YEAR 9 KNOWLEDGE ORGANISER

TRINITY TERM

Name:

Family Group:

LEARNING - LOVING - LIVING

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LEARNING - LOVING - LIVING

KNOWLEDGE ORGANISER GUIDANCE

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

In addition to knowledge organiser homework, subjects will be setting **additional homework task**s for completion. This is to further augment the knowledge organiser material and develop the skills and understanding in the subject areas.

Students will also be assigned **ENGLISH** reading activities on www.CommonLit.org and **MATHS** activities with short explanatory videos on the online platform of https://mathswatch.co.uk.

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

It is also recommended that students regularly **READ** a variety of **fiction and non fiction books** of their choosing.

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

Half term

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

RETRIEVAL ACTIVITY IDEAS

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.

4 Methods of Retrieval Practice

@ImpactWales

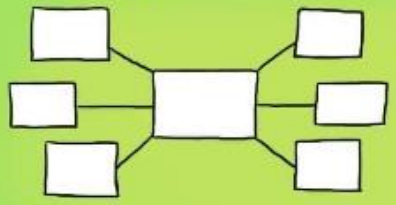
Before you start put away all your books & classroom materials.

Retrieval Practice Examples

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

BRAIN DUMP

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



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

QUIZZING

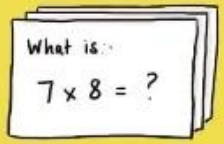
Create practice questions on a topic. Swap your questions with a partner & answer.

Question - What is a metaphor?

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

FLASHCARDS

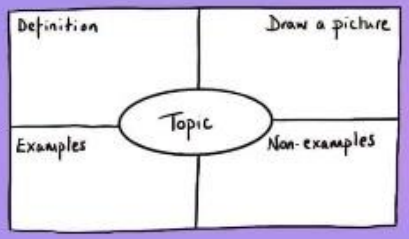
Create your own flashcards, question on one side answer on the other. Can you make links between the cards?



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

KNOWLEDGE ORGANISERS

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



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

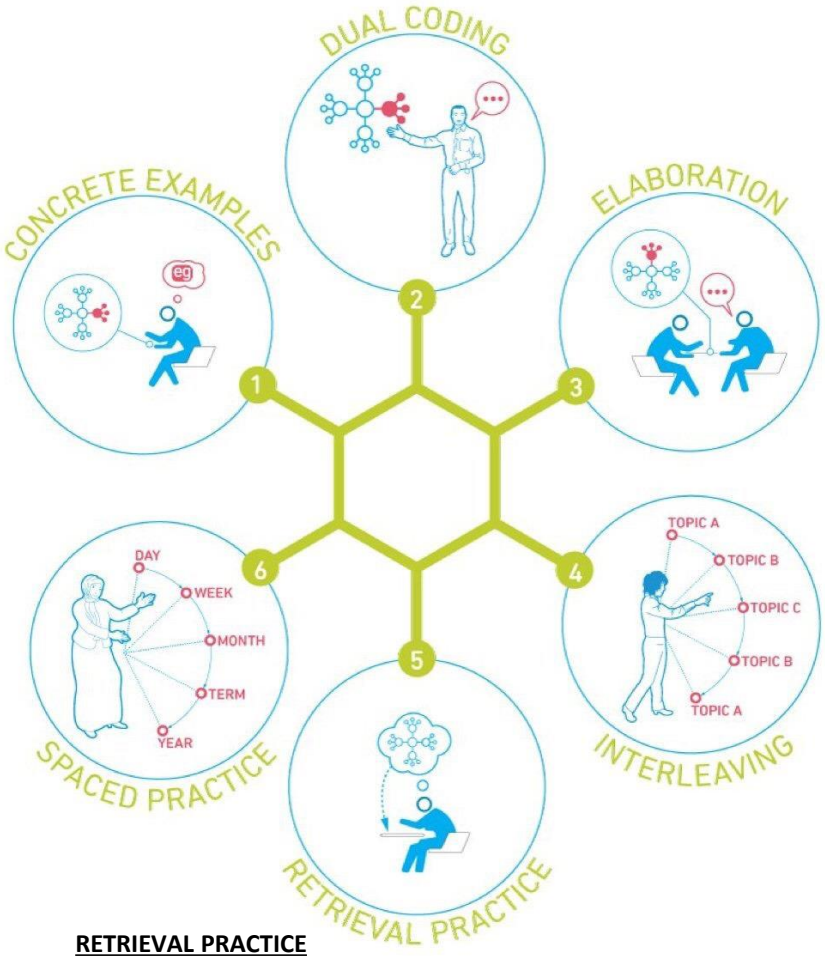
After you have retrieved as much as you can go back to your books & check what you've missed. Next time focus on that missing information

DUAL CODING

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

CONCRETE EXAMPLES

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



ELABORATION

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

SPACED PRACTISE

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

INTERVEAVING

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

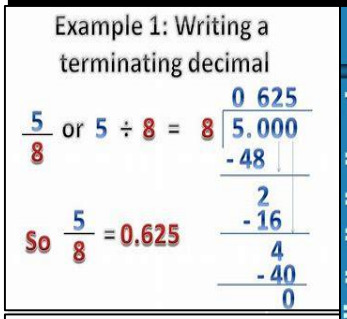
Through the act of retrieval, or calling information to mind, our memory for that information is strengthened and forgetting is less likely to occur. Retrieval practice ideas include: Read, cover, write, check, flashcards and brain dumps.

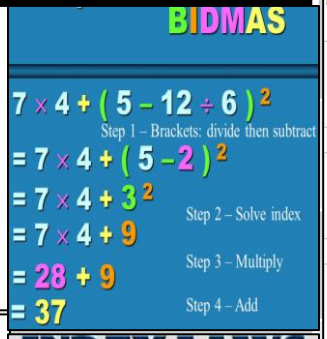
Act One Summary: Engagement celebration interrupted by Insp. Mr.B and Sheila reveal links to Eva.		
Who	**What**	**Notes**
Stage directions	Dinner jackets, large suburban house, port, champagne	Extreme opulence. Insular existence divorced from reality of poverty and lower class struggles
Birling	We're 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

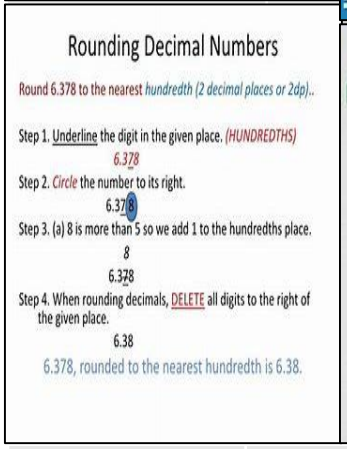
Act Two Summary: Gerald and Mrs.B reveal links to Eva		
Who	What	Notes
Insp.	You see, we have to share something. If there's nothing else, we'll have to share our guilt.	Birlings are immoral. They have contempt for collective responsibility.
Insp.	We often do on the younger ones. They're more impressionable	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 didn't 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	

