approx 60$$ This is an **underestimate** because both values were rounded down (largest)

It is good to check all calculations with an estimate in all aspects of maths — it helps you identify calculation errors

numbers

12.4 > 12.39
12.4 is greater than 12.39
To order a group of numbers, you complete steps 1-3 with more than 2 numbers.

Start here
3 = 3
4 is more than 3 (3.45 is the greatest)
9 is greater than nothing (3.39 is next largest)
So......
3.45 is greater than 3.39 which is greater than 3.3

3.45
3.39
3.3

Order of Operations	In mathematics, the **order** of **operations** tells us in which sequence we should perform operations in order to evaluate a given mathematical expression.	

MathsWatch References

Decimals	3. 17, 18, 66, 67, N1b, N2b, N13b, N14b, N15b, N17b, N28b, N29b, N40a, N40b
Rounding	31, 32, 90
Estimation	91
Order of Operations	75
Negative Numbers	68a, 68b
Square, Square Roots, Cube, Cube Roots	81

Index	An index number is a number which is raised to a power. The power, also known as the index, tells you how many times you have to multiply the number by itself.

Important Ideas

Cube	Net of Cube	Area of Shapes

trapezoid
parallelogram
rectangle

Surface = $\frac{b1+b2}{2}$ x h   Surface = b x h   Surface = b x h

square   triangle   circle

Surface = b x h = s^2 Surface = $\frac{b \times h}{2}$ Surface = $\pi \times r^2$

Formula for the surface area of a cuboid

We can find the formula for the surface area of a cuboid as follows.

Surface area of a cuboid =

2 × lw	Top and bottom
+ 2 × hw	Front and back
+ 2 × lh	Left and right side

= $2lw + 2hw + 2lh$

Vocabulary

Perimeter	The perimeter of a plane figure is the length of its boundary.
Area	The amount of space inside the boundary of a flat (2-dimensional) object such as a triangle or circle, or surface of a solid (3-dimensional) object.
Solids	A solid shape is a three-dimensional figure that has **width, depth and height**. Examples of solid shapes include **cubes, pyramids and spheres**.
Volume	Volume is the **amount of space inside a three-dimensional object, or its capacity**.
Nets of Shape	A **net** is what a 3D (three-dimensional) shape would look like if it were opened out flat**.**
Surface Area	**Surface area** is the total **area** of the faces and/or curved **surface** of a solid figure.

Q& A

11 cm
9 cm
12 cm

18 mm

Use π = 3.142 (3 dp)
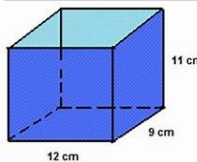
Find the volume of the cuboid above.	**Find the circumference of the circle above.**	**Find the area of the circle above.**
V = l x w x h V = 12 x 9 x 11 V = 1188 cm³	C = 2πr or πd C = 2 x 3.142 x 18 C = 113.04 mm	A = πr² A = 3.142 x 18² A = 1017.36 mm²
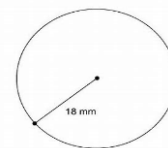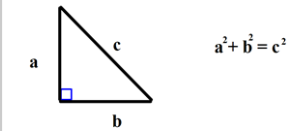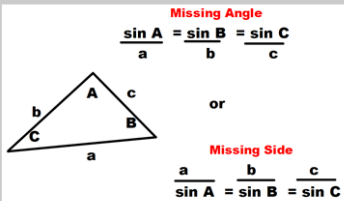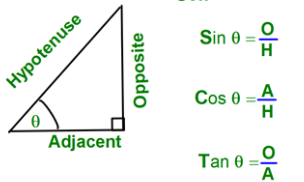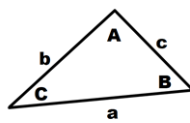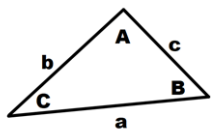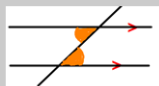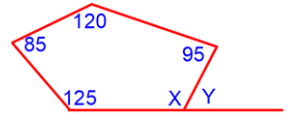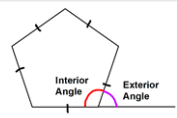
MathsWatch References

Perimeter	52, G8a, G8b
Area	53, 54, 55, 56, 114a, 114b, 117, G9, G20a, G20b, G20c, G20d, G22b, G24
Solids	43
Circles	116, 117, 118, 167, G2, G22a, G22b
Volume	115, 119, G21a, G25a
Nets of Shapes	44, G12c
Surface Area	114a, 114b, G21b, G25b

Key Facts & Formula

Perimeter	Perimeter of a rectangle of length L and width W is 2 L +2 W

Figure	Formulas for Volume (V) and Surface Area (SA)
Rectangular Prism	$V = lwh$ = length × width × height $SA = 2lw + 2hw + 2lh$ = 2(length × width) + 2(height × width) + 2(length × height)
General Prisms	$V = Bh$ = area of base × height SA = sum of the areas of the faces
Right Circular Cylinder	$V = Bh$ = area of base × height $SA = 2B + Ch$ = (2 × area of base) + (circumference × height)
Right Pyramid	$V = \frac{1}{3}Bh = \frac{1}{3}$ × area of base × height $SA = B + \frac{1}{2}Pl$ = area of base + ($\frac{1}{2}$ × perimeter of base × slant height)
Right Circular Cone	$V = \frac{1}{3}Bh = \frac{1}{3}$ × area of base × height $SA = B + \frac{1}{2}Cl$ = area of base + ($\frac{1}{2}$ × circumference × slant height)
Sphere	$V = \frac{4}{3}\pi r^2 = \frac{4}{3}$ × π × cube of radius $SA = 4\pi r^2 = 4$ × π × square of radius

Methods Explored

Pythagoras' Theorem: links the lengths of the three sides of a right-angle triangle.

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

Trigonometry : allows us to find angles and sides on triangles. This section helps us with right-angle triangles.

Soh Cah Toa

$Sin\ \theta = \dfrac{O}{H}$

$Cos\ \theta = \dfrac{A}{H}$

$Tan\ \theta = \dfrac{O}{A}$

Exterior angles in any regular polygon

Once you find the exterior angle you can use angles on a straight line to find the interior angle. Since to go round the outside of any shape you do a full circle around it we can use the formula:

Exterior angle = 360 ÷ Number of sides

Irregular polygons

Irregular polygon do not have equal sides or angles so you need to work each angle out separately.

120
85   95
125   X   Y

(Interior angles in any pentagon sum to 540°)

Formulae to learn by heart

Sine Rule : when you know a combination of at least two pairs of sides and their opposite angles with one missing element.

Missing Angle
$\dfrac{\sin A}{a} = \dfrac{\sin B}{b} = \dfrac{\sin C}{c}$

or

Missing Side
$\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

Cosine Rule : Two sides and the angle between them is known (or can be found).

$a^2 = b^2 + c^2 - 2bc \cos A$

Area of a triangle rule : two sides and the angle between them is known (or can be found).

$area = \dfrac{ab \sin C}{2}$

Exact Trigonometric values
Need to be learnt by heart: you may be asked to recall them or calculate with them

	0°	30°	45°	60°	90°
sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	–

Vocabulary

Corresponding angles are equal
Translations of each other. Equal in size.

Supplementary angles sum to 180°.
Different place, different size. Sum to 180°.

Alternate angles are equal
Rotations of each other. Equal in size.

Vertically opposite angles are equal
Opposite across a vertex. Same size.

Regular Polygon
A polygon with every side equal in length and every angle equal in size.

Exterior- and interior- angles
The two angles formed when you extend the side of a polygon in a straight line outwards from the shape.

Interior Angle   Exterior Angle

Maths Watch References - for further self study

45	Angles on a line / Around a point
121	Angles in a triangle
123	Angles in polygons
122	Special case triangles
150	Pythagoras theorem
156	Reasoning
168	Trigonometry
173	Exact Trigonometric values
201	Sine rule
202	Cosine rule
203	Area of triangle

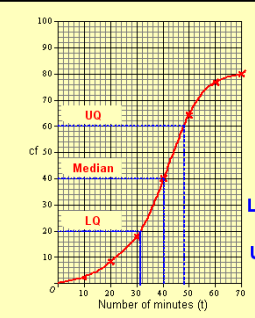## Methods Explored

Stratified Sampling	'Strata' means 'layers'. This is when the sample you select is based on the size of the subgroups ('layers') within the population so that your sample is representative of the proportions of these sub groups within the population. There are 20 boys and 40 girls in a year. I need 30 people for my sample. Boys in the sample $= \frac{20}{60} \times 30$
Cumu-lative Frequency	This is a way of representing **grouped data**. To find the cumulative frequency you add the frequencies up as you go. You plot the highest value of the groups against the cumulative frequency.
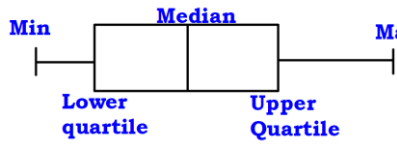
Number of minutes (t)	Cumulative frequency
0 < t ≤ 10	2
0 < t ≤ 20	8
0 < t ≤ 30	18
0 < t ≤ 40	40
0 < t ≤ 50	64
0 < t ≤ 60	77
0 < t ≤ 70	80

Median $= 40$

Lower Quartile $= 31$

Upper Quartile $= 48$

Interquartile Range $= 17$

IR = 48 - 31

Box Plot	A way to show the distribution of data in a visual form. The lower quartile is the value 25% of the way through the data. The median is the middle value. The Upper quartile is 75% of the way through the data. The interquartile range is the difference between the UQ and LQ. The IQR gives a measure of spread that excludes outliers around the max and min values (unlike the range). The IQR is therefore more reliable.

Min   Median   Max

Lower quartile   Upper Quartile

Histograms
Similar to a bar chart. Frequencies are shown not by height, but by the areas of the rectangular bars. The **frequency density** is found when you divide the frequency by the class width (group width)
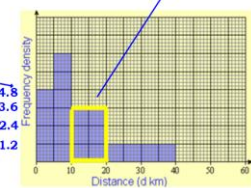
Distance (d km)	Frequency
0 < d ≤ 5	24
5 < d ≤ 10	36
10 < d ≤ 20	
20 < d ≤ 40	24
40 < d ≤ 60	12

Start by calculating the frequency density

$24 \div 5 = 4.8$

The area of the bar is found by finding the height x width which represents the missing frequency.

$3.6 \times 10 = 36$

You can now scale the frequency density axis from this point calculated as 4.8

Vocabulary

Modal Class	The group with the highest frequency
Inter-Quartile Range	Upper quartile – Lower quartile. This is a measure of spread / consistency.
Line of best fit	A line which goes through the middle of the points to best describe the general **correlation**. You should try to place it so that the same number of points are above and below the line and that it goes in the general direction of the points. It does **not** have to join to the **origin** of the graph.
Discrete data	Data which takes only certain values. E.g shoes sizes may take half-values, jeans sizes are even numbers only.
Continuous data	Data that can take any value, within a range, as it is measured.

Vocabulary

Correlation	Where there is a pattern between two variables. Correlation does not mean cause and effect.
Frequency	The number of times something happens or appears.
Consistency	Data which is more consistent varies less: the values tend to be closer together (lower range and IQR). Less consistent data is more spread out.
Outlier	An extreme value: far above or far below where most values lie.
Data Set	The numbers or data collected for an investigation.
Population	Everything or everybody that could possibly be involved in an investigation
Sample	A selection of people or things taken from the population. It is often quicker and cheaper to study a sample rather than the whole population.
Random Sample	Where every member of a population has an equal chance of selection. This means the sample is representative or un-biased.
Bias	Not representative of the population. Some groups of the population are over- or under -represented.

Maths Watch References

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Electric charge and current

Every atom contains particles with an electric charge: protons and electrons. By getting electric charges to **flow**, we can get them to do work (i.e. transfer energy) in all sorts of useful ways. For that is what happens in any electric circuit you can think of: *flowing charges transfer energy.*

If we want to get electric charges to flow, we must make a **closed**, or complete circuit – a loop of conducting materials, like metal wires. Then, we must provide a source of **potential difference**. The source of potential difference could be a cell, battery or the mains. What these sources do is to create a *difference* in electrical *potential* energy – hence the name. This provides the force to make the **electric charges** in the conductors **flow**. When electric charges, like electrons, are flowing, we call it an **electric current**.

The size of an electric current is simply the **rate of flow of electric charge.**
So current $(I) = \frac{Q}{t}$ or $Q = It$

In a circuit, in any closed loop of the circuit, the size of the current is the same throughout the loop. As shown on the diagram, the current is the same in all parts of the loop, including through the battery and through the resistors.

Current, resistance and potential difference

Cells and batteries etc. are **sources of potential difference**. This means they boost the potential energy of charges in a circuit. Other components, like resistors or bulbs, do **work** – so they take the potential energy of the charges and **transfer** it into some other form, like light or heat. In a circuit, all the energy provided by the cell/battery is transferred by the components in the circuit all together. So, in components like bulbs, the charges do work – i.e. they transfer energy. By definition, this means they have a potential difference **across** them. We say 'across' since it is a difference, from one side of the component to the other.

The **current** through a component depends on this **potential difference** across the component, but also its **resistance**. Without any resistance, a component would <u>do no work</u> (try putting a 0 in the equation!), so things like bulbs HAVE TO have resistance. The resistance of a component, along with the potential difference across it, determines the current through it, as shown in the second equation. It shows us that: if we keep the potential difference the same, but increase the resistance, the current must *decrease*. If we keep the potential difference the same, but decrease the resistance, the current must *increase*.

Key Terms	Definitions
electric charge	Just a positive or negative charge! In most electrical circuits, the electric charges that are flowing are **electrons** – which are of course negatively charged. Symbol: Q
current	The rate of flow of electric charge (i.e. speed). Calculated by dividing the size of the charge by the time. Symbol: I
potential difference	Also known as voltage, or p.d.. The potential difference is a measure of how much work is done per coulomb of charge.
resistance	Resistance determines the size of the current for a particular potential difference.

Equation	Meanings of terms in equation
$Q = I\,t$ *	Q = charge flow (coulombs, C) I = current (amperes, A) t = time (seconds, s)
$V = I\,R$ *	V = potential difference (volts, V) I = current (amperes, A) R = resistance (ohms, Ω)
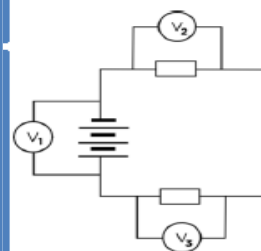
Look how the voltmeters are added **across** the components to measure the potential difference across them.

Symbol		Symbol	
switch (open)		bulb	
switch (closed)		fuse	
cell		voltmeter	
battery		ammeter	
diode			
resistor		thermistor	
variable resistor		LDR	
LED			

Yes, you need to learn these symbols.

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Key Terms	Definitions
series	Components connected one after another in a closed loop.
parallel	Components connected in different loops of a circuit.
resistor	An electrical component that regulates current in a circuit. Bear in mind, all electrical components have **resistance**, so are resistors in some sense, as well as being e.g. bulbs.

Equation	Meanings of terms in equation
for series circuits: $R_{total} = R_1 + R_2$ *	R_{total} = total resistance (ohms, Ω) R_1 = resistance of first component (Ω) R_2 = resistance of next component (Ω) – and so on
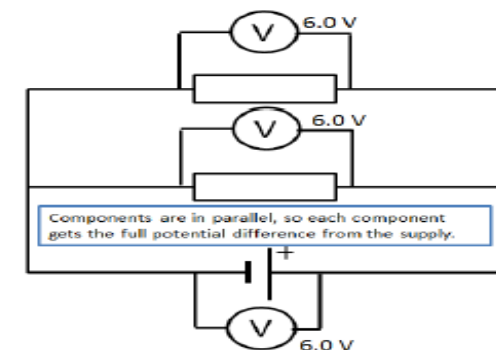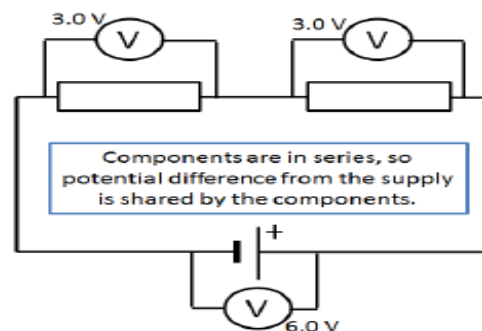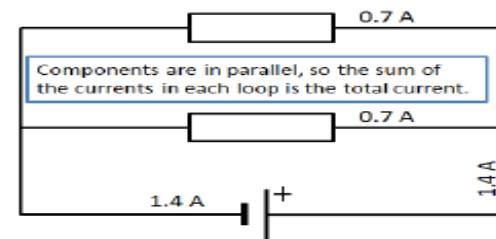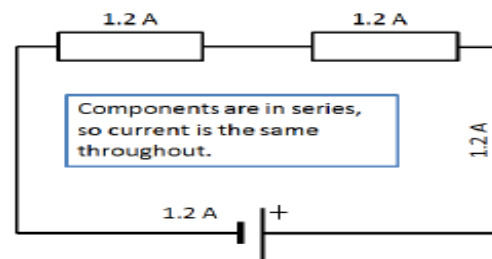
Direct and alternating potential difference

The flow of charge (current) in a circuit can travel in one direction around the circuit only. This is due to a **direct** supply of potential difference, also known as dc. Cells and batteries provide a direct potential difference. However, it is possible for the direction of the current to change back and forth in a circuit. This happens when there the supply provides an **alternating** potential difference – also known as ac. This means the p.d. is constantly switching from positive to negative, which you can see if you measure the p.d. and produce an image of is on an **oscilloscope**, as the diagram shows. The rate at which the p.d. switches from positive to negative is called the <u>frequency</u> of the supply. The bottom image, since the supply is a battery, shows a direct potential difference.

Three-core cables

We connect most electrical appliances to the mains with a three-core cable. The three pins on a plug are just the three ends, or terminals, of the three wires in the cable. Each wire in insulated in a different colour.

Earth wire
Neutral wire
Live wire
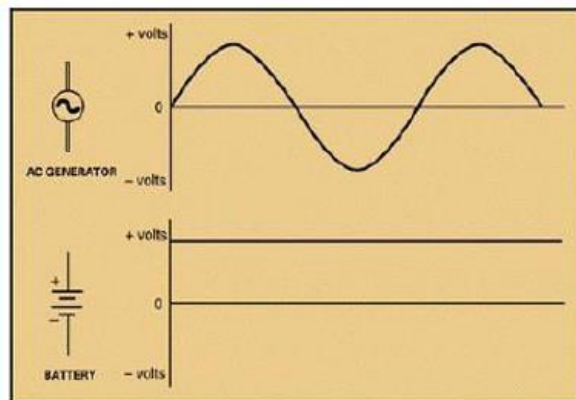
Mains electricity

Mains electricity (the supply into your house/school etc. that comes through the plugs) is an ac supply. In the UK, we have a supply with a p.d. of about 230V, and the frequency is 50 Hz.
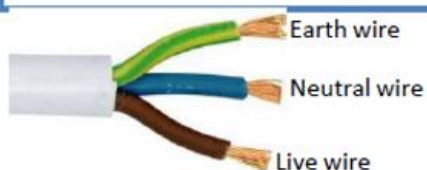
Wire in three-core cable	Colour code of the insulation	Function
Live wire	Brown	Carries the alternating p.d. from the supply to the appliance
Neutral wire	Blue	Completes the circuit. The neutral wire is at 0 V (earth potential).
Earth wire	Yellow and green stripes	Earth wires are at 0 V. They are safety wires, and only carry a current if there is a fault and the appliance has become live (electrified).

DANGER (and safety)

The earth wire carries current to the ground (literally, earth). This makes circuits safer because if there is a fault, it conducts the current to the ground rather than making the appliance 'live'. Appliances become live if the live wire touches the case. This is particularly a problem with metal-cased appliances, like cookers or toasters.
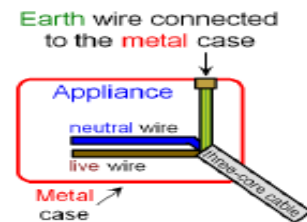
The live wire is the most dangerous one, since it is at 230 V. it should never touch the earth wire (unless the insulation is between them, of course!), because this would make a complete circuit from your mains supply to the ground (earth). A shock or fire would be highly likely.

Even if a circuit is switched off (i.e. the switch is **open**), the live wire can still be dangerous. If you touch it, you may complete a circuit between the live wire and the earth (because you'll be standing on the floor), so you get a shock.

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Key Terms	Definitions
direct p.d.	A supply where the potential difference is fixed at a certain value, so the current flows in one direction only
alternating p.d.	A supply where the p.d. switches between positive a negative, reversing the direction of the current frequently.
frequency	The number of times the p.d. reverses direction every second. Measured in Hertz (Hz).

The national grid

The national grid connects power stations to consumers of the power – like you. It consists of a network of cables (i.e. power lines) and **transformers**. There are two types of transformers; together they improve the efficiency of the energy transfer from power station to homes and schools etc.:
1. Step-up transformers *increase* the p.d. from the power station to the transmission cables. This reduces the current so less energy is lost as heat.
2. Step-down transformers *decrease* the p.d. from the cables to a much lower value (230V, generally) for domestic use. This increases the current to suit electrical appliances used at home.

States of matter and changes of state

Study the diagram. The particle model is used to explain differences between solids, liquids and gases, and to explain how changes from one state to another happen. Make sure you know how to draw the particles arrangement in each state, and know all the names for each state change shown on the diagram.

In a solid, the particles are **fixed in position** and only vibrate – they can't flow around. In a liquid, the particles are still **very close together** but they can **flow past each** other. In a gas, the particles move **randomly** and there is **empty space** between them.

In changes of state, no new substance is produced and there is <u>no</u> change in the **mass** of the substance. This is because no particles are created or destroyed.

Gas

Sublimation
Deposition
Condensation
Evaporation

Melting
Freezing

Solid   **Liquid**
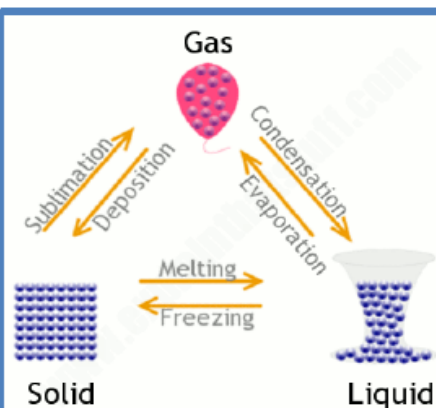
Density and the particle model

The particle model explains why 1 kg of a gas will have a **much** larger volume than 1 kg of a solid. This is because there is <u>empty space</u> between the particles in a gas, whereas in a solid, they are tightly packed together. Looking at the equation below, you should see that in this example the *m* is the same (1 kg), but the volume for the gas is much larger. Since we <u>divide</u> by volume, this must mean that the **density** of the gas is much smaller than the density of the solid.

Pressure in gases

Particles in a gas are constantly moving – so they store **kinetic energy**. They <u>collide</u> with the walls of their container, and exert a force when they do. The total force exerted on a certain area of the wall is the **gas pressure**.

Cooler gas – less kinetic energy

Hotter gas – more kinetic energy

The amount of kinetic energy that the particles have is related to the temperature of the gas. The higher the temperature, the more kinetic energy they have. This means they move faster, on average. Therefore, there are more collisions with the container walls and they exert a greater force when they collide with the walls. Thus, **increasing** the <u>temperature</u> of a gas (keeping the volume the same) **increases** the <u>pressure</u> of the gas.

Key Terms	Definitions
model	Models are used all the time in science. A model represents the real world and can explain many things about the universe. However, models are never perfect and there are limits to what they can explain. That doesn't stop them being extremely useful though!
particle model	The model that represents molecules or atoms as small, hard spheres. The important things to think about when using the particle model are the **arrangement** of the particles in each state of matter and the **kinetic energy of** the particles.
state of matter	The physical arrangement of particles determines the state of a particular substance: solid, liquid or gas. Changing from one state of matter to another is a physical process, NOT a chemical process. No new substance is produced, and if you reverse the state change, you have a substance with exactly the same properties as the stuff you started with.
density	The quantity that defines how much material (i.e. mass) is in a certain volume. See equation. If you have two objects the same size but different densities, the more dense object will feel heavier in your hand as there is more mass in the same volume.
melt/freeze	The change of state from solid to liquid/liquid to solid.
evaporate/ condense	Change of state from liquid to gas/ gas to liquid.
boil	Like evaporation, boiling is a change of state from liquid to gas. However, boiling involves heating of the liquid so it boils, rather than particles on the surface of the liquid becoming gas (like in evaporation).
pressure	Pressure is caused by the force exerted by particles in a gas when they hit the walls of a container.

Equation	Meanings of terms in equation
$\rho = \dfrac{m}{V}$ *	ρ = density (kilograms per metre cubed, kg/m³) m = mass (kg) V = volume (metres cubed, m³)

Relative formula mass (M_r)

This is the mass in grams of 1 mole of a substance. To calculate it you need to add up the atomic masses (bigger number) of all of the atoms in the molecule.

e.g 1. $NaCl = Na + Cl = 23 + 35.5 = 58.5$

e.g 2. $MgF_2 = Mg + (2 \times F) = 24 + (2 \times 19) = 62$

Higher tier -The Mole

A mole of an element is simply 6.02×10^{23} atoms (this number is known as Avogadro's number). Obviously, if the atoms are larger then 1 mole of that atom will be heavier. For example, one mole of hydrogen atoms weighs 1 gram but 1 mole of carbon weighs 12 grams. To calculate the number of moles in an element you need to divide the mass by the relative atomic mass:
For example, how many moles are there in 6 grams of carbon?
$6/12 = 0.5$

To work out the number of moles in a compound you divide the mass of the compound by the relative formula mass, for example how many moles in 30 grams of magnesium oxide (MgO)?
M_r of MgO$=24+16= 40$
Moles$= 30/40=0.75$

Higher Tier: Calculating Masses in Reactions

An understanding of the mole will allow to calculate the mass made in a chemical reaction.
Take the chemical reaction below:

$$Mg + 2HCl \rightarrow MgCl_2 + H_2$$
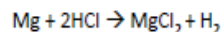
This equation shows that one mole of magnesium reacts with two moles of hydrochloric acid to produce one mole of magnesium chloride and one mole of hydrogen gas. Suppose you started with 5 grams of magnesium, how much magnesium chloride would you make?
Step 1: Calculate the moles of the element or compound you were given in the equation:
$$5/24 = 0.21 \text{ moles of magnesium}$$
Step 2: Look at the balanced equation, you must therefore have 0.21 moles of magnesium chloride, as the ratio in the balanced equation between magnesium and magnesium chloride is 1 to 1.
Step 3: Calculate the M_r of the relevant product: what you want to find is the M_r of magnesium chloride:
M_r of MgCl$_2$ $=24+35.5+35.5=94$
Step 4: Now find the mass that will be made from that number of moles of magnesium chloride
Mass = moles x M_r, so 0.21 x 94= 19.7 grams

Key Terms	Definitions
mole	6.02×10^{23} atoms of an element or molecules in a compound
Avogadro's number	6.02×10^{23} This is the number of atoms in 12 grams of carbon 12.
relative formula mass	The total atomic mass of elements in compound
limiting reagent	The reagent which is used up first in a chemical reaction.

Equation	Meanings of terms in equation
* $$moles = \frac{mass}{M_r}$$	Mass is the mass of the substance in grams M_r is the relative formula mass of the compound (or use the relative atomic mass if it is an element)

Higher Tier - Calculating moles from masses

If you know the mass of each reactant and product you can calculate a balanced equation from the masses, for example: Calculate the balanced equation when 12 grams of magnesium reacts completely with 38.5g of HCl, to make 49.5 grams of $MgCl_2$ and 1 gram of H_2

$$Mg + HCl \rightarrow MgCl_2 + H_2$$

Step 1: work out the moles of each reactant and product.
Mg$=12/24= 0.5$ HCl$=38.5/38.5= 1$ MgCl$_2$ $=49.5/99 = 0.5$ $H_2 = 1/2 = 0.5$
Step 2 divide through by the smallest number

Mg$=0.5/0.5=1$ HCl$= 1/0.5 = 2$ MgCl$_2$ $=0.5/0.5=1$ $H_2 = 0.5/0.5=1$

Step 3 write the balanced equation:
$$Mg + 2HCl \rightarrow MgCl_2 + H_2$$

Higher tier - Limiting Reagent

When a chemical reaction is carried out, one or more reagents are in excess and one reagent is the limiting reagent. The **limiting reagent** is the reagent which is used up first in a chemical reaction, if all of this reagent is used up the reaction can no longer continue, for example, if a tiny amount of sodium is dropped into a large bowl of water there are a lot more water particles that there are sodium atoms. We therefore say that the sodium is the **limiting reagent** and the water is in excess.

The amount of product formed is **directly proportional** to the amount of limiting reagent. Therefore if you double the amount of limiting reagent you will get double the amount of product.

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The Particle Model of Matter
Matter is made of particles. The particles can be arranged in different ways and move in different ways. There are three common states of matter in the world:
Solids:
- In solids, particles are arranged **very close together** because they are attracted strongly to each other.
- The particles cannot move out of their positions, BUT they do **vibrate** around their fixed positions.

Liquids:
- In liquids, particles are arranged **very close together**.
- However, they are not in fixed positions: particles in liquids constantly move, **flowing** past each other.

Gases:
- In gases, particles are spread apart from each other with empty space between them.
- Particles in gases constantly move randomly in all directions.

Changes of State
A melting/freezing point is a particular **temperature** for each particular substance. Changes of state between solid and liquid happen at this temperature (the melting point).
- Solid → liquid is **melting**. This happens at the substance's melting point.
- Liquid → solid is **freezing**. This happens at the substance's freezing point, which is equal to its melting point.

A boiling point is a particular **temperature** for each particular substance. Changes of state between liquid and gas happen at this temperature (the boiling point).
- Liquid → gas is **boiling** or **evaporation**. This happens at the substance's boiling point.
- Gas → liquid is **condensation**. This happens at the substance's boiling point.

Mass is **conserved** during any change of state, because the number of particles remains exactly the same. Only their arrangement changes.

Key terms	Definitions
matter	Any material/substance/chemical/stuff!
state of matter	Solid, liquid or gas, depending on the arrangement of particles in matter.
particles	The tiny objects that all matter is made from. Particles are **models** for atoms or molecules.
conserve	Keep the same
density	A compound measure for how much mass fits into a certain unit of volume of a substance.
randomly	Unpredictably (all over the place)
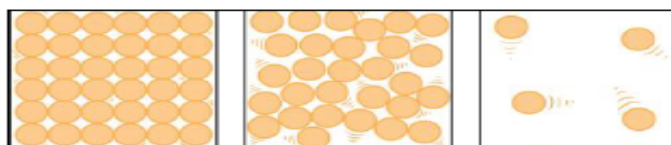
2D diagrams of particle arrangements in solids, liquids and gases.

Density

$$density = \frac{mass}{volume}$$

Density
Calculating density allows comparison of different amounts of substances. It is a measure of how much stuff fits in a certain unit of volume.

Solids are denser than liquids. Liquids are denser than gases.

There is an exception: ice (solid water) is less dense than liquid water. This is unusual.

Density explains floating in liquids.
- A substances floats if it is less dense than the liquid.
- A substance sinks if it is more dense than the liquid.

Internal energy and the particle model

Any substance, whether solid, liquid or gas, **stores energy**. The particles (atoms and molecules) have <u>kinetic</u> energy (since they can move/vibrate) and <u>potential</u> energy. <u>The total of the kinetic energy and the potential energy of the particles is called the **internal energy**.</u>

When you heat something up, you increase the energy of the particles in the substance (or 'system'). When heating one state, you simply increase the temperature of the substance by increasing the kinetic energy of the particles. However, when a state change is occurring, the temperature does not increase. This is because the particles are increasing in potential energy (which doesn't affect the temperature). That's why the graph above goes horizontal when the changes of state are taking place.
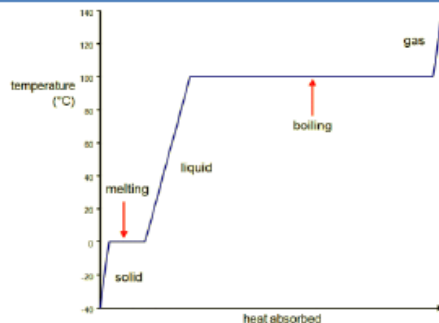
Specific heat capacity

Some substances are harder to warm up than others, and cool down less easily. The measurement of this is called **specific heat capacity**. Learn the precise definition opposite. So, when heating something, the temperature rise that will actually happen depends on the specific heat capacity (which is different with different substances) of the substance being heated, the mass of the substance and the amount of energy put in. These four quantities are linked in the equation to the right.

Changes of state and specific latent heat

As noted above, during heating to cause changes of state the potential energy of particles increases but the kinetic energy does not. So the temperature stays the same. The **energy needed for a substance to change state is called the latent heat.** The specific latent heat is specific to a substance, and is the energy required to change its state (using 1 kg of the substance), with <u>no</u> change in temperature. The energy needed for a state change depends on mass and specific latent heat of a substance – as the second equation shows.

But which change of state? We use the symbol L for any change of state, but call it the **specific latent heat of fusion** for changes from solid to liquid. We call it the **specific latent heat of vaporisation** for changes from liquid to gas (vapour).

Key Terms	Definitions
internal energy	The energy stored by the particles in a system (solid, liquid or gas). Internal energy is the sum of the potential energy of particles and the kinetic energy of the particles.
kinetic energy	The energy associated with movement. The kinetic energy of particles in any state of matter is related to the temperature of the matter.
temperature	A measure of the average kinetic energy of particles in a substance. As temperature increases, the average kinetic energy increases. <u>Note</u>: temperature does <u>not</u> measure the potential energy of particles, just their average kinetic energy.
heating	Heating is one way to transfer energy from one store to another. On this page, we talk about how heating substances increases the internal energy of that substance (both the kinetic and potential energy of particles).
specific heat capacity	The amount of energy required to raise the temperature of 1 kg of a substance by one degree Celsius.
latent heat	Latent heat is linked to the potential energy of particles in a system – it is the energy needed for a substance to change state. It cannot be measured with a thermometer, since it is not linked to the kinetic energy of particles.
specific latent heat	When a substance is changing state, you can keep heating it but the temperature stays the same. The energy isn't disappearing (that's impossible!), but is adding to the internal energy. <u>Specific latent heat</u> measures this: it is **the amount of energy required to change the state of 1 kg of a substance** (without changing the temperature at all).

Equation	Meanings of terms in equation
$\Delta E = m\, c\, \Delta\theta$	ΔE = change in thermal energy (joules, J) m = mass (kg) c = specific heat capacity (joules per kilogram per degree Celsius, J/kg °C) $\Delta\theta$ = temperature change (°C)
$E = m\, L$	E = energy (joules, J) m = mass (kg) L = specific latent heat (J/kg)

Internal energy in matter

All matter stores energy. This is called internal energy and it has two parts to it:

- All matter is made of particles that are moving, so matter stores **kinetic energy**.
- The relative position of particles is a store of **potential energy**, due to the attraction between particles.

So, internal energy of a substance = kinetic energy of the particles + potential energy of the particles.

Gases have <u>higher</u> internal energy than liquids and solids because:

- The particles move around more: they store more kinetic energy
- The attraction between particles has been overcome and they've moved apart: this has increased the potential energy.

Internal Energy and Changes of State

Heating a substance can do two things, but not at the same time:

1. Raise its temperature
2. Change its state from solid to liquid, or liquid to gas.

1. Temperature increases because heating increases the <u>kinetic energy</u> of particles: they move around more.

2. During changes of state, the temperature of a substance does **<u>not</u>** change. The heating is overcoming the attraction between particles and moving them apart (increasing the <u>potential energy</u>).

Concentration	Pressure
$concentration = \dfrac{mass\ of\ solute}{volume\ of\ solvent}$	$pressure = \dfrac{force}{area}$

Key terms	Definitions
temperature	The measure of the average kinetic energy of particles in a substance.
solution	A type of mixture produced by dissolving a solute in a solvent.
solute	A substance that is dissolved in a solvent.
solvent	The liquid that dissolves a solute to make a solution.
Fluid	Collective term for liquids and gases (particles in fluids move around and are not in fixed positions).
Brownian motion	The random motion of small particles in fluids due to their bumping into even smaller particles.

Concentration and Concentration Gradients

- Concentration is the compound measure of how much solute is dissolved in a certain unit of volume of solvent.
- A difference is concentration between two solutions is called a concentration gradient. Solute particles tend to spread from higher concentration to lower concentration (down the concentration gradient), until the concentration is equal throughout the solution. This is called **diffusion**.
- This can happen across cell membranes.

Pressure

- Pressure is a compound measure of how much force acts on a particular unit of area.
- Pressure increases if the force acting on an area *increases*.
- Pressure increases if the area a force acts on *decreases*.
- The deeper you go in a fluid, the greater the pressure because the column of fluid above pushes down with more force on a certain area.
- Factors that affect pressure: height in a fluid; volume of fluid; temperature of fluid; number of particles in the fluid.

Equipment List

For the regular shaped solid objects:
* 30 cm ruler marked off in mm
* digital balance
* materials kits ie various regular shaped objects made of iron, copper, aluminium.

For the irregular shaped solid objects:
* digital balance
* displacement can and something to stand it on (eg a brick)
* measuring cylinders
* 250 ml beaker of water and an extra empty beaker
* paper towels
* cotton or thin string
* various irregular shaped objects

For the liquids:
* digital balance
* 250 ml beaker
* suitable liquid eg sugar solution.

Method
For regular solids
1. Measure the length, width and height of each of the objects. Record your results in a table. Include columns for volume, mass, density and substance.
2. Measure the mass of each object using the digital balance, and record the results.
3. Calculate and record the volumes (length x width x height).
4. Calculate and record the densities (mass ÷ volume).

For irregular objects (see diagram)

1. Place a displacement can on a brick. Put an empty beaker under the spout and fill the can with water. Water should be dripping from the spout.
2. When the water has stopped dripping, place a measuring cylinder under the spout. Choose the measuring cylinder you think will give the most precise reading.
3. Tie the object to a piece of cotton and very carefully lower it into the displacement can so that it is completely submerged. Collect all of the water that comes out of the spout in the measuring cylinder.
4. Measure and record the volume of the collected water; this is equal to the volume of the object.
5. Calculate and record the density of the object. Try to find out what substance it is made from.
6. Repeat for some of the other objects. Remember to refill the can each time.

For liquids:
1. Measure the mass of the empty beaker.
2. Record your results in a table. Your table will also need columns for the mass of the beaker with the liquid in, the mass of the liquid, the volume of the liquid and the density.
3. Pour about 100 ml of liquid into the measuring cylinder. Measure and record the volume.
4. Pour this liquid into the beaker. Measure and record the mass of the beaker and liquid.
5. Calculate and record the volume of the liquid.
6. Calculate the density of the liquid.
7. The density of water is 1 g/cm³. Determine the mass of sugar per cm³ dissolved in the water, assuming the sugar does not affect the volume of the water.

Expected Results

In solids, metals should have the highest density. Which should be in the order of 1000 kg/m³

Key Terms	Definitions
Displacement/ Eureka can	A piece of equipment used to measure how much water is displaced

Diagram

Displacement can
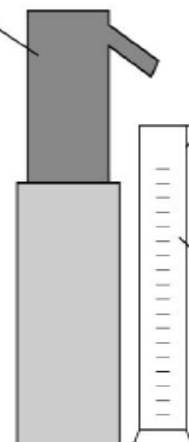
Measuring cylinder

Increasing accuracy
Vernier callipers can be used to measure lengths to a very high degree of accuracy.
Balances that have a high resolution.
Using a burette to measure volume to a higher resolution.

Sources of Error
Balance not reading 0 when substances are being weighed.
Water lost on side of can/spout in displacement can.