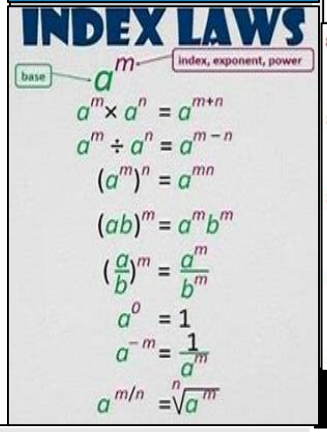
Act 3 Summary: Inspector's final admonishment and exit. Aftermath: was it real? does it matter? Young are changed. Old refuse to accept responsibility.		
Who	**What**	**Notes**
Eric	I'm not very clear about it, but afterwards she told me that she didn't want me to go in but that-well, I was in that state 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 (tricolor 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



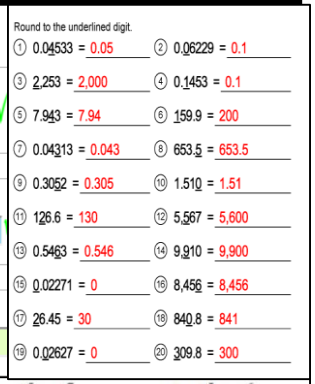


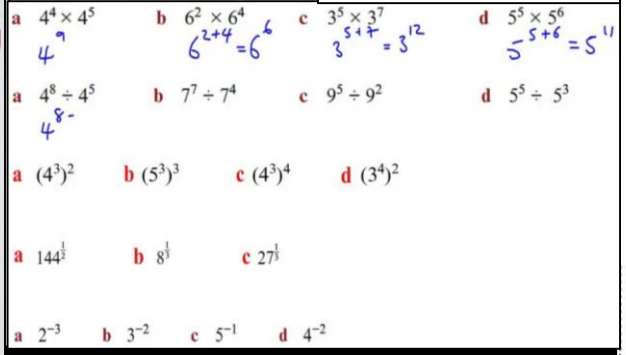




Order of Operations	In mathematics, the **order** of **operations** tells us in which sequence we should perform operations in order to evaluate a given mathematical expression.
Index	An index number is a number which is raised to a power. The power, also known as the index, tells you how many times you have to multiply the number by itself.

Questions & Answers





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

Key Facts

Square and Cube Root Reference Chart

Number	Second Power	Square Root	Third Power	Cubed Root
n root	$n^2 = n \cdot n$ Square of n	√perfect square	$n^3 = n \cdot n \cdot n$ Cube of N	∛perfect cube
1	1^2	√1	1^3	∛1
2	2^2	√2	2^3	∛8
3	3^2	√9	3^3	∛27
4	4^2	√16	4^3	∛64
5	5^2	√25	5^3	∛125
6	6^2	√36	6^3	∛216
7	7^2	√49	7^3	∛343
8	8^2	√64	8^3	∛512
9	9^2	√81	9^3	∛729
10	10^2	√100	10^3	∛1000
11	11^2	√121	11^3	∛1331
12	12^2	√144	12^3	∛1728
13	13^2	√169	13^3	∛2197
14	14^2	√196	14^3	∛2744
15	15^2	√225	15^3	∛3375
16	16^2	√256	16^3	∛4096
17	17^2	√289	17^3	∛4913
18	18^2	√324	18^3	∛5832
19	19^2	√361	19^3	∛6859
20	20^2	√400	20^3	∛8000

Comparing & Ordering Decimals

All numbers have value. You can compare the value of two number by using the following symbols:

Greater Than	Less Than	Equal To
>	<	=

Follow these steps to compare two numbers.

Step 1: Line up the numbers according to place value.

12.4
12.39

Step 2: Compare the numbers in each place starting with the largest.

Start here
1 = 1
2 = 2
4 is more than 3
So.....
12.4 is greater than 12.39

12.4
12.39

Step 3: Use the symbols to show the relationship between the two numbers

12.4 > 12.39

12.4 is greater than 12.39

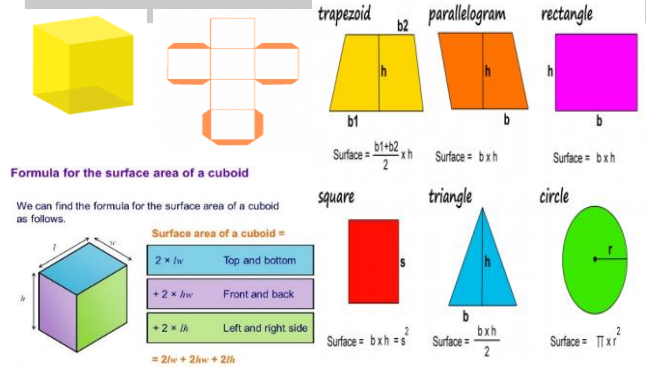
To order a group of numbers, you complete steps 1-3 with more than 2 numbers.

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

Important Ideas

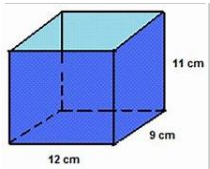
Cube | Net of Cube | Area of Shapes

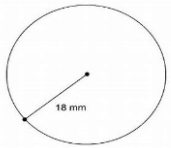


Vocabulary

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





Use π = 3.142 (3 dp)

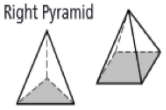
Find the volume of the cuboid above.	**Find the circumference of the circle above.**	**Find the area of the circle above.**
V = l x w x h **V = 12 x 9 x 11** **V = 1188 cm³**	**C = 2πr or πd** **C = 2 x 3.142 x 18** **C = 113.04 mm**	**A = πr²** **A = 3.142 x 18²** **A = 1017.36 mm²**

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

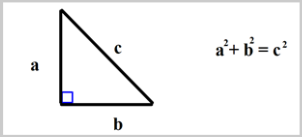
Figure	Formulas for Volume (V) and Surface Area (SA)
Rectangular Prism 	$V = lwh$ = length × width × height $SA = 2lw + 2hw + 2lh$ = 2(length × width) + 2(height × width) + 2(length × height)
General Prisms 	$V = Bh$ = area of base × height SA = sum of the areas of the faces
Right Circular Cylinder 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