Number	Key term	Definition
1	Urbanisation	A rise in the percentage of people living in urban areas, compared to rural areas.
2	Conurbation	The merging of towns and cities to form one large city.
3	World cities	Megacities that play a disproportionally large role in world affairs.
4	Urban Primacy	A city that has more importance and influence bigger than its size.
5	Net Growth	The number of people left after subtracting those leaving from those arriving
6	Decentralisation	Closure of industries.
7	Internal Migration	Movement within a country.
8	Rural-urban Migration	Movement of people from the countryside to towns and cities.
9	Knowledge economy	Working in industries that supply expertise/research and development.
10	International migration.	Moving from one country to another.

Number	Key term	Definition
11	Informal economy	An unofficial economy, where no records are kept. People have no contracts or employment rights
12	Formal economy	One which is official, meets legal standards for accounts, taxes and workers' pay and conditions.
13	Ethnic enclaves	Areas where people of similar ethnic background live together.
14	Counter-urbanization	Movement of people away from the city.
15	Re-urbanization	Movement of people back into the city.
16	Regeneration	The redeveloping of former industrial areas or housing to improve them.
17	Brownfield	Sites are former industrial areas that have been developed before.
18	Megacity	A city with a population of 10 million or above.
19	CBD	Central business district
20	Chawls	Low quality multi-story buildings.
21	Informal housing	Illegal settlements ie. slums/squatter settlements.
22	Spatial	Relates to space eg the spatial growth of a city.

Champagne-Glass Distribution

RICHEST

Each horizontal band represents an equal fifth of the world's people

POOREST

World population	World income
Richest 20%	82.7%
Second 20%	11.7%
Third 20%	2.3%
Fourth 20%	1.9%
Poorest 20%	1.4%

Rostow's Model of Development

Stage 5 - High mass consumption

Stage 4 - Drive to maturity

Stage 3- Take off

Stage 2 - Transitional Stage - Preconditions for take off

Stage 1 - Traditional Society

Development

Time

Figure 1: Rostow's Model of Development.

Periphery

Semi-periphery

Core

goods

resources

resources

goods

Frank's dependency theory

Clark Fisher Model

Percentage of employment (%)

pre-industrial   industrial   post-industrial

Key
primary
secondary
tertiary
quaternary
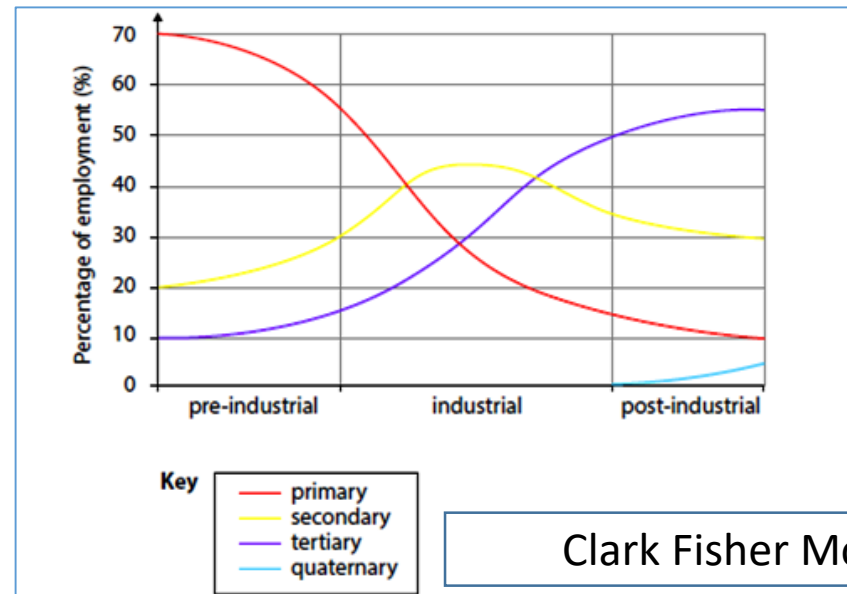
	C18th and C19th Crime and Punishment
1	This period saw rapid population growth and increased urbanisation meant more opportunities for crime. There was significant poverty in the cities and enforcing crime became more problematic. There was a change in attitudes too – prisons were for reforming criminals and not just punishing them. Important individuals in this time included John Howard, a prison reformer, and Robert Peel, the founder of the Metropolitan Police.

	Key events
2	**1690** – Excise duty extended to salt, leather and soap and mounted customs officers introduced.
3	**1716** – Last known execution for witchcraft.
4	**1723** – Black Act makes poaching game or damaging forest a capital crime.
5	**1735** – Witchcraft Act decriminalised witchcraft.
6	**1748** – Fielding brothers set up the Bow Street Runners.
7	**1778** – Transportation to Australia introduced.
8	**1789** – French Revolution.
9	**1810**- 222 crimes are capital offences.
10	**1816**- The first national prison opens at Millbank, London to hold convicts awaiting transportation.
11	**1823** – Black Act repealed.
12	**1829**- Metropolitan Police Act
13	**1832** – 60 crimes are capital offences.
14	**1835** – Gaols Act introduces inspection of prisons.
15	**1842** – Pentonville prison set up on the site of old Millbank prison.
16	**1850** – Import taxes cut and large scale smuggling reduced.
17	**1856** – Police Act makes it compulsory for all towns and counties to set up a police force.
18	**1868** – Public execution ended.
19	**1869** – National Crime Records established.
20	**1877** – All prisons are brought under government authority.
21	**1878** – Criminal Investigations Department set up.
22	**1898** – Prison Act emphasises rehabilitation and reform of prisoners.
23	**1902** – Holloway Prison for women opens/ first conviction in court using fingerprint evidence.

	Key Concepts
24	Smuggling and highway robbery became less common in the C19th.
25	There were increasingly harsh and unpopular laws against poaching but they were repealed in the 1820's.
26	The **growth of the prison system** meant that an alternative punishment to transportation was available.
27	Early C18th law enforcement continued to use similar methods to the early modern period but the establishment of the **Bow Street Runners was a very important development in policing that laid the foundations for the Metropolitan Police Act**.
28	The government was concerned with punishing wrongdoing and deterring others from crime by ensuring conditions were sufficiently harsh.

	Key Words	
29	**Smugglers**	People who brought goods into the country and sold them on, without paying duties.
30	**Hawkhurst Gang**	A large smuggler gang which operated in the South East of England from 1735 to 1749.
31	**William Pitt**	Prime Minister who lowered import duties and who helped to reduce smuggling.
32	**Highway Robbery**	Threatening and attacking travellers and forcing them to hand over valuable possessions.
33	**Turnpikes**	Roads with a toll gate.
34	**Jack Shepherd/ Dick Turpin**	Famous highwaymen.
35	**Tolpuddle Martyrs**	Men from the village of Tolpuddle in Dorset who formed an early trade union.
36	**Martyr**	A person who suffers for their beliefs, and often is admired for it.
37	**George Loveless**	Leader of the Tolpuddle Martyrs.
38	**Trade Union**	An organisation that represents workers to protect their rights.
39	**Transportation**	Criminals were sent to America and later Australia as punishment for their crimes.
40	**Home Secretary**	The government minister with responsibility for law and order.
41	**Hulk**	Disused ships used as floating prisons just offshore.
42	**Inhumane**	Cruel, without compassion.
43	**The Tyburn Tree**	The most famous place for public executions. The tree could hang 24 people at once.
44	**Tread wheel**	A common form of hard labour where the prisoner walked up the wheel for 10 minutes at a time with a 5 minute break before the next stint.
45	**John Howard**	Campaigner for prison reform.
46	**Elizabeth Fry**	Campaigner for prison reform.
47	**Humanitarianism**	A school of thinking based on the principle that all humans are equal and inhumane treatment of other human beings should be challenged.
48	**Bow Street Runners**	A crime fighting team, established in London, in 1748, by the Chief Magistrate, Henry Fielding. By 1785, they were officially paid by the government.
49	**Metropolitan Police Act**	Gave London a uniformed police force. Set up by Home Secretary, Robert Peel.
50	**Prototype**	A new idea or design that is tried out before more versions are made.
51	**Separate system**	Prisoners were kept apart as much as possible.
52	**Pentonville Prison**	Designed as a model prison by Joshua Jebb.
53	**Psychosis**	A confused state where sufferers have hallucinations and delusions – seeing and imagining things that are not really there.
54	**Hard labour, hard fare and hard board**	Physically demanding work, boring and bland diet and wooden board beds.
55	**Robert Peel**	Home Secretary responsible for bringing in a wide range of changes to criminal law and for reforming prisons. Some historians call him the 'father of modern policing'.
56	**Penal**	Involving punishments.

	Crime and Punishment from 1900 to the Present
1	The role of the government in people's lives grew as did the role of the state in enforcing the law. Social attitudes changes which led to some activities being decriminalised while others were made illegal for the first time. Development in science and technology and better methods of communication led to advances in crime prevention and detection. There has been changing attitudes about the rehabilitation of offenders.

Key events

2	**1901** – Fingerprint Branch is set up at New Scotland Yard.
3	**1916**- Conscription introduced.
4	1920's – women recruited into police force.
5	**1950**- Death penalty for Timothy Evans who was hanged for murdering his wife and baby. This was a miscarriage of justice.
6	**1953**- Death penalty for Dreck Bentley. Hanged for the murder of a police officer. He had not fired the gun himself, had learning difficulties and a low mental age.
7	**1955** – Death penalty for Ruth Ellis. Hanged for the murder of her violent and abusive boyfriend.
8	**1965** – Death penalty abolished for most crimes.
9	**1967** – Sexual Offences Act
10	**1968** – Abortion Act and Race Relations Act
11	**1976** – Domestic Violence Act
12	**1980** – Police National Computer is launched.
13	**1991** – Law recognises rape within marriage as a crime.
14	**1995** – National Automatic Fingerprint Identification System and National DNA Database set up.
15	**1998**- Death penalty abolished for all crimes.
16	**2000**- Terrorism Act
17	**2005** – Criminal Justice Act raises severity of 'hate crimes'.
18	**2006** – Racial and Religious Hatred Act
19	**2015**- Modern Slavery Act

Key Concepts

20	**Changing social attitudes** cause changes in the law.
21	**New technologies** create new crimes.
22	**Important developments in modern policing** include increased use of science and technology, more emphasis on crime prevention and increasing co-operation and co-ordination at national level.
23	In the C20th, there has been **increasing specialisation in policing**.
24	During the C20th, there has been **changing attitudes about the purpose of prisons and types of punishments** and the death penalty has been abolished.

Key Words

25	Homosexuality	Sam sex relationships were decriminalised in 1967.
26	Sexual Revolution	Growing liberal attitudes towards sex in the 1960's.
27	The Crime	A crime motivated by prejudice against the victim's race, gender, disability or sexual orientation.
28	Homophobic	Prejudice against people who are gay.
29	Multicultural	Lots of different nationalities living in an area/country.
30	Injunction	An order issued by a court to forbid a particular action or behaviour. An injunction can include instructions to stay away from a person or a place.
31	Coercive behaviour	Using force or threats towards a partner.
32	Abortion	To end a pregnancy.
33	Social crimes	Crimes in society that many accept to a degree e.g. tax evasion, copyright.
34	Terrorism	The use of violence, fear and intimidation to publicise a political cause.
35	IRA	Irish Republic Army – wanted political independence from the rest of the UK.
36	Al-Qaeda and Isis	Islamic Fundamentalist Terrorist Organisations.
37	People Trafficking	People from poorer countries being brought to the UK and forced to work for very low wages or no wages.
38	Cybercrime	This is any crime that is carried out using the internet and other digital technologies.
39	Fraud	Impersonating other people or businesses to make money illegally.
40	Copyright	This is the right of an artist or company to be recognised and aid as the creator of their work.
41	Extortion	Making people pay money by using threats or blackmail.
42	Biometric Testing	His uses unique body characteristics like fingerprints or eye patterns to restrict access to date, places an buildings.
43	Neighbourhood Watch	A local committee of people who raise awareness about crime and encourage neighbours to keep an eye on each others' property.
44	Police Community Support Officer	Work with police officers and have some, but not all, of their responsibilities.
45	Vigilance	To keep a watchful eye for danger.
46	Active citizenship	People taking an active role in their community in order to improve it.
47	Abolished	Banned or made illegal.
48	Liberal	Open to new ideas.
49	Age of criminal responsibility	The age at which a person is judged to be mature enough to understand their actions. A person who has reached the age of criminal responsibility can be prosecuted and punished for their crimes.
50	Borstal	A prison for boys only.
51	Electronic Tagging	The court orders a person convicted of a crime to wear an electronic tag to monitor their movements.
52	Anti-Social Behaviour Order	A court places restrictions on what a person can do.
53	Community service	People convicted of minor offences are ordered to do supervised work to improve their local community.
54	Restorative justice	A criminal meets the victim of their crime to talk about what they have done and the impact it has had on others.
55	Conscription	Compulsive military service.
56	Conscientious Objectors	Men who refused to fight.
57	Pacifists/ absolutists	People who believe that fighting is wrong.
58	Auxiliary work	Support work
59	White feather	A symbol of cowardice.
60	Propaganda	Deliberate mass persuasion.
61	Peace Pledge Union	An organisation founded in the 1930's that opposed was and sought to find peaceful means to resolve conflicts around the world.
62	Pardon	To let a person off the punishment after they have been convicted of a crime.
63	Joint enterprise	When an accomplice to a crime is held jointly responsible for the crime. Christopher Craig was the accomplice of Derek Bentley but he couldn't be hanged as he was 16.
64	Diminished responsibility	Not being fully in control of your actions, for example, because of mental illness.

23

Whitechapel	
1	The lives of inhabitants of Whitechapel were tough and the policing of such an area was difficult too.

Key events	
2	**1829** – Founding of the Metropolitan Police.
3	**1840's** – Irish immigration to the East End
4	**1842** – A detective Department added to the MET.
5	**1878** – A CID Department set up.
6	**1873** - Great Depression – brought widespread unemployment and poverty.
7	**1875** – Artisan's Dwelling Act; a slum clearance programme. Peabody Estate opened in 1881.
8	**1880's** – A wave of Russian immigration as a Jew was blamed for the assassination of Tsar Alexander II.
9	**1885** – Dynamite Saturday – When the Fenians (Irish Nationalists) launched attacks on central London landmarks.
10	**1887** – 'Bloody Sunday' when the Metropolitan Police attempted to stop a demonstration in Trafalgar Square.
11	**1888** – Serial murders of Jack the Ripper.
12	**1890** – The Houses of the Working Classes Act opened the way for the new London County Council to begin housing development schemes to replace slums with mass low cost housing. The Public Health Amendment Act - gave more powers to local councils to improve toilets, paving, rubbish collection and other sanitary services.

Key Concepts	
13	**Living conditions** – The poor of Whitechapel were herded together in noisy and filthy courts. Prostitution, unemployment and poverty were common place.
14	**Statistics** – These can present historians with numerous problems.
15	**Anti Police feeling** – There was a feeling that the police favoured the middle and upper classes against the poor. Also police were expected to manage a variety of tasks that could be termed social work tasks.
16	**Attempts to improve living conditions** - Peabody Estate and Barnado's.

17	**Anti Jewish feeling** – By 1888, the Jewish population of parts of Whitechapel had grown to 95% of the total. Jewish settlers were resented as they tended to find work quickly, they would accept lower wages, they ran tailoring businesses on the sweatshop model, they worked Sundays and the religious and cultural rules about food and clothing made them stand out.
18	**Jack the Ripper** – The murderer of 5 prostitutes (Mary Ann Nichols, Annie Chapman, Elizabeth Stride, Catherine Eddowes, and Mary Jane Kelly) in the Whitechapel area in 1888 was known by this name. The cases highlighted the challenges and inadequacy of the existing police force and shone a spotlight on the troubled area of Whitechapel.

Key Words		
19	Whitechapel	A district in the East End of London. Ruled by gangs. Immigrant area. High levels of homelessness, poverty and crime.
20	Workhouse/ doss house	Offered a bed and food in return for hard labour.
21	Residuum	A criminal underclass born to steal, lie and rob.
22	Charles Booth	Shipping owner and led investigations into poverty
23	H Division of the Metropolitan Police	Had to investigate crime in Whitechapel
24	Home Secretary	Based in Westminster. He had little control over local police forces outside of London but the Metropolitan Police reported directly to him.
25	Watch Committee	A group of local politicians or law professionals set up to monitor the work of police forces.
26	Manpower	There were only 13.319 men in the MET in a population of just over 5 million. Only 1,383 were available for duty at any one time.
28	Penny Dreadful	A Victorian tabloid.
29	Sir Charles Warren	Metropolitan Police Commissioner from 1886. `
30	Metropolitan Police	Investigated crime in London and was controlled directly by the government. Did not patrol the City of London which had its own police force.
31	Sanitation	Conditions associated with public health, such as running water and sewerage systems.
32	Pollution	Wind carried smoke and stinking gas fumes through the maze like streets of the East End.
33	Rookeries	Overcrowded slum areas characterised by dirt, disease and crime.
34	Lodging house	Squalid accommodation which was rented for 8 hour sleeping shifts a day.
35	Barnado's	An attempt to prevent young people from going into the workhouse. It's motto was 'No Destitute Child Ever Refused Admission'.
36	Navvies	Men who did labouring jobs on canals, roads, railways and as dockers.
37	Special Branch	Designed to counter Irish terrorism and protect London from an Irish nationalist group called the Fenians.
38	Pogroms	A Russian word describing a government supported attack on the Jews.
39	Anarchy	A political movement that opposes all forms of organised government. Mikhail Bukanin was the leading anarchist of the time. Associated with Eastern Europeans.
40	Socialist	Someone who believes that poor people would get a better deal if the government nationalised (took over) important industries and services and ran them for the good of all – not for profit.
41	Capitalist	Someone who believes individuals should be free to own property and businesses and make a profit.
42	Blacklegging	Working during strikes.
43	Anti-semitism	Hatred against Jews.
44	Sensationalist	Describing events in a deliberately exaggerated style to shock and impress.
45	Satirical	Using humour or exaggeration to mock current affairs.
46	Stereotyping	Assuming all members of a group are alike – for example, looking similar, or having similar views.
47	Beat	The area the policeman is to patrol.
48	Prostitute	A person who offers sexual activity in return for a payment.
49	Brothel	A house where one or more prostitutes work.
50	Gin palace	Extravagant, richly decorated gas lit shop selling gin across the counter. Gin was a cheaply available, potent alcohol, popular with the poor. The light and splendour made a stark contract with the dark, dirty streets.
51	Opium den	A place where the drug opium was sold and smoked. Despite the name, the places could vary in appearance from an elegant bar room to a dark cellar.
52	Protection rackets	Gangs like the Bessarabian Tigers and the Odessians demanded protection money from small business owners.
53	Frederick Abberline	Inspector who led the investigation into the Ripper murders.
54	Lunatic asylum	The Victorian term for a psychiatric hospital.
55	Alibi	Proof that an accused person was in some other place at the time a crime was committed.
56	Post mortem	A detailed examination of a person's body to try and discover the cause of death.
57	Dissecting	Cutting an animal or human body into parts, usually as part of a scientific investigation.
58	Forensic	Using scientific methods and techniques to investigate crime.
59	Bertillon system	Combined physical measurements, photography and record keeping to identify repeat criminals.
60	Mug Shot	A head and shoulders photograph, typically taken of a person after arrest.
61	Whitechapel Vigilance Committee	Set up by businessmen due to the police's lack of progress in catching Jack the Ripper.

Key Ideas

Worship + Prayer	**Liturgical Worship** - This form of worship takes place in a church and is led by a priest - **Formal, set prayers** are read out - A more **traditional**, and formal form of worship **Non-liturgical Worship** - Also takes place in a church but **less formal** - No set prayers, instead people take turns to preach and read from the **Bible** - Can be modern and appealing to young people	**Prayer** - Prayer means **communicating with God**, either silently or out loud, sometimes through song - It is one of the most important parts of the spiritual life of a Christian and enables them to have a personal relationship with God - **Intercessions** are prayers made on behalf of others - **Thanksgiving** is when people pray to say thank you to God - **Set prayers** are written down and used in liturgical worship - **Informal prayer** is off-the-cuff and often used in non-liturgical worship
Eucharist + Baptism	**Eucharist** - Eucharist and baptism are both sacraments meaning special occasions in a Christian's life - In Eucharist a priest **consecrates** (blesses) **bread** and **wine** and the congregation then receives these - **Catholics** believe the Holy Spirit transforms the bread and wine into Jesus' body and blood - **Anglicans** believe the bread and wine are symbolic - Christians take part in this ritual in order to remember the **sacrifice** Jesus Christ made for them by being **crucified** on the cross *"For whenever you eat this bread and drink this cup, you proclaim the Lord's death until he comes"* – 1 Corinthians 11:26	**Infant Baptism** - This is a **formal** service welcoming a new child into the Christian church - **Holy water** is sprinkled over the baby's head - All Catholics baptise their children close to birth in order to ensure they go to heaven **Believer's Baptism** - A believer's baptism welcomes someone into the church who is **old enough** to decide themselves - They are submerged in a pool of **holy water** - They make promises to stay away from evil - **Baptists** only practice this type of baptism
Pilgrimage + Festivals	**Pilgrimage** - A pilgrimage is a journey made by a Christian to a holy site - Catholics go on pilgrimage to Lourdes where a vision of Mary was once seen, they believe the water there has healing effects	**Christmas** - Christmas celebrates the incarnation (birth) of Jesus Christ - Christians give gifts to commemorate the gift of God sending his own son to the world **Easter** - Easter celebrates the resurrection of Jesus Christ - Christians celebrate by saying *"he is risen"* and by eating chocolate eggs that represent new life
Evangelism + Church in the Community	Christians have a duty to **evangelise** (tell others of the word of God). An example is the **Alpha Course** which is an educational course that tells people more about the life of Jesus.	Christians also have a duty to **help others in the local community**. Two examples of this are **Street Pastors** who help drunk people at night and **Food Banks** that provide food to people in poverty.
Reconciliation	- Christians across the world play an important role in **reconciliation** (seeking to restore friendly relations after a conflict or falling out) - An example is **Coventry Cathedral** which was bombed during World War II but now seeks to create peace and reconciliation elsewhere in the world. **The World Council of Churches** also works to help after conflict. - In some places Christians face **persecution** where they are treated badly for their faith. Churches around the world work together to try and overcome this.	

Key Words

Believer's Baptism	Service where those old enough to decide for themselves are welcomed into the church
Christmas	Christian festival which celebrates the incarnation (birth) of Christ
Consecration	When a priest blesses bread and wine in order to use it for Eucharist
Easter	Christian festival which celebrates the resurrection of Christ
Eucharist	Service where bread and wine is received by Christians to remember Jesus' sacrifice
Evangelism	Spreading the word of God through action or speech
Infant Baptism	Service where babies are welcomed into the church with holy water
Liturgical Worship	Formal worship with set prayers, hymns and Bible readings
Mission	The calling to spread the word of God and evangelise
Non-liturgical worship	Worship with no set pattern, may have modern music and sermons
Persecution	Hostility and ill-treatment of a group of people
Pilgrimage	Going on a journey to visit a holy site
Prayer	A communication with God, can be private or during worship
Reconciliation	Restoring friendly relations after a conflict or falling out

5. Prophethood

✓ God has chosen people to bring the message of Islam to the people. These chosen people are called prophets.
✓ They are important because they provide communication between God and humans.
✓ In order for humans to live how God wants it is necessary for instructions to be delivered through prophets
✓ Around 124,000 prophets of which 25 are named in the Qur'an
✓ They are important role models as they were good people who lived according to God's will.

'Every community is sent a messenger'. Quran 10:47

Adam:

✓ First man on earth and first prophet of Islam
✓ Father of the human race so treated with great respect
✓ God created Hawwa (Eve) to stop Adam being lonely
✓ They were told not to eat from the tree in the middle of the garden but they did and so sin entered the world.
✓ Adam is important as God gave him understanding which he passed on through his descendants. God revealed to him the foods they can eat, how to repent for wrong doing and how to bury the dead.

'He taught Adam the names [of things]'. Quran 2:31

Ibrahim:

✓ Fulfilled all the tests and commands God gave him.
✓ Was promised to be the father of all nations.
✓ Demanded people to stop idol worship. Was supposed to be burnt alive but survived (miracle) so people began to follow God.
✓ Re-built the Ka'aba after it was destroyed.
✓ Important as he stopped idol worship, gave the message of one God and rebuilt the Ka'aba

'God took Abraham as a friend'. Qur'an 4:125

8. Holy Book - The Quran:

• The Qur'an is the direct word of God, which was revealed to Muhammad over a period of around 22 years.
• Contains the foundation of every believer's faith.
• Is most sacred of all the holy books.
• Is infallible (without error and non-changing)
• Contains a mixture of historical accounts and advice on how to follow God.
• There are 114 surahs (chapters) in total.
• Those who can recite the Qur'an from memory are given the title 'Hafiz'.

'This is the Scripture in which there is no doubt, containing guidance for those who are mindful of God'. Qur'an 2:2

3. Angels

Muslims believe angels bring the words of God to the prophets. They have no free will and are made from elements of light. Their roles are:

• Messengers
• Guardians of people
• Recording actions of humans
• An angel of death
• Purify hearts
• Bring natural disasters

'Jibril:
• Archangel
• Relayed the Qur'an to Muhammad
• Guided Muhammad through his entire life

• Mika'il:
• Archangel
• Angel of Mercy
• Responsible for sending rain, thunder and lightning

1. The Oneness of God
• One of the most important beliefs for Muslims is Tawhid (the belief that there is only one God).
• This belief is repeated daily in the Shahadah (one of the five pillars).
• A Muslim's most important duty is to declare faith in one God.
• God is unique. No one can picture God which is why there isn't any pictures or statues of Him in Islam.
• God is the only creator and controller of everything.
• Muslims believe they should accept whatever happens as the will of God (supremacy of God's will)
'Say, He is God the One, God the eternal'. Quran 112:1-4

4. Life after death

-Death isn't the end it is a new stage of life called Akhirah.
-After death you lie in the grave waiting for the day of Judgment this is called Barzakh.
-Angels are sent to question them about their life. If they are good and honest they will be rewarded if they are bad an untruthful they will be punished.

The Day of Judgement

✓ When God's purpose for the world has been fulfilled He will destroy it
✓ The world will be transformed into a new world
✓ Everyone who has ever lived will be resurrected and judged by God.
✓ If people are given the book of deeds in their right hands they will go to heaven, if it is in their left they will go to hell.

Heaven and Hell
Heaven:
• Described as the gardens of happiness
• It is a reward for faith and good deeds

'A reward for what they used to do'. Quran 56:24
Hell:
• Described as a place of fire and great torment
• Punishment for those who reject God and do evil

'They will dwell amid scorching wind and scalding water in the shadow of black smoke, neither cool nor refreshing'. Quran 56:42-44

2. Nature of Allah
Muslims believe God is:
-Immanent (present in earth and involved with humanity)
-Transcendent (outside life and beyond understanding)
-Omnipotent (all-powerful)
-Beneficent (all-loving and all-good)
-Merciful (compassionate and forgiving)
-Just (fair and judges humans actions)
'There is no God but Him, the Creator of all things'. Qur'an 6:102
'He is with you wherever you are'. Qur'an 57:4

6. Predestination

Sunni:
- Believe God has already determined everything that will happen in the universe.
- Linked to Sunni belief of the supremacy of God's will.
- Doesn't mean that people have no choice about how they behave.

'Only what God has decreed will happen to us'. Qur'an 9:51

Shi'a:
- Believe that God knows everything that is going to happen, but does not decide what is going to happen.
- Shi'a Muslims do not see conflict between supremacy of God's will and human freed to act freely and make choices as God knows what you will choose but does not choose for you.

'God does not change the condition of a people [for the worse0 unless they change what is in themselves'. Qur'an 13:11

7. Muhammad

- Muhammad received the final revelation of Islam from God.
- Known as the last and greatest prophet.
- Religious from an early age and would go into the mountains to a cave to pray and meditate.
- In 610CE on Mount Hira received his first revelation from God through the angel Jibril.
- For more than 20 years received further revelations, which were combined together to make the Qur'an.
- 3 years after the first revelation began preaching the words he received and continued to do it for the rest of his life.
- He challenged the people of Makkah to give up their sinful ways (cheating, drinking, gambling and idol worshipping).
- Was persecuted by the leaders of Makkah and so fled from the city in 622CE. This is known as the **Hijrah (departure)** and marks the beginning of the **Ummah (worldwide community).**
- Before the departure Muhammad was taken on an amazing experience where Jibril took him to Jerusalem. Muhammad was carried on a horse like creature with wings. From Jerusalem he ascended to heaven and saw signs of Gods and spoke to prophets such a Isa. This is where he was told to pray 5 times a day. This journey is known as the **Night Journey.**
- **'Muhammad is not the father of any one of you men; he is God's Messenger and the seal of prophets: God knows everything'. Qur'an 33:40**

10. The Imamate

- When Muhammad died it wasn't clear who should succeed him.
- Muslims split in to two groups **Sunni and Shi'a.**
- **Sunni's** elected Abu Bakr as their first Caliph (leader, teacher).
- **Shi'a** believe that Muhammad named his cousin Ali as his successor so he became the first Imam.
- For Shi'as it was important that Ali took control because they believe that Muhammad appointed him under divine instruction and leadership should follow in the family line.
- When Ali died his son became the Imam. Each Imam that followed was the son of the previous Imam.
- The **Twelver Branch of Shi'a Islam** believe that there have been twelve Imams in total. The last one they believe has been kept alive by God and is hidden somewhere on earth who will return to bring peace, justice and equality.
- The **Twelver's** believe that the Imams not only rule but are able to interpret the Qur'an and Shari'ah Law
- They believe that the receiving of God's law was through Muhammad but guiding people comes through the Imams.
- **The Imamate** is the name given to the appointment of the Imams and is important because people need divine guidance to know how to live correctly.

9. Sunni and Shi'a Islam

Sunni:
- When Muhammad died the majority of Muslims thought that **only** the Qur'an and Sunnah had the authority to guide the beliefs and behaviour of Muslims.
- They elected Caliphs to act on behalf of God and Muhammad. They do not make the laws; they just enforce them.
- These Muslims became known as Sunni (meaning followers of the Sunnah).

Shi'a:
- Another group believed that Muhammad named his cousin Ali as his successor.
- Ali and his supporters thought that the true leader had to be a descendent of Muhammad and chosen by God.
- Ali's claims to be leader were ignored by many Muslims.
- Over time a split developed between those who followed Ali (the Shi'as) and the Sunnis.
- Shi'as have their own interpretations of the Law and only accept sayings of Muhammad which have been passed down through Ali or his followers.

Six Articles of Faith in Sunni Islam:
- There is only one God Allah.
- Angels communicate the message of God to humans.
- The Qur'an is the most important writing and the highest authority in Islam.
- Muhammad is the most important prophet of God.
- The Day of Judgement is when all humanity will be judged by God and sent to paradise or hell.
- The supremacy of God's will means that God already know but also makes happen everything that occurs in the world and in human lives.

The Five Roots of 'Usul ad-Din' in Shi'a Islam:
1. Tawhid means that God is one.
2. Prophethood means accepting that Muhammad is God's last prophet.
3. God is just and wise and cannot do wrong. He holds humans accountable for their actions.
4. The Imamate means accepting that twelve Imams are the leader of Islam and guard the truth of the religion without error.
5. After death you will be resurrected and judged by God.

What is respiration?

- When we breathe in, air moves from mouth and nose down into the trachea.
- The trachea carries air from the throat to the lungs
- The inner surface of the trachea is covered in tiny hairs called cilia, which catch particles of dust, which are then removed when coughing.

- The trachea divides into two tubes called bronchi, one entering the left lung and the other entering the right lung.
- Once inside the lung the bronchi splits several ways, forming smaller and smaller bronchi.
- The small bronchi then divide into bronchioles which are tiny (diameter of less than 1mm).
- At the end of the bronchioles are the openings to the alveoli.
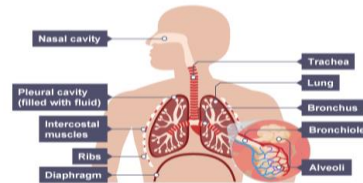
- There are usually several alveoli coming from one bronchiole, forming a clump which often looks like a bunch of grapes.
- The function of the alveoli is the exchange of gases.
- Capillaries that carry the blood surround the alveoli.
- The exchange of oxygen from the lungs into the blood and the exchange of carbon dioxide in the blood from these capillaries occur through the walls of the alveoli.

Breathing Mechanism

Breathing is a two way process – inspiration and expiration.

Inspiration – inhaling/intake of air into the lungs which _increases_ the volume of the chest cavity (chest puffs out!)

Expiration – exhale/expulsion of air from the lungs _decreasing_ volume of chest cavity.

Both inspiration and expiration use the _diaphragm_ and _intercostal muscles_. When the muscles contract they cause the cavity to increase in size and therefore in volume.

Inspiration

During inspiration – the breathing muscles contract

Contraction of the **diaphragm** causes it to flatten which makes the chest cavity bigger.

Contraction of the **intercostal muscles** causes the ribs to rise, thus also increasing size of chest cavity.

When the chest expands, its volume increases, reducing the pressure in the chest and air is drawn into the lungs.

Air goes from high pressure outside body, to low pressure inside lungs.

Exspiration

During expiration– the breathing muscles relax

The diaphragm curves and returns to its dome shape.

The weight of the ribs causes them to go back to where they were and this reduces the volume in the chest.

Reduction of the chest cavity increases the pressure of the air in the lungs and causes is to exhale.

The breathing muscles then relax.

Keywords:

Diaphragm	Increase
Intercostal muscles	Decrease
Relax	Ribs
Contract	Pressure
Volume	
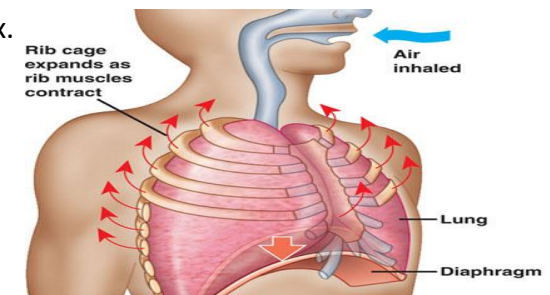
Blood Vessels
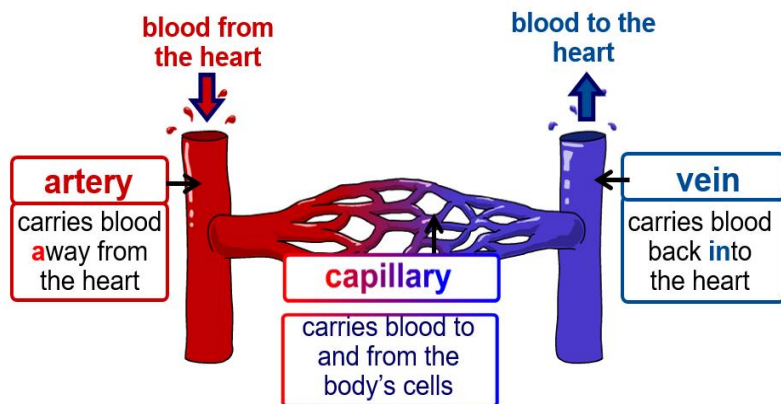
Function of the Artery
- Arteries carry OXYGENATED blood **AWAY** from the heart.
- Blood in artery is under the **highest pressure**
- They have **muscular walls** that can **adjust their diameter (lumen)** to increase or decrease blood flow
- **Vasodilation** – increasing size to allow more blood through (happens during exercise so more blood can get to muscles)
- **Vasoconstriction** – decrease in size to allow less blood flow through.

Function of the Vein
- Veins carry DEOXYGENATED blood **TOWARDS** the heart.
- They have much thinner walls compared with arteries because blood pressure is much lower.
- They have a large internal diameter (lumen).
- Veins have valves to prevent blood flowing backwards.

Function of the Capillaries

- Very thin blood vessels that join arteries (carrying blood away from the heart) and veins (which carry blood back to the heart)
- The thin walls of the capillaries allow for gases to be exchanged – oxygen to pass through to the blood.
- Nutrients and waste products can also diffuse from the capillaries into the blood.

The HEART

The STRUCTURE of the Heart

The four chambers of the heart have special names:
An **upper** chamber is called an **atrium** (plural: atria).
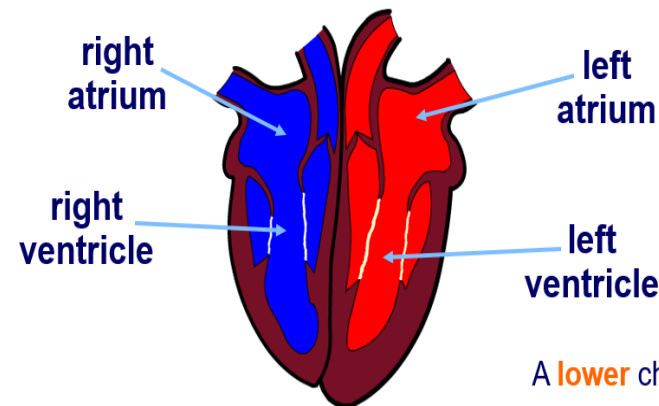
A **lower** chamber is called a **ventricle**.

The Cardiac Cycle and Pathway of Blood

There are two phases of the cardiac cycle
Diastole – heart ventricles are relaxed and the heart fills with blood
Systole – the ventricles contract and eject the blood pumping it to the arteries.
One cardiac cycle is completed when the heart fills with blood and the blood is pumped out of the heart.
Valves are found in the heart, pressure forces them open and close in order to prevent backflow – blood always travels in one direction.

Skill and Ability

Skills – are learned and, when mastered, are consistently done in a way that looks good and shows good technique.

Abilities – are inherited from parents. They are known as traits which remain fairly stable throughout life. Abilities can help performers learn new skills quicker.

Do you have natural ability in a sport?

Classification of Skills

Skills are put into groups/categories – Skill Classification

The **basic** to **complex** continuum
The **Open** to **closed** continuum
The **Self paced** to **externally paced** continuum
The **gross** to **fine** continuum.

The Basic to Complex Continuum

How do you decide if someone has basic or complex skills?
Ask the following questions:
Who is the skill being taught to? A beginner or more experienced performer?
How much decision making is involved – do you have to use high level thinking?
Are the movements easy to carry out without much experience?
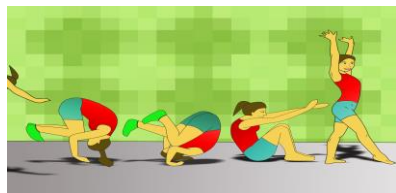
A – A forward Roll

B – A double somersault

The Open to Closed Continuum

To determine whether something is an open or a closed skill, it is all dependent on the **environment.**

Open Skill – A skill which is performed in a certain way to deal with a changing or unstable environment, e.g. to outwit an opponent.

Closed Skill – A skill which is not affected by the environment or performers within it. It tends to be done the same way each time.

A – Football Pass

B - Penalty

The self-paced to externally-paced Continuum

Self-paced Skill – The skill is started when the performer decides to start it. The speed, rate and pace of the skill is controlled by the performer.

Externally-paced Skill – The skill is started because of an external factor. The speed, rate and pace of the skill is controlled by external factors, e.g. opponent.