YEAR 9 – TRINITY TERM 1- MATHEMATICS- HIGHER- GEOMETRY

LEARNING - LOVING - LIVING

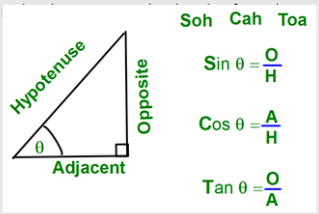
Methods Explored

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



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

The sides are labelled in relation to the a



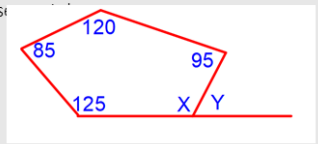
Exterior angles in any regular polygon

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

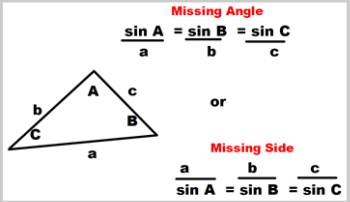
Irregular polygon do not have equal sides or angles so you need to work each angle out s



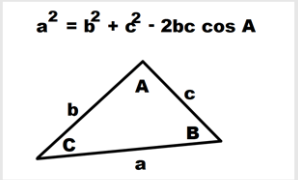
(Interior angles in any pentagon sum to 540°)

Formulae to learn by heart

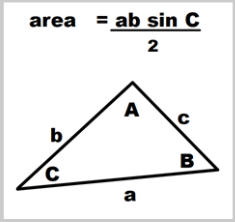
Sine Rule : when you know a combination of at least two pairs of sides and their opposite angles with one missing element.



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



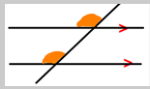
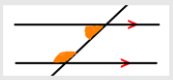
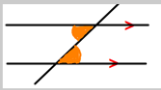
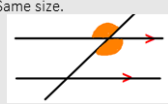
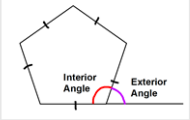
Area of a triangle rule : two sides and the angle between them is known (or can be found).



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. 

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

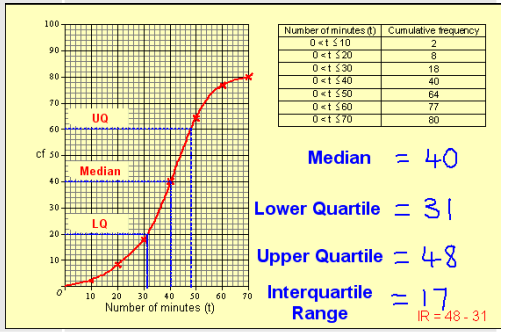
'Strata' means 'layers'. This is when the sample you select is based on the size of the subgroups ('layers') within the population so that your sample is representative of the proportions of these sub groups within the population.

There are 20 boys and 40 girls in a year.
I need 30 people for my sample.

Boys in the sample $= \frac{20}{60} \times 30$

Cumulative Frequency

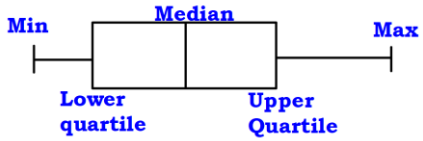
This is a way of representing **grouped data**. To find the cumulative frequency you add the frequencies up as you go. You plot the highest value of the groups against the cumulative frequency.



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

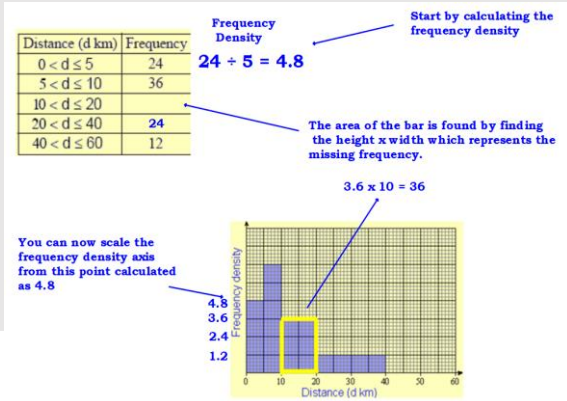
Box Plot

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.



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)



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

57	Frequency Trees
61	Two-Way Tables
62	Averages and the Range
63	Data - Discrete and Continuous
65	Frequency Tables and Diagrams
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186	Cumulative Frequency
187	Box Plots
205	Histograms

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 x F) = 24 + (2 x 19) = 62

Higher tier -The Mole

A mole of an element is simply **$6.02x10^{23}$ 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 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	$6.02x10^{23}$ atoms of an element or molecules in a compound
Avogadro's number	$6.02x10^{23}$ 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:

$$Mg + 2HCl \rightarrow MgCl_2 + H_2$$

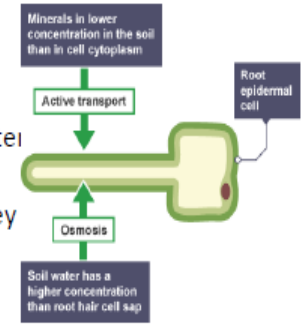
Higher tier - Limiting Reagent

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.

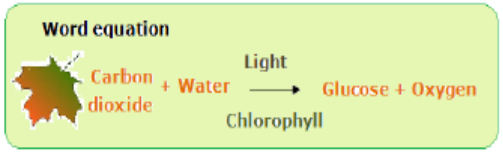
Roots

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



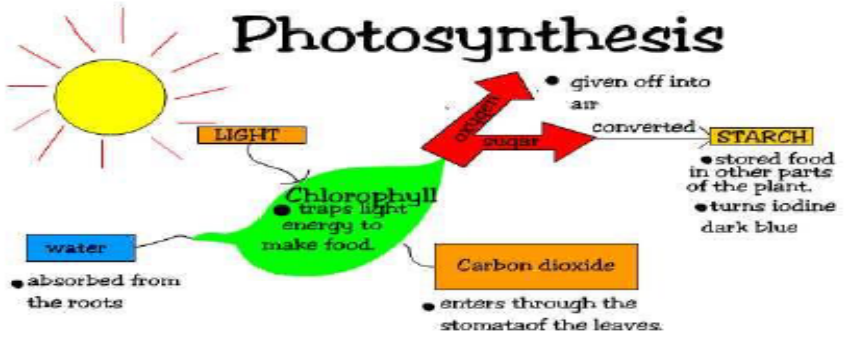
Photosynthesis

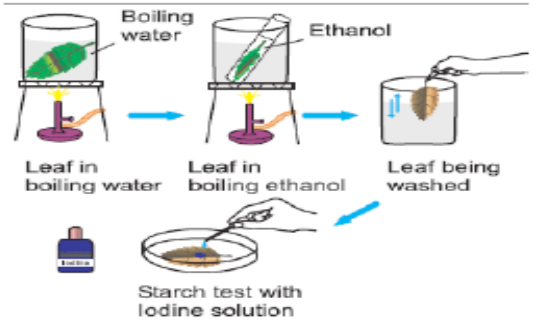
- Plants use **photosynthesis** to make food (glucose) using **energy** from the sun