1	Algorithms	understand what an algorithm is, what algorithms are used
		for and be able to interpret algorithms (flowcharts, pseudocode, written descriptions, program code)
2	Flowcharts	understand how to create an algorithm to solve a particular problem, making use of programming constructs (sequence, selection, iteration) and using appropriate conventions (flowchart, pseudocode, written description, draft program code)
3	Pseudo code	understand the purpose of a given algorithm and how an algorithm works
4	Interpreting Algorithms	understand how to determine the correct output of an algorithm for a given set of data
5	Errors in algorithms	understand how to code an algorithm in a high-level language
6		understand how the choice of algorithm is influenced by the data structures and data values that need to be manipulated
7	Programming	be able to write programs in a high-level programming language
8	Python	understand the benefit of producing programs that are easy to read and be able to use techniques (comments, descriptive names (variables, constants, subprograms), indentation) to improve readability and to explain how the code works
9	Errors in code	be able to differentiate between types of error in programs (logic, syntax, runtime)
10	Trace Table	be able to determine what value a variable will hold at a given point in a program (trace table)

Python -> English	
`print("hello!")`	Prints a value on screen (in this case, hello!)
`input("")`	Inputs a value into the computer.
`x = input("")`	Inputs a value and stores it into the variable x.
`x = int(input(""))`	Inputs a value into x, whilst also making it into an integer.
`answer = x + y`	Saves the result of x and y added together in a variable named answer.
`print(str(x))`	Prints the variable x, but converts it into a string first.
`print("Hello", "World")`	Prints the two strings concatenated with a space between. This code would output "Hello World".
`age = 12` `print("Age: " + str(age))`	The + joins together two variables when printing. Str has to be used to cast age to be a string. This code will output "Age: 12".
`if name == "Fred":`	Decides whether the variable 'name' has a value which is equal to 'Fred'.
`else:`	The other option if the conditions for an if statement are not met (eg. name = 'Bob' when it should be Fred)
`elif name == "Tim":`	elif (short for else if) is for when the first if condition is not met, but you want to specify another option.
`# COMMENT`	# is used to make comments in code — any line which starts with a # will be ignored when the program runs. They are used to describe the code to a programmer.
`for i in range(0,10):` `    # WRITE CODE HERE`	Repeats any code indented after this line a set number of times, in this case, 10.
`while x < 10:` `    # WRITE CODE HERE`	Repeats any code indented after this line until a condition is met, in this case x becoming equal to or greater than 10.
`list = ["",""]`	Creates a variable and makes it an array — a list which can store many values.

```
def hello(name):
        print("Hello " + name + " nice to meet you")

hello("Alice")
hello("Bob")
hello("Sue")
```

Python -> English

Code	Description
print("hello!")	Prints a value on screen (in this case, hello!)
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list = ["",""]	Creates a variable and makes it an array – a list which can store many values.

Data types

Data Type	This indicates how the data will be stored. The most common data types are integer, string, and float/real.	Casting code
String	A combination of letters, numbers or characters. (eg, Hello, WR10 1XA)	str(x)
Integer	A whole number. (eg. 1, 189)	int(x)
Float/Real	A decimal number, not a whole number. (eg. 3.14, -26.9)	float(x)
Boolean	1 of 2 values. (eg. True, False, Yes.	bool(x)

Arithmetic operators

Operation	Symbol	Example	Output
Addition	+	2 + 10	12
Subtraction	-	9 – 6	3
Multiplication	*	5 * 4	20
Division	/	5 / 2	2.5
Floor Division	//	7 // 2	3
Remainder	%	7 % 3	1

Comparative operators

Symbol	Meaning
==	Equal to
!=	Not equal to (or different to)
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to
MOD	Modulus e.g. 12MOD5 gives 2
DIV	Quotient e.g. 17DIV5 gives 3
^	Exponentiation e.g. 3^4 gives 81

```
num1 = float(input("Enter the first
number: "))
num2 = float(input("Enter the second
number: "))
if num1 > num2:
    print (num1, " is greater than ",
num2)
if num1 < num2:
    print (num2, " is greater than",
num1)
if num1 == num2:
    print (num1, "is equal to", num2)
```

Input(s)	Process(es)	Output(s)	Decision(s)
Staff Name Staff Monthly sales (x12)	Calculate the total sales (monthly sales added together) Calculate the average sales (total divided by 12)	If they get a bonus or not	Whether they have entered 12 monthly sales Whether the average is enough to get a bonus

Validation Type	Where	Reason
Presence check	Sales	To make sure that each time the number of sales for each month is entered rather than having blank entries.
Presence check	Name	To make sure that a staff member's name is entered
Format check	Sales	To make sure that the sales are a numerical value

Key vocab	
Python	A programming language used to write programs.
Shell	The place where code is run.
Code editor	The place where code is written.
Programming	The process of writing computer programs.
Algorithm	A set of rules/instructions to be followed by a computer system.
Flowchart	A visual method of planning an algorithm using symbols.
Pseudocode	A language similar to English which is used to plan algorithms.
Code	The instructions that a program uses.
Sequence	Parts of the code that run in order and the pathway of the program reads and runs very line in order.
Selection	Selects a pathways through the code based on whether a condition is true.
Iteration	Code is repeated (looped), either while something is true or for a number of times.
Variable	A value that will change whilst the program is executed. (eg. temperature, speed)
Function	A collection of code that works outside the main program. These are created to speed up programming. They can be called from a single line of code at any time.
Comparative Operator	A symbol used to compare multiple values.
Arithmetic operator	A symbol used to manipulate numerical values.
Syntax	The punctuation/way that code has to be written so that the computer can understand it. Each programming language has its own syntax.
Syntax error	An error produced when the computer cannot understand the code which has been written.
Logic error	An error produced when a program is understood by the computer but does not perform as the programmer expects.

Addition example code

```
number1 = int(input("Input the first number :"))
number2 = int(input("Input the second number :"))
answer = number1 + number2
print("The answer is " + str(answer))
```

Finding errors – follow these steps

- Have you checked that you have closed all brackets correctly?
- Have you checked that you have closed all quotes correctly?
- Are your variable names spelt in the same way consistently? Remember that Python is case sensitive
- Have you remembered to use commas to separate the variables inside print?
- Have you used quotes around strings which you want to print out word for word?
- Have you used int or float on number inputs?

WHY comments IN CODE IS IMPORTANT
Well commented functions/logics are helpful to other programmers to understand the code better.
If you see/edit code later, comments may help you to memorize your logic that you have written while writing that code.

Selection example code

```
fav_num = int(input("Pick a number between 1 & 10..."))

if(fav_num == 7):
    print("Good guess!")
elif(fav_num < 7):
    print("Too low!")
else:
    print("Too high!")
```

```
if entry == "a"
then
    print("You
selected A")
elseif
entry=="b"
then
    print("You
selected B")

else

print("Unreco
gnised
selection")
endif

switch entry:
    case "A":

print("You
selected A")
    case "B":

print("You
selected B")
    default:

print("Unreco
gnised
selection")

endswitch
```

Selection will be carried out with if/else and switch/case. In the example the pseudocode is checking the input and returning a message based upon the specific input required, the else block is used as a catch for any unexpected input which allows the code to degrade gracefully.

The switch/case method works in the same way.

WHY INDENTING IN CODE IS IMPORTANT
- Easier to read
- Easier to understand
- Easier to modify
- Easier to maintain
- Easier to enhance

Free online training
https://www.sololearn.com/

Free download for home
https://www.python.org/about/gettingstarted
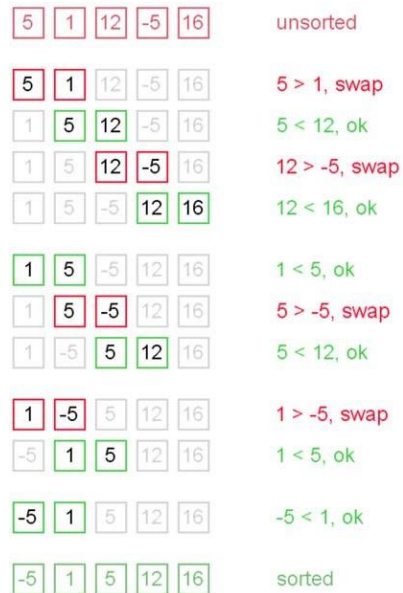
Use links provided to understand how to apply method too.

https://www.geeksforgeeks.org/bubble-sort/

https://www.geeksforgeeks.org/insertion-sort/

https://www.geeksforgeeks.org/merge-sort/

Figure 1: bubble sort

Figure 2: insertion sort

Figure 1: merge sort

Bubble sort Works by repeatedly going through the list to be sorted, comparing each pair of adjacent elements. If the elements are in the wrong order they are swapped, else they are left in position.

Insertion sort Sorts data one element at a time. The algorithm takes one data item from the list and places it in the correct location in the list. This process is repeated until there are no more unsorted items in the list. More efficient than bubble sort.

Merge sort This is a two-stage sort. Firstly the list is split in half into sub lists repeatedly. The algorithm stops splitting the lists when each list has only 1 element in it. The second stage involves repeatedly merging the lists in order until there is only one sub list remaining.

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.

Speaking Stage Directions
This is when the actors narrate the stage directions prior to acting them out. For example the actor will say "Daniel sat down angrily" and then he will sit angrily.

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	Physical Theatre Key Words
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.	**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	Body Language Key Word
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.	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.

Political Message
Brechtian plays have a political message.

Narration
Narration is used to remind the audience that what they're watching is a presentation of a story. Sometimes the narrator will tell us what happens in the story before it has happened. This is a good way of making sure that we don't become emotionally involved in the action to come as we already know the outcome. There are two types of narration:
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".

Speaking the Stage Directions
This device was used by Brecht more frequently in rehearsal than performance. It helps distance the actor from the character they're playing. It also reminds the audience that they're watching a play and forces them to study the actions of a character in objective detail.

Breaking the Fourth Wall
The fourth wall is an invisible, imagined wall that separates the actors from the audience. While the audience can see through this "wall", the convention assumes, the actors act as if they cannot. When an actor uses Direct Address (i.e. speaks directly to the audience either in or out of role), this is called Breaking the Fourth Wall.

Direct Address and Step Out
Speaking directly to the audience breaks the fourth wall and destroys any illusion of reality.

Placards
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. The information doesn't just comment upon the action but deepens our understanding of it. For example, a married couple are arguing and the wife is very upset. If the actress held up a placard saying 'I'm miserable' that wouldn't tell us anything about the character that we didn't already know. However, if her placard said 'I'm having an affair' or 'I've never loved him' the audience would be forced to consider other aspects of their relationship. Placards can also help the audience to consider wider contexts, for example, the wife could hold up a placard that says facts about divorce "50% of married couples apply for divorce" Placards can also be used to identify changes the movement from one episode to the next.

Symbolic Props
Often one item can be used in a variety of ways. A suitcase might become a desk, or a car door or a bomb.

Episodes
Brecht called scenes 'episodes', with each scene being relatively self-contained.

Minimal set / costume / props
Set, costume and props are all kept simple and representational. Elaborate costumes might mean that the sense of theatre, of pretending to be something else, was lost.

Shock Tactics
Brecht would often try to shock the audience so that they would really consider his political message.

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.

Stylised Lighting
Brecht believed in keeping lighting simple as he didn't want the production values to overshadow the message of the work. He believed in using harsh white light as this illuminates the truth. However, many modern productions do use lighting effects. The important thing is that the audience still see the theatre, so often they will see production personnel, such as backstage crew, in action on the stage rather than hidden.

Spass
Spass literally translates as 'fun'. Brecht wanted to make his audience think. He realised that while we are laughing we are also thinking. Brechtian work isn't boring and it's definitely not always serious either. Even if the message itself is serious Brecht realised that comedy could be an excellent way of engaging the audience and forcing them to think about issues. Spass was also used to break the tension. For example, a very serious work addressing suicide might break the action by creating a parody of an American advert: Are you feeling low? Depressed? Think there's no way out? Then you need new 'End it All'...The poor taste of this would be shocking for an audience. But it actually highlights the pain of depression through contrast and black comedy. The audience will laugh and then question why they laughed.

Gestus
Gestus, another Brechtian technique, is a clear character gesture or movement used by the actor that captures a moment or attitude rather than delving into emotion. So every gesture was important and exaggerated. Brecht didn't want the actors to be the character onstage, only to show them as a type of person. For example, the boss who is corrupt and smoking a fat cigar as his workers starve is representative of every boss who profits through the exploitation of others. For this reason Brecht will often refer to his characters by archetypal names, such as 'The Soldier' or 'The Girl'. So we judge the character and their situation, rather than just empathising with them. Gestus is also gesture with social comment. For example, a soldier saluting as he marches across a stage is a gesture. But if he was saluting as he marched over a stage strewn with dead bodies, it would be Gestus as a social comment about the type of person he represents.

Song, Nursery Rhyme, Dance and Movement
This reminds the audience of the fact they are watching a play. Often in Brechtian theatre the style of the music and the lyrics jar, they don't seem to fit together in style. This distances the audience further. Brecht used melodies that are upbeat and joyous, yet the lyrics are sinister and dark (example 'Mack the Knife' from The Threepenny Opera. Brecht also used well known nursery rhymes and changed the lyrics to deepen the audience's thoughts and have an impact on how they felt about certain political views.

Ensemble
All members of the cast working together on behalf of the play, rather than emphasising individual actors or characters.

KEYWORDS

1- XLR: A connector used for microphones or other audio signals, most commonly with three pins although some have more or less. (**Male** have 3 pins; **Female** have 3 holes – they can be connected together).

2- Jack: A type of plug/connector with eiter a Tip and Sleeve (TS) or Tip, Ring and Sleeve (TRS). Commonly available in three sizes: 6mm (1/4 inch), 3.5mm (mini-jack) and 2.5mm.

3-Phono (RCA): They have two unbalanced wires and are often twinned for use as left and right. Right is usually red and left can be any colour, but usually grey or white.

4-DIN: Can have a wide range of pin patterns. Most commonly used for MIDI connections have a semicircle of pins, usually five.

5-Y Lead: A lead which separates the two signal wires coming from a TRS jack, and send them to two other mono connectors.

6 – Adapters: Used for when you don't have a suitable cable to convert one connector to another connector.

7-balanced cable: Has a separate earth wire with the two signal wires.

8-unbalanced cable: A type of connection or cable with two signal wires only, one of which is also connected to earth (ground).

9-Dynamic: A dynamic microphone generates its own electrical signal by vibrating a coil of wire in a magnetic field.

10-Capacitor: A microphone in which the diaphragm forms one side of a capacitor. When the diaphragm vibrates, the stored charge in the capacitor is

11-Directionality: The pick-up pattern of a microphone, dependent on the shape of the microphone bosy and the construction of its capsule.

12- Omnidirectional: All directions – picks up sound well from all around it.

13-Figure of eight: Picks up sound from the front and rear, but very little from the sides.

14-Cardiod: Picks up sound well from the front, some from the sides and much less from behind.

15- Hypercardioid: Similar to cardiod but more focused to the front and has some side rejection.

16-Spill: When you pick up other instruments other than the one you are trying to record, sometimes also known as bleed.

1. Match the pictures with the terms – some of them combine 2 of the terms.
2. Try to be as detailed as possible.
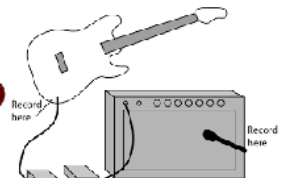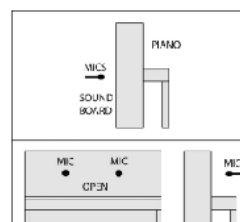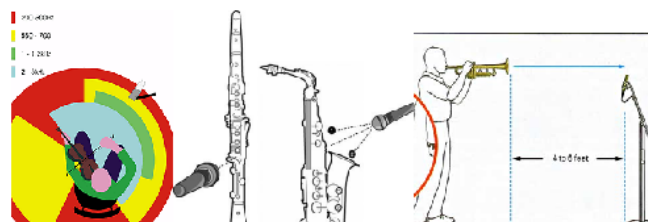
KEYWORDS

Mixer: A device that combines and controls audio signals from other equipment.

Mix Bus: A bus is a path along which an audio signal can be routed. Used to combine different inputs before sending them to the main output.

Pan: The placement of sounds from left to right, usually achieved by distributing signal between left and right speakers (creating stereo sound)

Gain: A measure of amplification. A gain of 10 means the output will be 10 times stronger than the input.

Foldback: A speaker used to help instrumentalists hear themselves or the mix, sometimes called a **monitor**.

Auxiliary: 'extra' – an additional signal path. They are '**pre**' (before) fader or '**post**' (after) fader.

17- EQ (Equalisation): The process of filtering, amplifying or attenuating a range of frequencies in an audio signal. Usually in ranges of frequency (bands) such as Bass, Mid and High.

17- Channel: Where the input of a single instrument/voice is mixed.

17- Fader: A linear or rotary control, most commonly found on a mixer to adjust the volume of each channel.

17- DI Box: A device that matches the audio signal from a guitar or other instrument to a microphone input on a mixer.

Audio interface: A device enabling analog audio equipment to connect to a computer, consisting of analog-to-digital and digital-to-analog convertors.
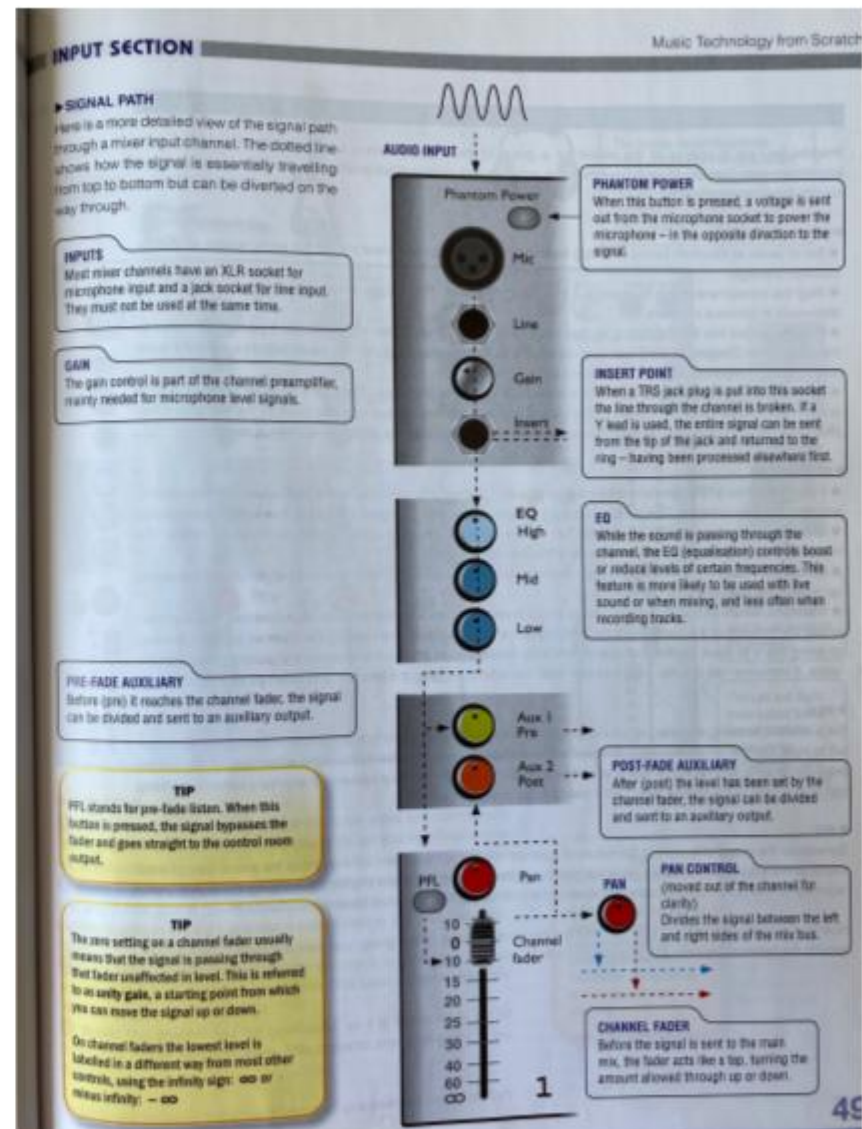
Factors that influenced its inception	Significant artists/bands/producers	Important recordings/performances/events
• Reggae emerged in Jamaica from its predecessors Ska and Rocksteady and was performed at a slower tempo with a more laid-back feel. • After Jamaica's independence, people flocked from the countryside to Kingston, seeking work and settling into shanty towns. With high unemployment, Jamaican 'rude boys' (disaffected youths on the street) arose and became regular subject matter. • The roots Reggae style incorporated elements of the Rastafarian religion into the lyrics, with a political message concerning the plight of the underprivileged Jamaican. • Engineer-producers such as King Tubby and Lee 'Scratch' Perry worked with 'dub' recording techniques – creating dub versions of songs which were also later used to 'toast' over.	**Duke Reid & Coxsone Dodd**: producers who helped to slow the tempo of ska, to form rock steady. **Toots & the Maytals**: pioneered the Reggae sound **Bob Marley and The Wailers**: Became the defining sound of roots Reggae (Bob Marley, Bunny Wailer & Peter Tosh). Helped Reggae to reach a global audience. **Jimmy Cliff**: gained international fame as the star of the movie 'The Harder They Come '. **Chris Blackwell**: Founded Island Records in Jamaica but relocated to London. **Clement Dodd**: Studio One producer, recorded The Wailers 1st track 'Simmer Down'. **UB40**: British Reggae Band, gave Reggae a fresher sound.	1962: Jamaica became independent. **'My boy lollipop, Millie Small (1964)**: early reggae success in British charts **'Rudy a message to you', Dandy (1967)** – example of a 'rudeboy' song. **'Do the reggay', The Maytals (1968)**: early use of the term 'reggae. **The Israelites, Desmond Dekker (1969)** **'Wonderful World, Beautiful People', Jimmy Cliff (1969)** 1972: Blackwell signed Bob Marley & the Wailers. 1973: The Harder they come (film) was released **'No Woman no Cry', Bob Marley (1974)** **'I shot the Sheriff', Eric Clapton (1974)**: Cover of Marley's song which was a big hit and inspired many listeners to look up Marley's music. **Freedom Fighters, Delroy Washington (1976)** **'One Love', Bob Marley (1977)** 1978: Bob Marley brings 2 opposing leaders together at 'One Love' concert in a bid to encourage peace.

Imagery & fashion associated with the style	Musical Features
Associated fashions included the colours of the Jamaican flag: green, gold, red and black – each colour symbolizing a different thing, associated with the Rastafarian religion. Dreadlocks are also common features 	Slow tempo with a laid-back feel. The bass guitar and percussion are brought to the foreground, and guitar and keyboards sent back in the mix, exchanging the traditional roles of these instruments. A Reggae bassline is very melodic and often the defining feature. It normally avoids the first beat of the bar. Drums also avoid beat 1, preferring to stress beat 3. The guitar mostly plays chords on the offbeat, beats 2 and 4. Piano & organ also play on the offbeat. Horns sometimes add countermelodies and would normally be made up of Sax, Trumpet and Trombone.

A. Key Terms

Keyword	Description
7. 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
2. Weight	The thickness of a mark or brushstroke
3. To **Block in**	**to BLOCK IN**: to fill in an empty area in an image with a certain colour before adding fine details such as shadows and highlights.
4. Composition	how objects or figures are arranged in the frame of an image
5. Contemporary	Living or occurring at the same time.
6. Negative Space	When drawing shapes, you must consider the size and position as well as the shape of the area around it. The shapes created in the spaces between shapes are referred to as **negative space**.
7. Geometric	characterized by or decorated with regular lines and shapes. "a geometric pattern"

B. Pattern
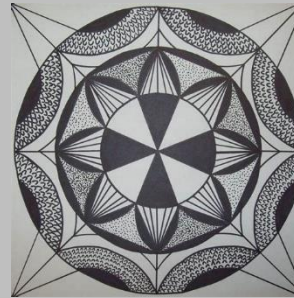
B1: Radial Symmetry
A pattern that rotates around a central axis.
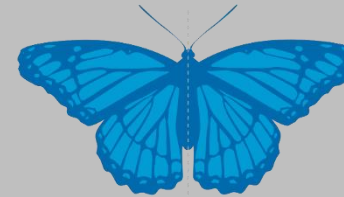
B2: Symmetry
the quality of being made up of exactly similar parts facing each other or around an axis.
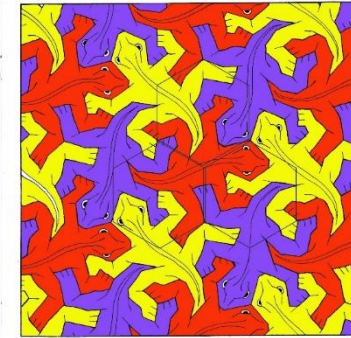
B3: Tesselation
A tessellation of a flat surface is the tiling of a plane using one or more geometric shapes, called tiles, with no overlaps and no gaps.

C. Painting techniques

	Key Words: Painting Techniques and Equipment	
C1	Flat painting	The use of flat colours (no tints or tones blended in) to give each shape a clear bold finish.
C2	Layers	Additional layers of paint are added to make the painted shapes flatter in colour (no brush marks showing)
C3	Palette	A flat container with wells to mix different coloured paint in.
C4	Paint brush	A hand held painting tool to apply paint to any surface.
C5	Water pot	A plastic container to hold water for cleaning brushes.

①

Quick test

1. Explain what food miles are.
2. Why is it important that the origins of food can be traced?
3. Which two gases contribute to global warming?
4. What is the outer skin on the wheat grain called?
5. What type of flour is need to make bread?
6. Give two examples of recipes that depend on gelation of ingredients.
7. Give two examples of recipes that depend on coagulation of egg protein
8. Give one example of a recipe that depends on the denaturation of egg protein

Nutritional needs of people at different life stages

②

Babies and Toddlers
- Milk only for first 4-6 months
- Weaning occurs from 6 months – introduce a wide variety of textures and colours
- Avoid nuts (choking hazard), salt and sugar

③

Pre-school children
- Balanced diet needed in line with Eatwell Guide from 12 months
- High needs for energy and protein due to rapid growth and constant movement
- Full fat dairy products should be consumed
- Salt and sugar should be avoided

④

Children
- Balanced diet needed – in line with Eatwell Guide from 12 months
- High needs for energy and protein due to rapid growth and constant movement
- 5-a-day is recommended

⑤

Teenagers
Increased needs for iron in teenage girls due to menstruation
Calcium intake & vitamin D are really important to ensure Peak Bone Mass is reached – setting up bone health for life
Many UK teenagers are lacking in calcium, iron and vitamin A.

⑥

Adults
No more growth means less energy is needed for adults than teenagers
Well balanced diet modelled on the Eatwell Guide essential.
Many UK adults eat too much fat, too much salt and not enough fruit and vegetables.

⑦

Elderly
Sedentary older people have reduced energy requirements. Calcium and vitamin D are very important to prevent osteoporosis.
Some elderly people can be at risk of Vitamin D deficiency
May have issues getting access to food due to mobility issues
May also be at risk of lack of variety of nutrients due to poor absorption.

⑧

Pregnancy & Lactation
Because the body becomes more efficient at absorption during pregnancy, normal nutritional requirements apply until the last third of pregnancy, when some extra energy and calcium is required. Pregnant and lactating ladies should eat a varied diet rich in fresh fruit and vegetables and wholegrains (in line with the Eatwell Guide). There are some foods to avoid:
- Unpasteurised milk products and undercooked meats/cured meat products – they may contain listeria which is harmful to unborn babies
- Pate, liver and liver products – due to high vitamin A content (Vitamin A is harmful to unborn babies if eaten in large quantities)
- Swordfish, marlin and shark as they are high in mercury which can be harmful to unborn baby,

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Scientific method for NEA 1 ⑨

1. Research
Gathering data or information about the ingredient(s) that you are investigating.

2. Hypothesis
An idea, prediction or explanation that you then test through experimentation

3. Investigation
practical work that is undertaken by experimentation to prove or disprove the hypothesis.

4. Fair test
An experiment that tests exactly the same thing during the investigation. E.g biscuits made should be cut out using the same cutter

5. Control
The part of the experiment that stays the same. This ensures that a 'Fair Test' is carried out.

6. Independent variable
The part of the experiment that is changed

7. Dependent variable
The outcome of the experiment that can be measured

8. Analysis
Explanation of the results linked to the data. Link back to research

9. Annotate
Add information to a photograph or chart

10. Sensory testing and tasting
Measuring the outcomes of experiment using the senses to describe outcomes

11. Conclusion
Outcome or result

12. Evaluation
To judge the worth of

Keywords ⑩

International cuisine

1. Cuisine. A style characteristic of a particular country or region with which specific ingredients, cooking methods, presentation and serving styles are associated.

2. Traditional foods. Food typically eaten by geographical, cultural, social or religious groupings, often using specific methods of preparation or cooking.

3. Culinary traditions

4. Meal structure. Typical eating pattern of a culture.

Food provenance

1. **Food miles.** The distance a food is transported from the field or food producer to the plate or consumer.

2. **Carbon footprint.** The amount of carbon that has been produced during the growing, processing and distribution of a food product.

3. **Global warming.** The gradual heating of the Earth's surface, oceans and atmosphere.

4. **Food security.** When all people at all time have access to sufficient, safe and nutritious food, to maintain a healthy and active life.

Setting mixtures

1. Coagulation. When protein denatures and forms a solid structure. E.g. in a fried egg

2. Denaturation. Unravelling of bonds that hold amino acids together in proteins and the creation of a different structure of proteins e.g. in whisked egg white to stiff peaks

3. Gelation solidifying a mixture by chilling or freezing

Key points ⑪

Nutritional needs change throughout life, but everyone needs to consider the current healthy eating guidelines when planning meals.

If you can't tolerate certain foods you have to change your diet

Some religions have their own dietary rules and laws.

Allergy to nuts can cause anaphylaxis

Traditional British food includes hearty dishes such as fish and chips, roast beef and Yorkshire pudding and Full English breakfast.

British eating patterns tend to include 3 meals a day; breakfast, lunch and dinner

European eating habits can be very similar to British eating habits with 3 meals a day

Other international cuisines include Chinese, Indian, and American; the style of dish and types of ingredients can vary considerably according to region

°C	°F	
75°C/167°F	Cooked food should reach a core temperature of 75°C / 167°F
75°C/167°F	Reheat cooked food to at least 75°C / 167°F
63°C/145°F	Hot food should be kept at a core temperature of at least 63°C / 145°F

DANGER ZONE
(Between 5°C and 63°C / 41°F and 145°F)
Some bacterial growth may occur. Bacteria can multiply by dividing into two every 10 to 20 minutes. (1 bacteria can grow into 2 million after 7 hours)

5°C/41°F — Refrigerate food at 5°C / 41°F or less
❄️ — Defrost food in a chiller
90 minutes — Cooling of food should take no longer than 90 minutes
-18°C and -22°C / 0°F and -8°F — Frozen food should be kept between -18°C and -22°C / 0°F and -8°F

Materials – Ferrous metals - containing IRON

Cast iron	High carbon steel	Low carbon steel	Stainless steel
Good compressive strength, good for casting.	Strong and hard but difficult to form.	Tough and low cost.	Strong and hard, good corrosion resistance.

Materials – NON Ferrous metals / alloys – containing NO iron

Aluminium	Copper (pure metal)	Brass (alloy of 65% copper 35% zinc)	Bronze (alloy of 90% copper 10% tin)	Lead (pure metal)	Zinc (pure metal)
Light, strong, ductile, good conductor, corrosion resistant.	Malleable, ductile, tough, good conductor, easily joined, corrosion resistant.	corrosion resistant, good conductor, easily joined, casts well.	Tough and hardwearing, corrosion resistant.	Very soft and malleable, heaviest common metal, corrosion resistant.	Low melting point, extremely corrosion resistant, easily worked.

Materials – Polymers – Thermoplastics – shaped when hot – can be reheated

ABS	Acrylic	Polycarbonate	Polystyrene
Strong and ridged, hard and tough, expensive.	Good optical properties, transparent, good colour, hard wearing, shatter proof.	High strength and toughness, heat resistant, good colour stability.	Good toughness and impact strength, good for vacuum forming and injection moulding.
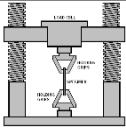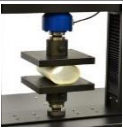
Materials – Polymers – Thermosetting plastic – can be moulded – non recyclable

Polyester resin	Melamine resin	Polyurethane	Vulcanised rubber
Good strength but brittle	Stiff hard and strong	Hard with high strength, flexible and tough	Highest tensile strength, elastic, resistant to abrasion

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.

Testing materials

Materials testing is used to check the suitability of a material.	Testing can be non-destructive or destructive.	Most Non destructive testing will be visual.	Tensile testing, compressive strength tests and hardness testing are destructive.

Tensile test	Compressive test	Hardness test
- Used to find the strength under tension. - The maximum pulling or stretching force before failure. - Used by applying a load and observing the changes.	- The resistance of a material under a compressive force. - A material is placed under compression to see its resistance. - concrete is a good example of material with compressive strength.	- Used to find out how hard a material is. - In a work shop a hammer and dot punch is used to create an indentation in the material.

SI Base Units

unit	abb	physical quantity	Smallest - - - - - - - Largest
metre	m	length	Micrometer, millimeter, centimeter, meter
second	s	time	Microsecond, millisecond, seconds
kilogram	kg	mass	Milligram, gram, kilogram
ampere	A	electric current	Micro amp, milliamp, amp, kiloamp
kelvin	K	thermodynamic temperature	Kelvin, degrees Celsius
candela	cd	luminous intensity	Microcandela, millicandela, candela
mole	mol	amount of substance	Nanomole, micromole, millimole, mole

Engineering Disciplines

Mechanical	Hydraulics, gears, pulleys.
Electrical	Power station, household appliances, integrated circuits
Aerospace	Aircraft, space vehicles, missiles
Communications	Telephone, radio, fibre optic
Chemical	Pharmaceuticals, fossil fuels, food and drink
Civil	Bridges, roads, rail
Automotive	Cars, motorcycles, trains
Biomedical	Prosthetics, medical devices, radiotherapy
Software	Applications, systems, programming

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.

Health & Safety Legislation

Health and Safety at work Act – an agreement to keep us safe.	Personal Protective Equipment – to protect your body.	Manual Handling Operations – lifting and carrying.	Control of Substances Hazardous to Health – chemicals.	Reporting of Injuries RIDDOR – keeping a log of accidents.

T

Année 10 Higher

Semaine 1

Le sport

Je fais …	I do/go …
du canoë-kayak	canoeing/kayaking
du footing	jogging
du hockey sur glace	ice hockey
du patinage	skating
du roller	roller skating
du vélo/cyclisme	cycling
de la boxe	boxing
de la danse	dancing
de la musculation	weight-lifting
de la natation	swimming
de la planche à voile	wind-surfing
de la voile	sailing
de l'escalade	climbing
de l'équitation	horse-riding
des randonnées	for walks
Je trouve ça …	I think it's …
bien/cool	good/cool
génial/super	great/super
passionnant	exciting
barbant/ennuyeux	boring
nul/stupide	rubbish/stupid

La musique

Je joue …	I play …
du piano	the piano
du saxophone	the saxophone
du violon	the violin
de la batterie	drums
de la clarinette	the clarinet
de la flûte	the flute
de la guitare	the guitar
de la trompette	the trumpet
de l'accordéon	the accordion
Mon chanteur/Ma chanteuse	My favourite singer is …
préféré(e), c'est …	
car j'aime ses paroles/ses mélodies	because I like his/her lyrics/tunes
J'aime aussi la musique de …	I also like …'s music.
Ça me donne envie de …	It makes me want to …
Ça me rend …	It makes me …
J'ai téléchargé/acheté …	I downloaded/bought …
Je n'aime pas du tout la musique de …	I don't like …'s music at all.
Je déteste …	I hate …

Semaine 2

La technologie

Je fais …	I do …
beaucoup de choses	lots of things
des quiz/des recherches pour	quizzes/research for my homework
mes devoirs	
Je fais des achats.	I buy things/make purchases.

Technologie

Je vais sur mes sites préférés/	I go on my favourite sites/blogs/forums.
des blogs/des forums.	
J'envoie des e-mails/mails.	I send emails.
Je joue à des jeux en ligne.	I play games online.

Films et télé

J'aime/J'adore les …	I like/love …
Je (ne) suis (pas) fan de …	I am (not) a fan of …
Je n'aime pas …	I don't like …
J'ai une passion pour les …	I am passionate about …
J'ai horreur des …	I hate/can't stand …
films de gangsters/d'action	gangster/action films
films d'aventure/d'horreur	adventure/horror films
films d'arts martiaux	martial arts films
films de science-fiction	science-fiction films

Films and TV

Je préfère …	I prefer …
les documentaires	documentaries
les jeux télévisés	game shows
les magazines	magazine programmes
les séries	series
les actualités	current affairs programmes
les émissions de musique/de sport/	music/sports/youth/reality TV
de jeunesse/de télé-réalité	programmes
Mon émission préférée, c'est …	My favourite programme is …
Je trouve ça …	I find it …
Je pense que c'est …	I think that it's …

Semaine 3

Parler de sport

Je fais de l'escrime/du footing depuis	I've been doing fencing/jogging for
(quatre ans).	(four years).
Je pratique le trampoline depuis	I've been trampolining for
(trois mois).	(three months).
On joue au basket ensemble depuis	We've been playing basketball together
(trois ans).	for (three years).
J'aime beaucoup ça car c'est …	I like it a lot because it's …
élégant/facile	elegant/easy
ludique/sympa	fun/ nice
rapide/beau	fast/pleasant
C'est un sport qui est bon pour …	It's a sport that is good for …
le corps/le cœur	the body/the heart
le mental/la concentration	the mind/concentration

Talking about sport

… et qui demande …	… and which requires …
une excellente forme physique	excellent physical condition
une bonne coordination	good coordination
de l'endurance	endurance
de bons réflexes	good reflexes
Ça m'aide à décompresser.	It helps me to relax.
Ça me fait du bien.	It does me good.
Je préfère les sports individuels.	I prefer individual sports.
Je respire.	I breathe.
Je me fixe des objectifs.	I set goals for myself.
J'oublie mes soucis.	I forget my worries.

Semaine 4 - partie A

My life online

Je suis passionné(e) de …	I am passionate about/a huge fan of …
photographie/cinéma/musique	photography/cinema/music
Il y a (deux mois), j'ai créé …	(Two months) ago, I created …
une page Facebook	a Facebook page
une chaîne YouTube	a YouTube channel
une station de radio	a radio station
un blog	a blog
Ça (ne) marche (pas) très bien.	It's (not) working very well.
J'ai beaucoup d'abonnés et de mentions	I have lots of subscribers and likes.
«j'aime».	

Ma vie d'internaute

Je vais travailler avec mon ami/ma sœur/	I'm going to work with my friend/
mon prof …	sister/teacher …
car il/elle est plus/moins … que moi	because he/she is more/less …
	than me
arrogante(e)/créatif/-ive	arrogant/creative
modeste/patient(e)	modest/patient
optimiste/organisé(e)	optimistic/organised
sérieux/-euse/technophobe	serious/technophobic
Nous allons créer …	We're going to create …

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Vocabulaire du français au GCSE
Année 10 Higher

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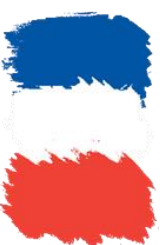
Semaine 4 - partie B

La lecture / Reading

Français	English
Quand j'avais X ans, je lisais …	When I was X years old, I read …
J'aimais …	I liked …
Avant, avec mes enfants, on lisait …	In the past, I read … with my children.
des histoires/des romans	stories/novels
des livres illustrés/classiques	illustrated books/classics
des livres pour enfants/des journaux	children's books/newspapers
Maintenant, je lis …	Now I read …
sur ma tablette/mon ordi	on my tablet/my computer
sur Internet	on the internet

Français	English
Maintenant/Aujourd'hui, les jeunes …	Now/Today, young people …
lisent des blogs/des textos/des tweets	read blogs/texts/tweets
passent tout leur temps sur leur portable	spend all their time on their mobile
Je trouve ça génial.	I find that great.
Je trouve que c'est bien/mieux/un peu dommage.	I find that it's good/better/a bit of a shame.
À mon avis, Internet a tué les joies de la lecture.	In my opinion, the internet has killed the joy of reading.

Mes émissions préférées / My favourite TV programmes

Français	English
Mon émission de télé préférée, c'est …	My favourite TV programme is …
C'est (un docu-réalité) qui parle de …	It's (a reality documentary) about …
Je le/la regarde …	I watch it …
tous les jours/mois	every day/month
toutes les semaines	every week
Je le/la trouve formidable/super/génial(e).	I find it amazing/fantastic/great.
Je ne le rate/manque jamais.	I never miss it.
Je ne le/la regarde jamais.	I never watch it.
Je le/la trouve débile/vulgaire.	I find it idiotic/crude.
J'adore les animateurs/animatrices.	I love the presenters.