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

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

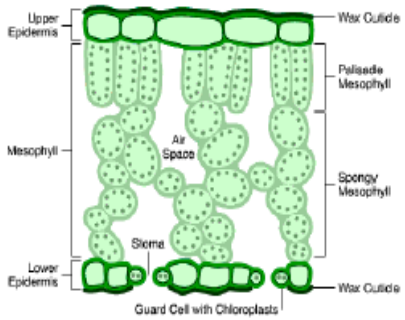


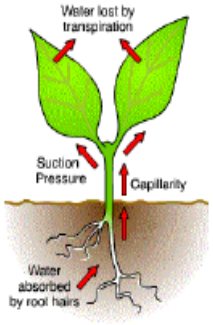


Leaves can be tested for starch using iodine The leaf is boiled to break open cells and then boiled in ethanol to remove the chlorophyll before testing with iodine. Blue/black is a positive result.

Leaf adaptations

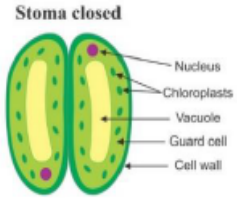
- Large **surface area** to absorb lots of light
- The upper layer has a **waxy coating** to prevent water loss and damage
- The **palisade cells** are towards the top of the leaf and which contain lots of chloroplasts. They are long & thin to use all the light up.
- There are small holes on the bottom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



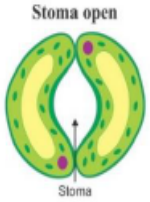


Key Terms	Definitions
Epidermis	Type of plant tissue that covers the surface of a plant
Palisade mesophyll	Tissue in the leaf where photosynthesis takes place
Spongy mesophyll	Tissue in the leaf with air spaces between cells – specialised for gas exchange
Xylem	Narrow tubes in the roots, stem and leaves,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

Stomata, guard cells and transpiration

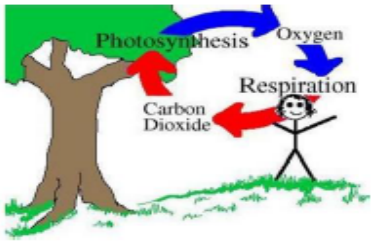


- Stomata allow the gases of photosynthesis to enter or leave the leaf. They need to be open to allow photosynthesis to take place. They also allow water to leave through transpiration
- Transpiration is the upward flow of water up from the roots and out of the leaf. It causes more water to be drawn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



Carbon dioxide and oxygen

- The balance of oxygen and carbon dioxide in the atmosphere is maintained through respiration in plants and animals and by photosynthesis in plants .
- Plants produce oxygen during respiration. They produce much more oxygen during photosynthesis than they consume in respiration, this is how the oxygen consumed by plants and animals is replenished in the air



- Recently the balance of oxygen & CO2 has been upset, CO2 levels are rising due to deforestation & burning fossil fuels leading to global warming

Experiment: Photosynthesis

Equipment List

- a boiling tube
- freshly cut 10 cm piece of pondweed (*Cabomba* or *Elodea*)
- a light source
- a ruler
- a test tube rack
- a stop watch
- 0.2% solution of sodium hydrogen carbonate solution
- a glass rod

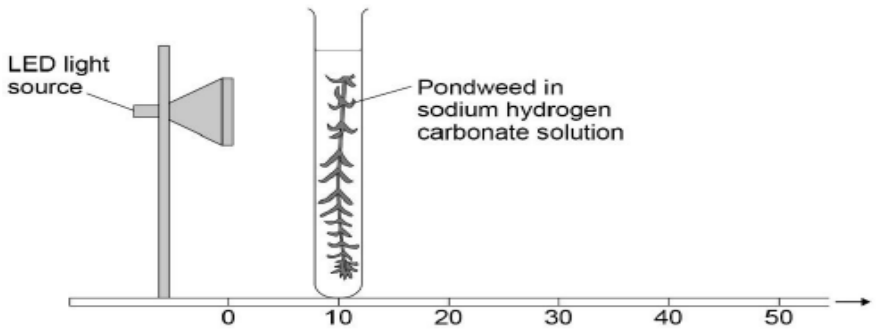
Variables

I.V Distance between lamp and plant (light intensity)
D.V Number of bubbles given off in one minute
C.Vs Type and mass of pondweed, time in which bubbles are counted, volume of solution, temperature of solution.

Method

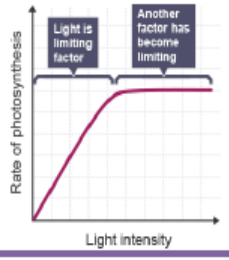
1. Set up a test tube rack containing a boiling tube at a distance of 10 cm away from the light source
2. Fill the boiling tube with the sodium hydrogen carbonate solution.
3. Place the piece of pondweed into the boiling tube with the cut end uppermost. Gently push the pondweed down with the glass rod.
4. Leave the boiling tube for 5 minutes.
5. Start the stop watch and count the number of bubbles produced in one minute.
6. Record results in a table
7. Repeat the count twice more so that the mean number of bubbles per minute can be calculated.
8. Move the test tube rack to a distance of 20 cm from the light source and repeat steps 4–6.
9. Repeat using distances of 30 cm, 40 cm and 50cm between the test tube rack and the light source.

Diagram



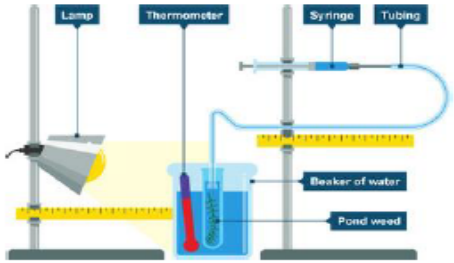
Expected Results

As the lamp gets closer to the pondweed the number of bubbles should increase as more oxygen is being produced. However, when the lamp gets very close, there will no longer be an increase in bubbles as something else (temperature or carbon dioxide concentration) becomes the limiting factor. A graph should look like this:



Increasing Accuracy

A syringe could be used to increase the accuracy of the volume of gas given off.

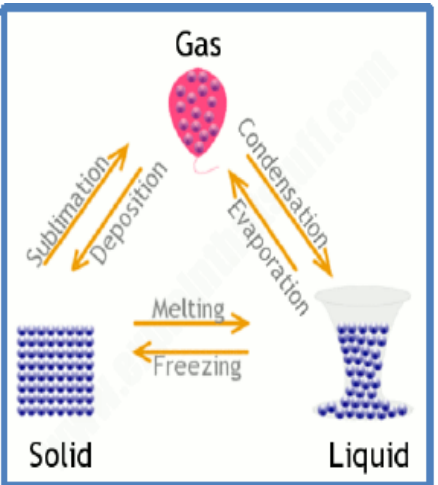


States of matter and changes of state

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 no change in the **mass** of the substance. This is because no particles are created or destroyed.

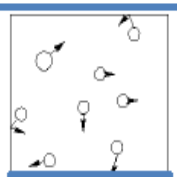


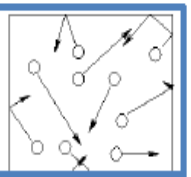
Density and the particle model

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 empty space 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 divide 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 collide 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

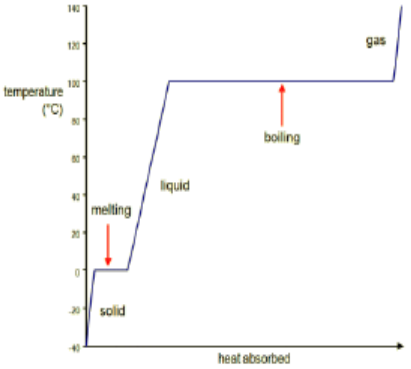

Hotter gas – more kinetic energy

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 temperature of a gas (keeping the volume the same) **increases** the pressure 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
$\rho = \frac{m}{V}$ *	*ρ = density (kilograms per metre cubed, kg/m^3)* *m = mass (kg)* *V = volume (metres cubed, m^3)*

Internal energy and the particle model



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

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 no 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. Note: temperature does not 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. Specific latent heat 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)*

Experiment: Density of Objects and Materials

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.

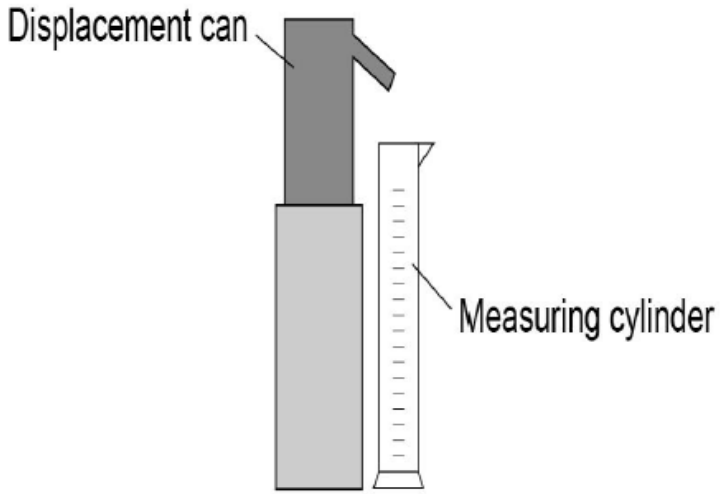
For liquids:
1. Measure the mass of the empty beaker.
2. Record your results in a table. Your table will also need columns for the mass of the beaker with the liquid in, the mass of the liquid, the volume of the liquid and the density.
3. Pour about 100 ml of liquid into the measuring cylinder. Measure 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/cm^3. Determine the mass of sugar per cm^3 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/m^3

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

Diagram



Increasing accuracy

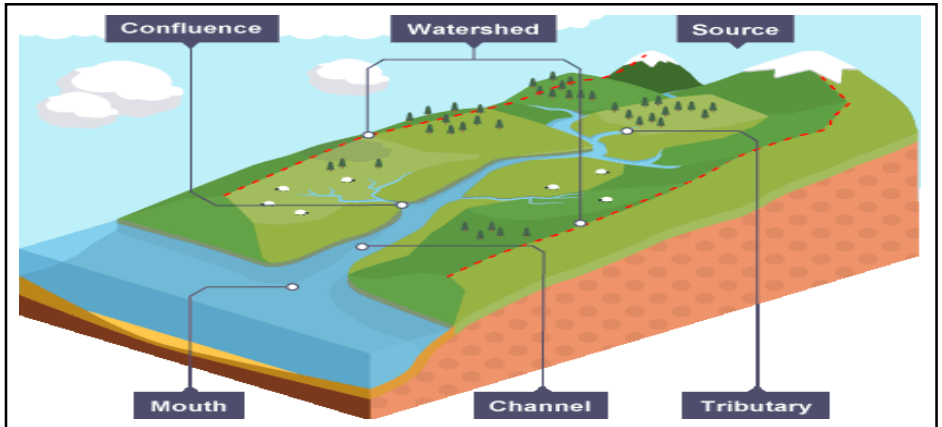
Vernier callipers can be used to measure lengths to a very high degree of accuracy.
Balances that have a high resolution.
Using a burette to measure volume to a higher resolution.

Sources of Error

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

A river's water can fluctuate over time. Understanding the hydrological cycle is useful in order to understand how and why the amount of water fluctuates.
A drainage basin is the area of land around the river that is drained by the river and its tributaries.

1	**Watershed**	The area of high land forming the edge of a river basin
2	**Source**	Where a river begins
4	**Mouth**	Where a river meets the sea
5	**Confluence**	The point at which two rivers meet
6	**Tributary**	A small river or stream that joins a larger river
7	**Channel**	This is where the river flows



A **long profile** is a line representing the river from its source (where it starts) to its mouth (where it meets the sea). It shows how the river changes over its course.
Upper course - in the upper course, where the river starts, there is often an upland area. The river's **load** is large in the upper course, as it hasn't been broken down by erosion yet.
Lower course - in the lower course, the land is a lot flatter. The river's load is fine sediment, as erosion has broken down the rocks.
Cross profile - A **cross profile** shows a cross-section of a river's channel and **valley** at a certain point along the river's course.

Diagram on next page.

Erosion – the wearing away of rock and soil found along the river bed and river bank

8	Hydraulic action	The force of the river against the banks can cause air to be trapped in cracks and crevices. The pressure weakens the banks and gradually wears it away.
9	Abrasion	Rocks carried along by the river wear down the river bed and banks.
10	Attrition	Rocks being carried by the river smash together and break into smaller, smoother and rounder particles.
11	Solution	Soluble particles are dissolved into the river.

Transportation – the river picking up and carrying material as it flows downstream.

12	Suspension	Fine, light material carried along in the water.
13	Saltation	Small pebbles and stones bounced along the river bed.
14	Traction	Large boulders and rocks are rolled along the river bed.
15	Deposition	When a river looses energy it drops its load or deposits some of the material it is carrying.
16	Velocity	Speed of the river measured in meters per second.