Semaine 5

Français	English
Les acteurs sont excellents/ne sont pas crédibles.	The actors are excellent/not credible.
Le scénario n'a aucun rapport avec la réalité.	The script has no connection to reality.
Je le/la regarde en version originale.	I watch it in the original language.
Avant, je regardais/nous regardions …	Before, I/we used to watch …
Maintenant, j'ai tendance à regarder …	Now, I tend to watch …
en direct sur la TNT	live on terrestrial TV
en replay/streaming	on catch-up/streamed

Le cinéma / Cinema

Français	English
Je suis passionné(e) de cinéma.	I'm passionate/mad about cinema.
J'adore …	I love …
J'admire …	I admire …
Je suis fan de … depuis …	I'm a fan of … since …
Il est le plus …	He is the most …
Elle est la plus …	She is the most …
beau/belle	good-looking, beautiful
intelligent(e)	intelligent
talentueux/-euse	talented
élégant(e)	elegant
doué(e)	gifted, talented
célèbre	famous
chic	chic
Chez lui/elle, il y a très peu de prétention …	With him/her, there is very little … pretentiousness

Semaine 6

Français	English
de vanité	vanity
d'arrogance	arrogance
Il/Elle est extrêmement modeste/sincère/humble.	He/she is extremely modest/sincere/humble.
J'ai vu le film … Il y a un moment et depuis, je suis fan.	I saw the film … some time ago and since then, I've been a fan.
Apparemment, quand il/elle était jeune …	Apparently, when he/she was young …
X compte parmi les acteurs les plus connus et les plus appréciés au monde.	X is one of the best-known and most popular actors in the world.
J'adore ses films et je les recommande.	I love his/her films and I recommend them.
Je vais voir son prochain film très bientôt.	I'm going to see his/her next film very soon.

Semaine 7 - Traduction spéciale en français : tous le vocabulaire plus …

Les mots essentiels / High-frequency words

Français	English
normalement	normally, usually
quelquefois	sometimes
souvent	often
tous les jours	every day
hier soir	yesterday evening
récemment	recently
depuis un moment	for a while
lorsque	when
d'abord	first(ly)
ensuite	next
à mon avis	in my opinion
personnellement	personally
car	because, as
cependant	however

Français	English
apparemment	apparently
en général	in general, generally
de toute manière	in any case
surtout	especially
en ce qui concerne	with regard to
autant de	so many
de plus en plus	more and more
en dehors de	outside (of)
ensemble	together
notamment	notably
partout	everywhere
pas du tout	not at all
pour la plupart	mostly
tandis que	while, whereas

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T1

En mi insti
Vocabulario Vale Higher

¿Te interesa(n)....? — *Are you interested in...?*

Spanish	English
el arte dramático	drama
el dibujo	art / drawing
el español	Spanish
el inglés	English
la biología	biology
la educación física	PE
la física	physics
la geografía	geography
la historia	history
la informática	ICT
la lengua	language
la química	chemistry
la religión	RE
la tecnología	technology
los idiomas	languages
los empresariales	business studies
las matemáticas	maths
las ciencias	science
la materia / la asignatura	subject
me encanta(n) / me chifla(n)	I love

Spanish	English
me interesa(n) / me fascina(n)	I'm interested in / fascinated by
me gusta(n) / no me gusta(n)	I like / I don't like
odio	I hate
prefiero	I prefer
porque es / son	because it is / they are
Mi día preferido es (el viernes).	My favourite day is (Friday).
mi horario	my timetable
¿Qué día tienes...?	What day do you have...?
Tengo inglés los martes.	I have English on Tuesdays.
¿A qué hora tienes...?	What time do you have...?
a la una / a las dos	at one o'clock / at two o'clock
y / menos cuarto	quarter past / to
y / menos cinco	five past / to
y media	half past
la educación infantil / primaria	pre-school / primary education
la educación secundaria	secondary education
el bachillerato	A levels
la formación profesional	vocational training
el instituto	secondary school

¿Qué tal los estudios? — *How are your studies?*

Spanish	English
La física es más / menos ... que...	Physics is more / less ... than...
Es mejor / peor que...	It's better / worse than...
tan ... como	as .... as
fácil / difícil	easy / difficult
divertido/a / aburrido/a	fun / boring
útil / relevante / práctico/a	useful / relevant / practical
creativo/a / relajante	creative / relaxing
exacto/a / lógico/a / exigente	precise / logical / demanding
Mi profesor(a) (de ciencias) es...	My (science) teacher is...
paciente / impaciente	patient / impatient
tolerante / severo/a	tolerant / harsh
listo/a / tonto/a	clever / stupid
trabajador(a) / perezoso/a	hard-working / lazy

Spanish	English
simpático/a / estricto/a	nice / strict
Mi profe...	My teacher...
enseña / explica bien	teaches / explains well
tiene buen sentido del humor	has a good sense of humour
tiene expectativas altas	has high expectations
crea un buen ambiente de trabajo	creates a good working atmosphere
nunca se enfada	never gets angry
me hace pensar	makes me think
nos da consejos / estrategias	gives us advice / strategies
nos pone muchos deberes	gives us lots of homework
el curso académico	academic year
las pruebas / las evaluaciones	tests / assessments
suspender / aprobar	to fail / to pass

¿Cómo es tu insti? — *What is your school like?*
En mi instituto hay... / *In my school there is... /*
Mi instituto tiene... / *My school has... /*

Spanish	English
un salón de actos	a hall
un comedor	a canteen
un campo de fútbol	a football pitch
un patio	a playground
un gimnasio	a gym
una piscina	a pool
una biblioteca	a library
una pista de tenis / atletismo	a tennis court / an athletics track
unos laboratorios	some laboratories
muchas aulas	lots of classrooms

Spanish	English
público / privado	state / private
pequeño / grande	small / large
moderno / antiguo	modern / old
En mi escuela primaria había...	In my primary school there was/were...
Mi escuela primaria tenía...	My primary school had....
más / menos...	more / fewer, less
exámenes / deberes / alumnos	exams / homework / pupils
muebles / espacios verdes	furniture / green spaces
tiempo libre	free time
oportunidades / instalaciones	opportunities / facilities
pizarras interactivas / clases	interactive whiteboards / lessons
aulas de informática	ICT rooms

Spanish	English
donde jugar	somewhere to play
poco espacio	little space
antes / ahora	before / now
El edificio / El colegio /	The building / The school /
El día escolar	The school day
es / era...	is / was...
(in)adecuado/a / corto/a /	(in)adequate / short /
largo/a	long
Las clases son / eran...	The lessons are / were
Instituto de Educación Secundaria (IES)	secondary school

Las normas del insti — *School rules*

Spanish	English
Tengo que llevar...	I have to wear ...
Tenemos que llevar ...	We have to wear ...
(No) Llevo ...	I (don't) wear ...
(No) Llevamos. ...	We (don't) wear ...
Es obligatorio llevar	It's compulsory to wear
un jersey (de punto)	a (knitted) sweater
un vestido	a dress
una camisa	a shirt
una camiseta	a T-shirt

Spanish	English
Lo bueno / malo es que...	The good / bad thing is that...
Lo mejor / peor es que...	The best / worst thing is that...
Lo que más me gusta es / son ...	What I like most is / are...
Lo que menos me gusta es / son	What I like least is / are...
no...ningún / ninguna	not a single...
ni...ni...	(n)either...(n)or
nada	nothing / anything
nadie	no-one / anyone
tampoco	not either
Mi insti es...	My school is...
mixto / femenino / masculino	mixed / all girls / all boys

Spanish	English
llevar piercings	to have piercings
Hay que...	It is necessary...
ser puntual	to be on time
respetar el turno de palabra	to wait for your turn to speak
mantener limpio el patio	to keep the playground clean
La norma más importante es...	The most important rule is...
respetar a los demás	to respect others
Las normas son...	The rules are...
necesarias / demasiado severas	necessary / too strict

Spanish	English
una chaqueta (a rayas)	a (striped) jacket
una chaqueta de punto	a cardigan
una corbata	a tie
una falda (a cuadros)	a (checked) skirt
unos pantalones	trousers
unos calcetines	socks
unos zapatos	shoes
unos vaqueros	jeans
unas medias	tights
amarillo/a	yellow

Spanish	English
blanco/a	white
negro/a	black
rojo/a	red
morado/a / violeta	purple
naranja	orange
rosa	pink
azul	blue
verde	green
gris	grey

T2

Semana 4 Parte B

Spanish	English
oscuro / claro	dark / light
a rayas / a cuadros	striped / checked
bonito / feo	pretty / ugly
cómodo / incómodo	comfortable / uncomfortable
anticuado / elegante / formal	old-fashioned / smart / formal
El uniforme…	Uniform…
mejora la disciplina	improves discipline
limita la individualidad	limits individuality
da una imagen positiva del insti	gives a positive image of the school
ahorra tiempo por la mañana	saves time in the morning
Está prohibido…	It is forbidden…
No se permite…	You are not allowed…
No se debe…	You / one must not…
comer chicle	to chew chewing gum
usar el móvil en clase	to use your phone in lessons
dañar las instalaciones	to damage the facilities
ser agresivo o grosero	to be aggressive or rude
correr en los pasillos	to run in the corridors

para limitar la libertad de expresión	for limiting freedom of expression
para fastidiar a los alumnos	for annoying the pupils
sacar buenas / malas notas	to get good / bad grades
Estoy de acuerdo.	I agree.
¡Qué va!	No way!
¡Qué bien!	How great!
¡Qué horror!	How awful!
Un problema de mi insti es…	One problem in my school is…
el estrés de los exámenes	exam stress
la presión del grupo	peer pressure
Hay (unos) alumnos que…	There are (some) pupils who…
se burlan de otros	make fun of others
sufren intimidación	are victims of intimidation
tienen miedo de…	are afraid of…
hacen novillos	skive
quieren ser parte de la pandilla	want to be part of the friendship group
son una mala influencia	are a bad influence

Semana 5

¿Cómo es tu día escolar? — What is your school day like?

normalmente	usually
Salgo de casa a las…	I leave home at…
Voy…	I go…
a pie / andando	on foot / walking
en bici / en autobús / en coche	by bike / by bus / by car
en metro / en taxi / en tren	by underground / by taxi / by train

¿Qué vas a hacer? — What are you going to do?

Voy / Vas / Vamos a…	I'm going / You're going / We're going to…
llegar / salir / estar	arrive / go out / be
ir en coche / andando	go by car / walk
llevar ropa de calle	wear casual clothes / non-uniform
ir / comer juntos	go / eat together
hacer una visita guiada	do a guided tour
ver los edificios	see the buildings

Las clases empiezan / terminan a las…	Lessons start / finish at…
Tenemos … clases al día.	We have … lessons per day.
Cada clase dura … minutos	Each lessons lasts … minutes.
El recreo / La hora de comer… es a la(s)…	Break / Lunch is at…

El año / trimestre / verano pasado…	Last year / term / summer…
participé en un evento especial / un concierto / un concurso /	I took part in a special event / a concert / a competition /
pasar todo el día en…	spend the whole day in…
asistir a clases	attend lessons
practicar el español	practise Spanish
ir de excursión	go on a trip
tener una programación variada	have a varied programme
Va a…	It's going to…
ser fácil / guay	be easy / cool

Semana 6

¿Qué vas a hacer? — What are you going to do? / Extra-curricular activities

I play / I've been playing the trumpet…	Toco la trompeta…
I sing / I've been singing in the choir…	Canto en el coro…
I go / I've been going to the … club	Voy al club de…
I am / I've been a member of	Soy miembro del club de…
the … club	ajedrez / judo / teatro / periodismo
chess / judo / drama / reporters	lectores / Ecoescuela / fotografía
reading / eco-schools / photography	desde hace … años / meses
for … years / months	Para mí…
For me…	Pienso que / Creo que…
I think that…	las actividades extraescolares son…
extra-curricular activities are	muy divertidas
a lot of fun	algo diferente / un éxito
something different / an achievement	

un torneo	a tournament
gané un trofeo	I won a trophy
toqué un solo	I played a solo
conseguimos la clasificación	we achieved the award / designation
como…	as…
tuvimos una charla	we had a talk / presentation
ganamos una competición nacional	we won a national competition
dimos un concierto	we gave a concert
¡Fue un éxito!	It was a success!
Este trimestre / El próximo	This term / Next term

Semana 7

Las actividades extraescolares

Pienso que / Creo que…	I think that…
las actividades extraescolares son…	extra-curricular activities are
muy divertidas	a lot of fun
algo diferente / un éxito	something different / an achievement
te ayudan a…	they help you to…
olvidar las presiones del colegio	forget the pressures of school
desarrollar tus talentos	develop your talents
hacer nuevos amigos	make new friends
te dan…	they give you…
una sensación de logro	a sense of achievement
más confianza	more confidence
la oportunidad de ser creativo/a	the opportunity to be creative
la oportunidad de expresarte	the opportunity to express yourself

voy a	I'm going to…
aprender a …	learn to …
continuar con…	continue with…
dejarlo	stop doing it
apuntarme al club de…	sign up for the … club
vamos a…	we are going to…
montar una obra de teatro	put on a play
conseguir…	achieve…

Vocabulary

Primary data	Data you have collected yourself
Secondary data	Data that comes from published sources
Qualitative data	Data that uses words
Quantitative data	Data that uses numbers
Discrete data	Quantitative data that which is counted
Continuous data	Quantitative data which is measured
Bivariate data	Data sets that uses two variables
Ranked data	Discrete data that is put it order
Hypothesis	A hypothesis is a statement of belief about some aspect of a population
Control	A control in an experiment is designed to check the hypothesis, and is compared to the standard.
Population	All the data that you are interested in
Sample frame	A list that includes every population from which a sample is to be taken
Sample	A sample can be taken and used to make predictions about a population.
Pilot study	Using a small sample of data to see if meaningful results can be obtained

Important Ideas

Categorical data can be sorted in to groups of data types.

You can carry out experiments or make observations to see if your hypothesis is supported by the data you collect.

Question	Answer
Data types	
What type of data is the following: 1) Number of seagulls on a beach 2) The weight of a bag of sugar 3) The name of a town 4) The score you got on your last test 5) The time taken to run a marathon	1) Quantitative – discrete 2) Quantitative – continuous 3) 3) Qualitative 4) Quantitative – discrete 5) Quantitative - continuous
Sampling	
Sarah wants to find out how many of the 250 students in his year bring a mobile phone to school. She decides to ask 10 of his friends (a) Write down two reasons why this is not a good sample (b) Explain how Sarah could take a better sample	(a) It's too biased - her friends are likely to do similar things - the sample is too small. (b) She should take a random sample of 30 or more using a list of all the students in her year.
Experimental design	
Malique wants to know whether drinking a certain tea will help with weight loss. Design an experiment for Malique.	1) Select two groups of people at random 2) Weigh each person 3) One group drink the tea. 4) Re-weigh all the people after a certain amount of time.

Key Facts & Formula

Samples	GOOD samples: • Are as large as possible • Are unbiased • Have a suitable time frame BAD samples: • Are too small • Are biased • Are out of date, have people missing or counted twice, incorrect names on the list
Designing investigations	The DATA HANDLING CYCLE: • Specify the problem and plan • Collect data from a variety of sources • Process and represent the data • Interpret and discuss data
Estimation	You can infer characteristics of a population using estimation and sampling: **Proportion of sample with that characteristic x population size**

Important Ideas

Samples don't give you information about every member of the population so the data can be less accurate and may be biased

You can use summary statistics to make estimates of population characteristics

Vocabulary

Random sampling	Every member of the population has an equal chance of being selected.
Stratified sampling	Stratified sampling gives the different groups in the same sample an amount of representation that's proportional to how big they are in the population.
Judgement sampling	Uses judgement to select a sample that is representative of the population
Opportunity sampling	Uses the people or objects that are available at the time.
Cluster sampling	Used when the population is in groups. A random sample of these groups is selected and all items in the selected groups are include in the sample.
Quota sampling	Splitting the population into groups wit certain characteristics and selecting a given number from each group.
Systematic sampling	Items are selected from the population at regular intervals either in time or in space.
Explanatory variable	The "cause" variable
Response variable	The "effect" variable
Extraneous variable	A variable you are not interested in which could affect your results

Question	Answer
Population and sampling	
You want to find out the average amount of pocket money received by students in your school. Describe how you would get a random sample of 40 from a population of 748 students.	**Get a list of all 748 students (a sample frame) and number them 1 to 748. Generate 40 random numbers (using a random number table or computer) between 1 and 748. Match the 40 random numbers to the students to create the sample.**
Estimation	
Evelyn captures 30 frogs from her garden pond and carefully marks each before returning them to the water. The next day she captures 20 frogs and finds that 10 are marked. Estimate the number of frogs in her pond.	$$\frac{30}{N} = \frac{10}{20}$$ $$\Rightarrow N = 60 \text{ frogs}$$
Collection of data	
Rajan plans to distribute his questionnaire abut public transport by handing out copies in his town centre a) Give one advantage and one disadvantage of Rajan's plan for collecting data b) B) Suggest one way Rajan could reduce the number of non-responses	a) Advantage – it should be quick and cheap to carry out. Disadvantage – the results may be biased depending on who takes a questionnaire and who responds. b) He could enter people who respond in a prize draw

Key Facts & Formula

	Advantage	Disadvantage
Questionnaire	• Much cheaper to do • Each person answering the question is treated the same way	• Non-response • People may misunderstand some questions
Interview	• Interviewer can explain complex questions • Interviewer can follow up on unclear responses	• Interviewer may be biased • Can be costly

Petersen Capture-recapture	$$\frac{n}{N} = \frac{m}{M}$$ Assumptions: No significant change to population All members of the population are equally likely to be captured. Capture and marking does not affect recapture & markings are not lost Sample is big enough to be representative
Stratified sampling	Number in sample for each stratum: $$\frac{\text{stratum size}}{\text{population size}} \times \text{number in sample}$$

Extension skills:

11. Do you have to serve diagonally in table tennis? The ball must bounce once on your side of the table and once on your opponents side of the table. In doubles the ball must be played diagonally for example within the right half of the court only however in singles you can serve to and from any part of the table.

12. How high do you have to throw the ball when you are serving? 6 inches

13. What happens if the ball hits the net? The ball must pass 'cleanly' over the net. If the ball 'clips' the net and goes over it is a 'let' and the point is retaken. If the ball hits the net and doesn't go over the point goes to the other player / team. There are no second serves.

14. How do you get spin on the ball? One of the biggest differences between recreational and competitive table tennis players is the ability to execute a spin shot. The advantage of executing a spin is that it makes it more difficult for your opponent to return.
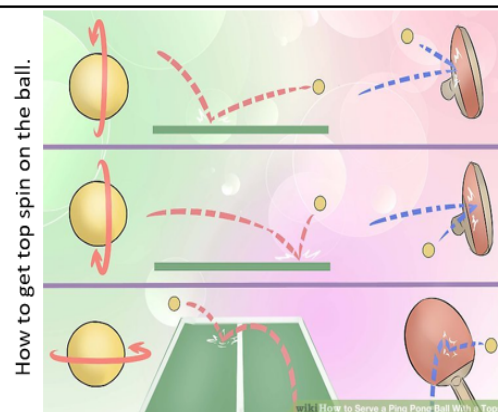
To generate a spin:
1. Start your stroke below and behind the ball.
2. Wait for the ball to bounce off your table upwards.
3. Move your arm forward and upwards, brushing the ball at a "/" angle from a high position.
4. The ball's trajectory will arch downwards, picking up speed after it bounces off the table.
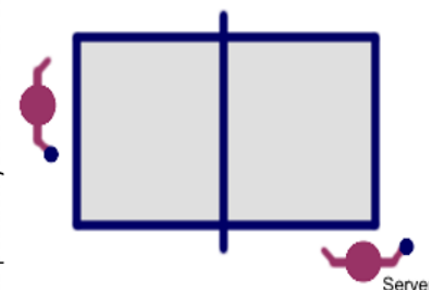If returned incorrectly, the resulting return by your opponent will fly off the table, earning you a point!

15. Where is table tennis most popular? Many Asian countries are crazy about table tennis particularly China and South Korea. China are currently number one in the world but South Korea provide fierce competition and are currently second.