Diagram 1 - River erosion processes:

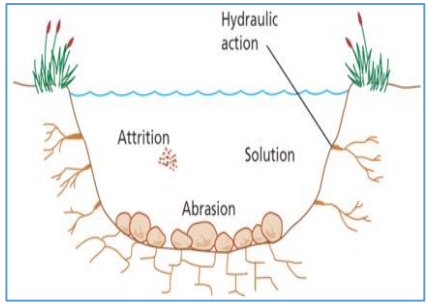


Diagram 2: River transport processes

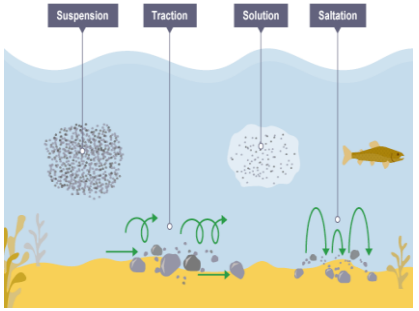


Diagram 3 - Long and cross profiles of a typical river:

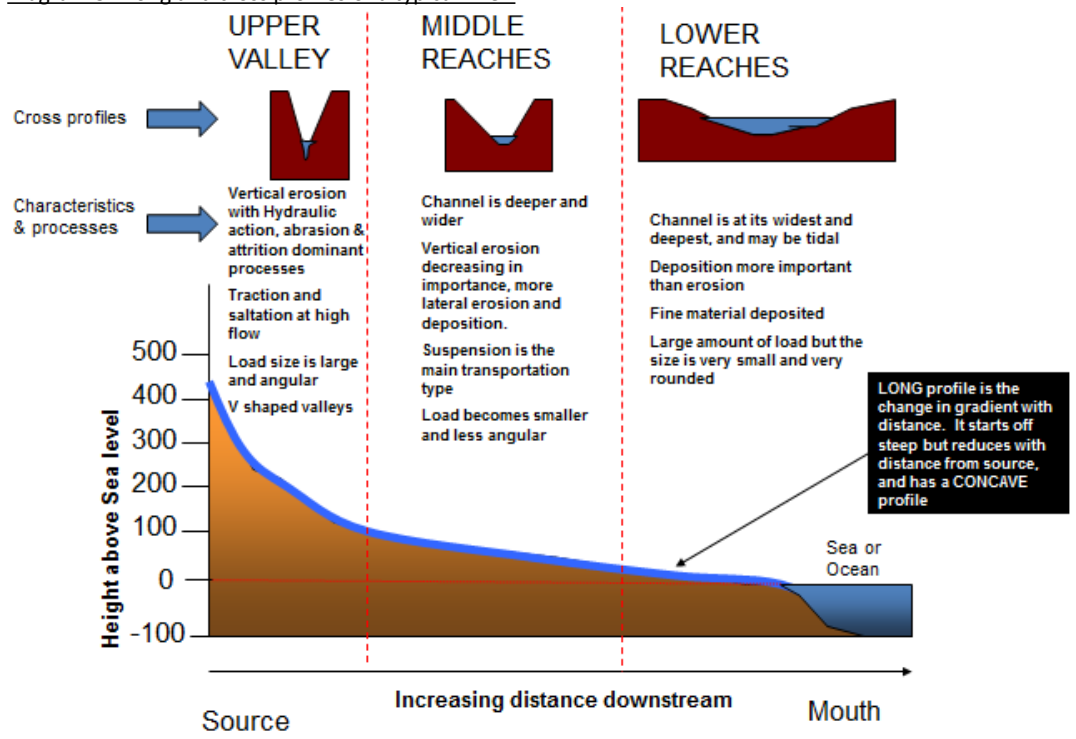


Diagram 4: Waterfalls and gorges

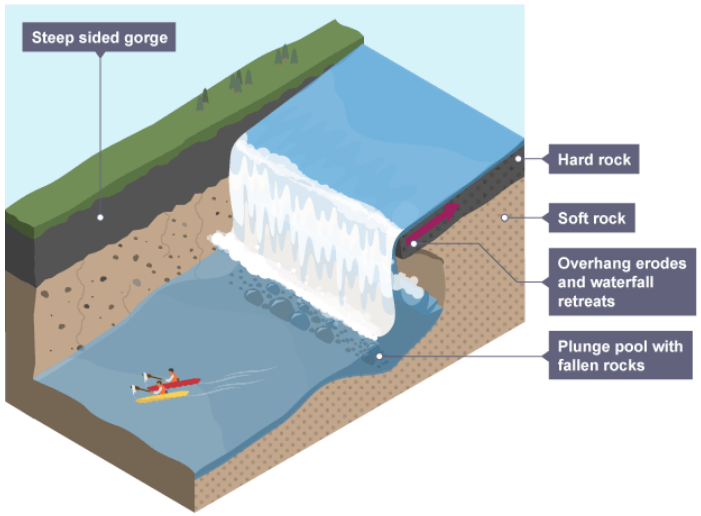
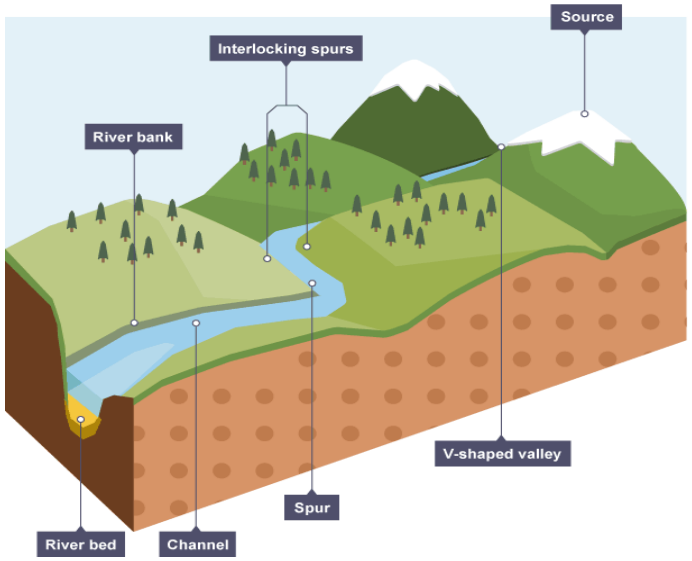


Diagram 5: interlocking spurs



Erosional landforms:

The process of **erosion** can create different landforms. The erosional features are often found in the **upper course** of the river.

Waterfall and gorges

A **waterfall** is a sudden drop along the river course. It forms when there are horizontal bands of resistant rock (hard rock) positioned over exposed, less resistant rock (soft rock).

The soft rock is eroded quicker than the hard rock and this creates a step.

As erosion continues, the hard rock is undercut forming an overhang.

Abrasion and **hydraulic action** erode to create a **plunge pool**.

Over time this gets bigger, increasing the size of the overhang until the hard rock is no longer supported and it collapses.

This process continues and the waterfall retreats upstream.

A steep-sided valley is left where the waterfall once was. This is called a **gorge.**

In the upper course there is more **vertical erosion**. The river cuts down into the valley. If there are areas of hard rock which are harder to erode, the river will bend around it. This creates **interlocking spurs** of land which link together like the teeth of a zip.

YEAR 9 – TRINITY TERM – HISTORY – PAPER 1- WHITECHAPEL, C.1870-C.1900

LEARNING - LOVING - LIVING

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.

Context	
1	There was much religious change under the Tudors and Elizabeth had to find a way of dealing with these issues. Many people objected to Elizabeth's coronation in 1558 and she faced questions over her legitimacy, with many preferring Mary Queen of Scots, and whether a woman could rule effectively.
Key events	
2	**1532** Start of the English Reformation.
3	**1556-58** Dutch Revolt against Spanish.
4	**1558** Elizabeth's accession.
5	**1559** Mary Queen of Scots became Queen of France.
6	**1559** Treaty of Cateau-Cambresis – England had to return Calais to France.
7	**1559** Religious Settlement and visitations commenced.
8	**1556** Pope issued an instruction that English Catholics should not attend Church of England services.
9	**1560** Elizabeth helped Scottish Protestant lords defeat Mary of Guise. Treaty of Edinburgh.
10	**1562** Religious war in France.
11	**1563** Philip II banned import of English cloth into Netherlands.
12	**1567** Elizabeth allows Dutch Sea Beggars to shelter in English harbours.
13	**1568** Genoese Loan
14	**1568** Mary Queen of Scots fled to Scotland and then arrives in England.
15	**1569** Revolt of the Northern Earls,
Key Concepts	
16	**Society and Government** was very structured and hierarchical. The monarch had much power.
17	**Elizabeth's accession** caused controversy as her gender, legitimacy and religion were questioned.
18	**Religion** – Elizabeth imposed her Religious Settlement but this upset many English and foreign Catholics and some wanted Mary Queen of Scots to replace Elizabeth**.**
19	**Financial problems** – When Elizabeth took the throne the Crown was £300,000 in debt.
20	**Foreign powers** opposed to Protestantism remained an issue for Elizabeth, especially Scotland, France and Spain.

Key Words		
20	**Nobility**	Belonging to the aristocracy.
21	**Gentry**	People of a high social class.
22	**Yeomen**	Men who held a small amount of land or an estate.
23	**Tenant farmers**	Farmed rented land usually owned by yeomen or gentry.
24	**Merchants**	Traders.
25	**Professionals**	Lawyers and doctors.
26	**Craftsmen**	Skilled employees.
27	**Extraordinary taxation**	Occasional, additional taxation to pay for unexpected expenses, especially war.
28	**Militia**	A military force of ordinary people, rather than soldiers, raised in an emergency.
29	**Privy council**	Advisors to Elizabeth.
30	**Justices of the Peace**	Large landowners who kept law and order.
31	**Patronage**	To provide someone with an important job or position.
32	**Secretary of State**	Elizabeth's most important Privy Counsellor.
33	**Crown**	Refers to the monarch and their government.
34	**Divine Right**	Belief that the monarch's right to rule came from God.
35	**Royal Prerogative**	Elizabeth could insist that Parliament did not talk about certain issues.
36	**Succession**	The issue of who was going to succeed the throne after the existing monarch died.
37	**Legitimate**	Being born in wedlock when the existing king and queen were married.
38	**Customs duties**	Taxes from trade.
39	**Auld Alliance**	A Friendship between France and Scotland.
40	**Puritans**	Radical Protestants.
41	**Ecclesiastical**	An adjective used to describe things to do with the Church.
42	**Act of Supremacy**	Made Elizabeth supreme governor of the Church of England.
43	**Act of Uniformity**	Established the appearance of churches and the form of services they held.
44	**Royal Injunctions**	A set of instructions to reinforce the acts of Supremacy and Uniformity.
45	**Recusants**	Catholics who were unwilling to attend church services laid down by the Elizabethan religious settlement.
46	**Visitations**	Inspections of churches and clergy by bishops to ensure that the Act of Supremacy was being followed.
47	**Papacy**	The system of church government ruled by the Pope.
48	**Heretics**	People who refused to follow the religion of the monarch.
49	**Martyr**	Someone who dies for their religious beliefs.
50	**Counter Reformation**	The campaign against Protestantism.
51	**Philip II**	Catholic King of Spain.
52	**Trade embargo**	When governments ban trade with another country.
53	**Excommunicated**	Expulsion from the Catholic Church.
54	**Sea Beggars**	Dutch rebels who fled to the water.
55	**Genoese Loan**	When Elizabeth took gold loaned to Philip II by the bankers of Genoa.

Early Challenges	
56	**Legitimacy-** Her father Henry VIII divorced his first wife without permission of the Pope. This meant his marriage to Elizabeth's mother Anne Boleyn was invalid. This meant Elizabeth was illegitimate.
57	**Marriage-** Elizabeth was expected to marry quickly because women were thought not strong enough to rule alone, she would need a husband to help control the nobles and she needed to produce an heir to provide stability after she died.
58	**Invasion-** Danger of invasion from powerful foreign countries… •*France*–England was already at war with Catholic France. France had close ties with Mary, Queen of Scots. •*Scotland,* •*Spain* –Wealthy & powerful, strongly Catholic.