16. When did table tennis start in England? Table tennis as we know it today started in England in the late 1880's. Game makers were trying to emulate the popularity of lawn tennis by developing indoor versions of it. As we can see it is still played in England both competitively and recreationally.

Y9 AIM: Develop skills and tactics in competitive situations.

Reference: https://tabletennisengland.co.uk/

Key skills:

1. What is the aim of table tennis? The aim of table tennis is to score more points than your opponent by volleying the ball across the net and landing on the table.

2. When is a point won? A point is won by you if your opponent is unable to return the ball to your side of the table (e.g. they miss the ball, they hit the ball but it misses your side of the table, or the ball hits the net), or if they hit the ball before it bounces on their side of the table.

3. How is table tennis scored? The winner of a game is the first to 11 points. There must be a gap of at least two points between opponents at the end of the game though, so if the score is 10-10, the game goes in to extra play until one of the players has gained a lead of 2 points. The point goes to the player who successfully ends a rally, regardless of who has served.
A match can consist of the number of games you like, just make sure you agree this in advance!

4. How big is the ball? The ball has a diameter of 40mm and weighs only 2.7g.

5. What is a rally? The period where the ball is in play.

6. What is a let? A rally of which the point is not scored.

7. What is a point? A rally of which the result is scored.

8. Who is the server and who is the receiver? The server is the player due to strike the all first in the rally while the receiver is the player due to strike the ball second.

9. How many players are on the table during a game? A game of table tennis is played in either singles or doubles.

10. How is the serve made? The serve is made from the end of the table with the server tossing the ball upward from the palm of the free hand and striking it as it descends so that it first bounces on the servers own court and then passing over the net bounces on the opponents court. There are no second serves.

How to get top spin on the ball.

wiki How to Serve a Ping Pong Ball With a Topspin

Where to position yourself for the serves.

Server

Number	Key term	Explained
1	Democratic	Relating to or supporting democracy or its principles.
2	Democratic deficit	Less democratic
3	direct democracy	purest form of democracy. A form of democracy in which all laws and policies imposed by governments are determined by the people themselves, rather than by representatives who are elected by the people.
4	indirect democracy	is a type of democracy founded on the principle of elected officials representing a group of people
5	legitimacy	the degree to which the government has the right to exercise power
6	political participation	opportunities to become involved in the political process
7	referendum	a popular vote on a specific question
8	Absolute majority	where an MP gains over 50% of the vote

Number	Key term	Explained
9	AMS	Additional Member System. a hybrid system with 2/3 FPTP and 1/3 regional list. Used in Scotland and Wales
10	Alternative vote	An electoral system whereby voters rank candidates in order of preference.
11	British Constitution	This sets out how we are governed. The UK does not have one single document instead our constitution comes from many sources and has been shaped over hundreds of years by different laws and events e.g. Magna Carta, Human Rights Act.
12	Parliamentary Sovereignty	This means that Parliament is the only body that can make laws. It is hugely powerful. It also means that UK law and policy can be changed when new Parliaments are formed, its adaptable. However, once law and policy are created by Parliament, all individuals and public bodies must follow it.
13	European Parliament	The European Union has a parliament, which represents all member countries of the EU. This group have a say in plans that are developed for Europe, often involving trade and employment. The UK has now started the process of leaving the EU.
14	National Parliament	This is what most people think of when they imagine politics. Our national Parliament is based in Westminster. The elected body (MPs) sit in the House of Commons and have the power (along side the rest of Parliament) to make laws and shape national policy.
15	Local council	Councillors are elected by citizens who live in their ward. They cannot make laws, but they can make decisions about your local area, they aim to improve your local area.

Number	Key term	Explained
16	Misters whips	Whips are MPs or members of the House of Lords appointed by each party to inform and organise their own members in Parliament. One of their responsibilities is to make sure that their members vote in divisions, and vote in line with party policy. It is the party whips, along with the Leader and Shadow Leaders of each House, that negotiate behind the scenes to arrange the day to day business in Parliament - a process often referred to as 'the usual channels'.
17	Cabinet	The Cabinet is the team of 20 or so most senior ministers in the Government who are chosen by the Prime Minister to lead on specific policy areas such as Health, Transport, Foreign Affairs or Defence.
18	Shadow Cabinet	The Shadow Cabinet is the team of senior spokespeople chosen by the Leader of the Opposition to mirror the Cabinet in Government. Each member of the shadow cabinet is appointed to lead on a specific policy area for their party and to question and challenge their counterpart in the Cabinet. In this way the Official Opposition seeks to present itself as an alternative government-in-waiting.
19	Backbenchers	Backbenchers are MPs or members of the House of Lords that are neither government ministers nor opposition Shadow spokespeople . They are so called because, in the Chamber, they sit in the rows of benches behind their parties' spokespeople who are known as frontbenchers.

Number	Key term	Explained
20	Manifesto	A manifesto is a publication issued by a political party before a General Election. It contains the set of policies that the party stands for and would wish to implement if elected to govern.
21	Legislation	Legislation is a law or a set of laws that have been passed by Parliament. The word is also used to describe the act of making a new law.
22	Bishops	As senior members of the Church of England, which is the established church, some bishops are entitled to sit in the House of Lords. The Archbishop of Canterbury, the Archbishop of York, the Bishops of London, Durham and Winchester and 21 other bishops in order of seniority together form the Lords Spiritual.
23	Crossing the floor	To cross the floor in Parliament means to change sides: to leave one political party and join another.
24	Dissolution	Dissolution is the official term for the end of a Parliament before a general election. When Parliament is dissolved every seat in the House of Commons becomes vacant. MPs immediately revert to being members of the general public and those who wish to become MPs again must stand for election as candidates.
25	Frontbench (frontbenchers)	A frontbencher is either a Government minister or an Opposition shadow spokesperson. They are so-called because they occupy the front benches on either side of the Chamber when the House is in session, with other party members - backbenchers - sitting behind them.

Budgeted public sector expenditure on services in the United Kingdom (UK) in 2020/21, by function (in billion GBP)

- Industry, agriculture and employment 30
- Housing and environment 32
- Personal social services 36
- Public order and safety 38
- Transport 44
- Debt interest 56
- Defense 55
- Other (including EU transactions) 58
- Education 116
- Health 178
- Social protection 285

Sources
GOV.UK; HM Treasury
© Statista 2020

Additional Information:
United Kingdom; HM Treasury; 2020

United Kingdom 2016-17 Government Expenditure

31.1%
18.8%
13.2%
6%
5%
4.4%
3.9%
4.4%
6.3%
3.1%
3.8%
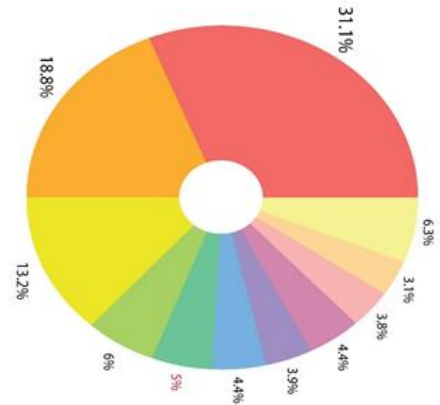
Expenditure figures taken from page 5, Budget 2016, 16 March 2016, HM Govt

- Social Protection - £240bn
- Health - £145bn
- Education - £102bn
- Defence - £46bn
- Government Debt Interest - £39bn
- Public Order and Safety - £34bn
- Personal Social Services - £30bn
- Housing and Environment - £34bn
- Transport - £29bn
- Industry, agriculture and employment - £24bn
- Other (includes EU contributions) - £49bn
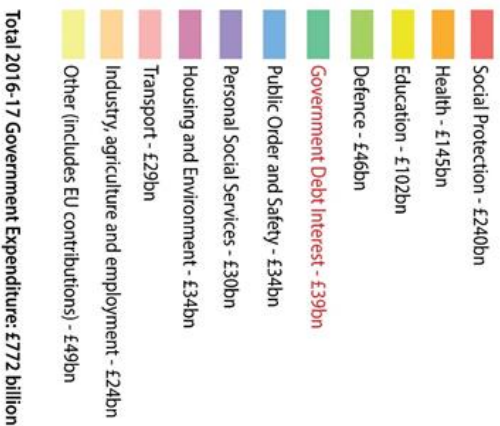
Total 2016-17 Government Expenditure: £772 billion

Public sector gross current procurement expenditure on services by function 2014-15

Box 1: - 2.1.4 Place

Factors affecting place:
• customer location
• location of raw materials
• transport and infrastructure links
• availability of staff

Channels of distribution

Agent – do not own the products, they sell on behalf of manufacturer and then usually get a commission from the sale.

Wholesaler – buys in bulk and re-sells smaller quantities to retailers. This means lower profit margins for the manufacturer.

Retailer – retailers can a purchase product to sell from wholesalers or manufacturers. They sell directly to the end-users.

Direct – the manufactures sells directly to the customers; often via mail order or online (e-commerce).

Ecommerce

Electronic commerce or e-commerce is a term for any type pf business that involves the transfer for information across the internet. It is currently one of the most important aspects of the internet. Ecommerce enables businesses to sell their products to customers which no barriers of time or distance. An online store enables customers to purchase products and services and you can place the items in a virtual shopping basket, check out and complete the transaction by providing payment information

How much do consumers in the UK spend online?
• UK households spent the equivalent of $5,900 (£4,611) using payment cards online in 2015 (UK Cards Association).

• Online shoppers in the UK spend more per household than individuals in any other country, (Research from the UK Cards Association).

Box 2: - 2.1.5 Price

Price = manufacturing costs + marketing costs + design costs + packaging costs + distribution costs + testing & market research costs + staff costs + taxes + bank charges + website costs + **PROFIT**

Cost plus pricing
For example, The Sweet Factory has produced a new product, Chomp Bar – a delicious mix of chocolate, nuts, raisons and caramel.

The cost of this product (before profit) is 50p.
You could simply decide on the amount of profit you want to make for each bar and add this to the cost. There are two ways doing this:
• Using a **mark-up** – eg work out the cost and add a percentage, so if you wanted a 100% mark up the bar would cost £1.00
• Using a **profit margin** – eg work out the cost and add the percentage profit margin, so if you wanted a 20% mark up and the product costs 50p to make then 80% = 50p, therefore 100% = 62.5p which would be rounded up to 63p

Equilibrium Price
The market price (the price we pay) is based on the supply and the demand for the product or service. If supply is low and consumer demand is high then this will make the product more expensive. If there is a large supply of the produce and people do not want to buy it (low demand) then the price will be low. The equilibrium price is the price where supply and demand cross.
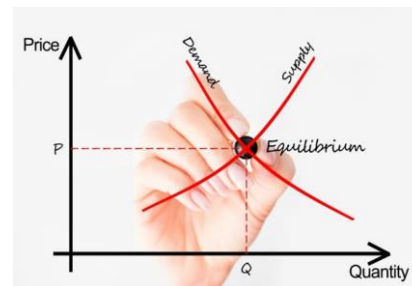
Price skimming : - This is where you charge a high price to begin with as you expect there to be a high demand for this new product. This works well for established firms with a good customer base, who are will to pay more. Sometimes a higher price can make a product more desirable and improve the firms' image. After it's established, the price is lowered to help it become a mass market product.

Penetration pricing
This is where you charge a very low price, as the product is new, to encourage customers to try it. This is a good way to gain a market share in a competitive market. Once the product is established the price rises as loyal customers continue to buy.

Box 2 continue……

Psychological pricing
Psychological pricing is where the product is priced a figure that may appeal more to a consumer, for example 99p appears to be better value than £1.

Loss leaders
The products price is set below the cost of producing it – there is no profit made on the product. This is usually used when the consumer will buy another product at the same time which makes a profit. For example, games consoles may not make a profit, however, there is profit in the actual games for the consoles.

Competitive pricing: - This is where the business charges similar or the same prices for their products as their competitors. For example, petrol stations usually charge very similar prices.

Promotional pricing: - is usually time limited to create a surge in demand for a product. They can appear to be more valuable than similar products on the market. For example, buy one get one free or 50% discount.

Box 3: -2.1.6 Promotion
How do businesses **advertise**?

- Newspapers (local & national)
- Magazines
- Posters & bill boards
- Leaflets & flyers
- TV adverts
- Radio adverts
- Internet

Box 3 continue ….
Examples of **sales promotion** include,
- Competitions
- for 1 offers
- Free samples
- Coupons
- Point of sale displays
- Free gifts e.g. comes with free toy

Personal selling is a face-to-face selling technique by which a salesperson uses his or her interpersonal skills to persuade a customer in buying a particular product.

Direct marketing is a form of advertising in which companies provide physical marketing materials to consumers to communicate information about a product or service.

What is the difference between Personal Selling and Direct Marketing?

- Personal selling is more for products and services that are complex in nature and cannot sell off the shelves on their own such as financial products.
- Direct marketing is a selling technique that involves making direct contact with the intended customer through phone calls, emails, offers through newspapers and magazines etc.

- Direct marketing is more aggressive than personal selling that appears like an attempt to arm the client with important information at first.

- There is an emphasis on building up a relationship with the customer in personal selling whereas direct marketing seeks to impress upon the benefits of the offer.

- Personal selling is the oldest form of selling while direct marketing is being used increasingly by small and big companies to increase their sales.

Box 3 continue …

Businesses have a range of promotional objectives:
- increasing consumer knowledge
- increasing market share
- communicating with customers
- encouraging purchasing
- developing customer loyalty

Box 4: - 2.2 Market Research and Markets
2.2.1 Data Types
Qualitative data cannot be expressed as a number. Data that represent nominal scales such as gender, religious preference, opinions and preferences are usually considered to be qualitative data.

Quantitative data is anything that can be expressed as a number, or quantified. Examples of quantitative data are scores on tests, number of hours of study, or weight of a person.

Box 5: - 2.2.2 Primary Research
Primary research (field research) involves gathering new data that has not been collected before. For example, surveys using questionnaires or interviews with groups of people in a focus group.

Advantages and disadvantages of primary research:
• data has been collected personally to its relevant to the research
• sample size can be selected by the researcher
• research has full control of how and where they collect information from
• information is up to date
• it belongs to the business, so they don't need to share to with competitors
• expensive to collect
• it can take all long time to process information
• if researcher makes a mistake it's hard to tell as there is nothing to compare to with

Box 6: - 2.2.3 Secondary Research
Secondary research (desk research) involves gathering existing data that has already been produced. For example, researching the internet, newspapers and company reports.

Advantages and disadvantages of secondary research:
• not expensive
• easily accessible
• immediately available
• provides good background information
• not always recent
• not always specific
• may get 'false' results as lack of control over the data

Box 7: - 2.2.4 Market types
Mass Market: - is a large, general market consisting of consumers belonging to various age groups, lifestyles and preferences. If a company manufactures a product which is useful to a wide range of consumers across various sectors and appeal to a large group of people.

• high number of sales
• large number of competitors
• wide customer base
• profit margins low

Niche Market: - is the subset of the market on which a specific product is focused. Niche markets are usually a small, specialised market for a particular product or service.

• sales volume low
• small number of customers
• specialized products
• high profit margins

Box 8: - 2.2.5 Orientation types

Product orientation
A company that follows a product orientation chooses to ignore their customer's needs and focus only on efficiently building a quality product. This type of company believes that if they can make the best 'breakfast cereal,' their customers will come to them.

Market orientation
A market orientated company is one that organises its activities, products and services around the wants and needs of its customers.

**Box 9:- 3.1 Operations Management**
3.1.1 Outsourcing
Outsourcing (also sometimes referred to as "contracting out") is a business practice used by companies to reduce costs or improve efficiency by shifting tasks, operations, components, jobs or processes to an external contracted third party for a significant period of time.

Advantages for outsourcing include:
• improved focus on core business activities - outsourcing can free up your time to spend on other aspects of the business
• increased efficiency - choosing an outsourcing company that specialises in the process or service you want means its more efficient and may be of higher quality.
• increased reach – you can do have access to new equipment of skills so you can do more things or make new products

Disadvantages of outsourcing include:
• service delivery - which may not be to your expected standard
• confidentiality and security – the outsourcing company will have access to your information
• lack of flexibility – may be hard to adjust to your way of working.
• instability - the outsourcing company could go out of business
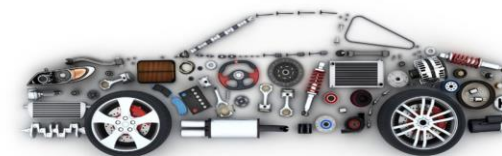
Define: *Alcohol*

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.

1 UNIT	1.5 UNITS	2 UNITS	3 UNITS	9 UNITS	30 UNITS
Normal beer half pint (284ml) 4%	Small glass of wine (125ml) 12.5%	Strong beer half pint (284ml) 6.5%	Strong beer Large bottle/can (440ml) 6.5%	Bottle of wine (750ml) 12.5%	Bottle of spirits (750ml) 40%
Single spirit shot (25ml) 40%	Alcopops bottle (275ml) 5.5%	Normal beer Large bottle/can (440ml) 4.5%	Large glass of wine (250ml) 12.5%	Men 3-4 units daily	Women 2-3 units daily

Government advises alcohol consumption should not regularly exceed:

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: Asexual

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

Define: Androgyny

A gender expression that has elements of both masculinity and femininity

Define: Biological Sex

The physical anatomy and gendered hormones one is born with.

Define: Bisexual

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

Define: Cisgender

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

Define: LGBTQ+

Lesbian
Gay
Bisexual
Trans
Queer / Questioning
+ = Other

Define: Sexuality

A persons sexual preference or orientation. Who they are attracted to.

Define: Drag Queen

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

Define: Gender Dysphoria

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

Define: Heterosexual

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

Define: Homosexual

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

Define: Transvestite

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

Define: Intersex

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

Define: Pansexual

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

Define: Transgender

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

Define: Transsexual

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

Define: Gender Identity

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

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

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

- **2000**: Government lifts the ban on lesbians and gay men serving in the Armed Forces.

- **2001**: Age of consent for gay/bi men is lowered to 16.

- **2002**: Equal rights are granted to same-sex couples applying for adoption.

- **2003**: Repeal of Section 28 - Section 28 was a law that made it illegal to talk positively about homosexuality in schools.

- **2003**: A new law comes into force protecting LGBT people from discrimination at work. Until 2003 employers could discriminate against LGBT people by not hiring them or not promoting them, just because of their sexual orientation or gender identity.

- **2004**: Civil Partnership Act is passed.

- **2004**: Gender Recognition Act is passed - This Act allowed trans people to change their legal gender. This means that they can get a new birth certificate that reflects who they really are, which helps for future legal processes like marriage.

- **2007**: It becomes illegal to discriminate against people because of their sexual orientation or gender identity when providing them with goods or services.

- **2008**: The Criminal Justice and Immigration Act makes 'incitement to homophobic hatred' a crime.

- **2009**: A new law gives better legal recognition to same-sex parents.

- **2013**: The Marriage (Same-Sex Couples) Act is passed.

Trans Teens and Children

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

If the child is diagnosed with gender dysphoria and they've reached puberty, they could be treated with gonadotrophin-releasing hormone (GnRH) analogues. These are synthetic hormones that suppress the hormones naturally produced by the body. They also suppress puberty and can help delay potentially distressing physical changes caused by the body becoming even more like that of the biological sex, until they're old enough for other treatment options. The effects of treatment with GnRH analogues are considered to be fully reversible, so treatment can usually be stopped at any time.

Teenagers who are 17 years of age or older may be seen in an adult gender clinic. They are entitled to consent to their own treatment and follow the standard adult protocols.

Gender Reassignment surgery will **not** be considered until a person has reached 18 years of age.

Schools and LGBTQ+ Students

All Schools are required to have a policy relating to LGBTQ+ Students and how they are supported in schools. However each case will be dealt with on an individual basis as to what is best for the students. Discussions will be conducted with Safe guarding team, parents, wellbeing teams and appropriate external agencies involved in the students care.

Where to get more help and support

- Parents and trusted family members

- Teachers and School Staff including School Nurse and Wellbeing Team

- Your Doctor or Community Nurse

- NHS Online

- Young Stonewall: https://www.youngstonewall.org.uk/

- The Proud Trust – Local Support groups: https://www.theproudtrust.org

- Friends and Family of Lesbians and Gays: https://www.fflag.org.uk/