Challenges to Elizabeth at Home and Abroad 1569-88	
1	Elizabeth faced many serious threats both within England and from aboard. Many still wanted Mary Queen of Scots on the throne. Philip II of Spain also wanted to remove Elizabeth from the throne. Spain and England were religious and political rivals. There was particular tension when Drake tried to challenge Spanish dominance in the New World.
Key events	
2	**1492** Discovery of the New World
3	**1567** Spanish travel to Netherlands to crush Protestant revolt.
4	**1568** Mary Queen of Scots arrives in England
5	**1569** Revolt of the Northern Earls
6	**1570** Elizabeth excommunicated
7	**1571** The Ridolfi Plot
8	**1572** Elizabeth hired Drake as a privateer
9	**1576** Spanish Fury and Pacification of Ghent
10	**1577-80** Drake circumnavigated the globe.
11	**1583** Throckmorton Plot
12	**1584** Treaty of Joinville
13	**1585** Act of Preservation of the Queen's Safety/Treaty of Nonsuch
14	**1586** Babington Plot
15	**1587** Mary Queen of Scots executed
16	**1587** Attack on Cadiz
17	**1588 Spanish Armada**

Key Words		
21	**New World**	North and South America.
22	**Revolt of the Northern Earls**	When northern earls encouraged Catholics to rebel.
23	**Ann Percy**	Wife of Thomas Percy.
24	**Jane Neville**	Wife of James Neville and Duke of Norfolk's sister.
25	**Mary Queen of Scots**	Supported the plan to marry the Duke of Norfolk.
26	**Thomas Howard, Duke of Norfolk**	One of England's most senior nobles and a Protestant.
27	**Charles Neville, Earl of Westmorland**	Duke of Norfolk's brother in law and from an important Catholic family.
28	**Thomas Percy, Earl of Northumberland**	Had been important under previous monarchs, but as a Catholic he had been side-lined.
29	**James Pilkington**	Appointed Archbishop of Durham.
30	**Civil War**	A war between people in the same country.
31	**Conspiracy**	A secret plan with the aim of doing something illegal.
32	**Papal Bull**	A written order by the Pope.
33	**Council of the North**	Used to implement Elizabeth's laws and authority in the North of England.
34	**Ridolfi Plot**	Plan to murder Elizabeth, launch a Spanish attack and put Mary Queen of Scots on the throne.
35	**Priest holes**	Secret hiding places for Catholic priests.
36	**Hanged, drawn and quartered**	A type of punishment used when the accused was found guilty of high treason. The accused would be hanged until near dead, cut open, have their intestines removed and were finally chopped into four pieces.
37	**Throckmorton Plot**	Plan for the French Duke of Guise to invade England, free Mary , overthrow Elizabeth and restore Catholicism in England.
38	**Sir Francis Walsingham**	Elizabeth's Secretary of State.
39	**Babington Plot**	The Duke of Guise would invade England and put Mary on the throne.
40	**Act of Preservation of the Queen's Safety**	In the event of Elizabeth's assassination, Mary would be banned from the succession.
41	**Agent provocateurs**	Agents who become part of groups suspected of wrongdoing and encourage other members to break the law so that potential threats can be identified and arrested.
42	**Foreign Policy**	The aims or objectives that guide a nation's relations with other states.
43	**Privateer**	Individuals with their own armed ships that capture other ships for their cargo, often with the support and authorisation of the government.
44	**Francis Drake**	Elizabeth hired him as a privateer.
45	**Circumnavigate**	To travel all the way around the world.
46	**Autonomy**	The right to self government, so people of one country can manage its own affairs.
47	**Spanish Fury**	The Spanish rampaged through Dutch provinces as they left.
48	**Pacification of Ghent**	Spanish troops expelled from Netherlands, political autonomy to be returned and end of religious persecution.
49	**Mercenary**	A soldier who fights for money rather than a nation or a cause.
50	**Treaty of Joinville**	The King of France and the King of Spain became allies against Protestantism.
51	**Treaty of Nonsuch**	Effectively put England and Spain at war.
52	**Singeing of the King of Spain's beard**	Drake sailed into Cadiz harbour, Spain's most important Atlantic port, and over 3 days destroyed 30 ships.
53	**Tilbury Speech**	Elizabeth's famous speech to her troops before the Armada.

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

1. The Five Pillars

They support the main principles and beliefs of Islam, just as pillars are used to support a building.

1. Shahadah – declaration of faith in God.
2. Salah – prayer.
3. Zakah – charitable giving.
4. Sawm – fasting.
5. Hajj – pilgrimage.

Topics covered:	4. Salah	8. Jihad
1. The five pillars	5. Sawm	9. Id-ul-Fitr
2. Ten Obligatory Acts	6. Zakah	10. Id-ul-Adha
3. Shahadah	7. Hajj	11. Ashura

2. Ten Obligatory Acts For Muslims who follow the Twelver Shi'a Islam, there are ten duties they must follow. They include the five pillars except for Shahadah.

Ten Obligatory Acts:

1. Salah – prayer.
2. Sawm – fasting.
3. Zakah – Charitable giving.
4. Khums – a 20 percent tax on income once all expenses are deducted.
5. Hajj – pilgrimage
6. Jihad – the struggle to maintain the faith and defend Islam.
7. Amr-bil-Maruf – encouraging people to do what is good.
8. Nahi Anil Munkar – discouraging people from doing what is wrong.
9. Tawallah – to be loving to the friends of God, including Muhammad and the Imams.
10. Tabarra – disassociating from the enemies of God.

3. Shahadah

- The basic belief of Islam is expressed: 'There is no God but Allah and Muhammad is the Prophet of Allah'.
- Reciting this in front of Muslim witnesses is the requirement for joining the community.
- It is recited many times during a lifetime. E.g. when a baby is born and in the daily prayers.
- It provides the foundation for the other four pillars. The other four are actions which put a Muslims faith (expressed in the Shahadah) into action.

Shi'a Islam: Many Shi'as add an extra phrase to the Shahadah.

- 'And Ali is the friend of God'.

8. Jihad	Greater Jihad:	Lesser Jihad:
	• A personal inward struggle of all Muslims to live in line with the faith. • They must observe the five pillars to bring them closer to God. • Muslims must devote their lives to God by avoiding temptations like drugs and alcohol. • Some try to improve life for people in the community • By completing these things, Muslims improve themselves spiritually and deepen their relationship with God.	• Less important that greater Jihad. Outward struggle to defend Islam. • There are texts in the Qur'an which appear to allow extreme violence but they cannot be used to defend terrorism. • Muslims must follow the rules set about by Holy War when taking on the task of lesser Jihad. • Neither lesser Jihad nor holy war should be used to defend terrorist attacks. However lesser Jihad in misinterpreted in modern times

4. Salah: Times of prayer:

- Some Muslims are required to pray at 5 set times during the day -just before sunrise, just after midday, afternoon, just after sunset and night.
- Shi'a Muslims combine the midday and afternoon prayers, and the sunset and night prayers, so they pray 3 times a day.

Preparation for prayer:

- It is important to be spiritually clean before prayer. Muslims complete ritual washing or ablution which is called **wudu.**

Direction of prayer:

- It is important Muslims face the holy city of Makkah while praying. It means all Muslims are physically and mentally focusing on one place associated with God. If the prayers take place in a mosque, it is easy to achieve as they have a Mihrab. It is a niche built into the wall which shows the direction of Makkah. If prayer takes place outside of a mosque, Muslims used a compass which shows the direction of Makkah.

Prayer in a mosque:

- ✓ Mosques have carpets which look like rows of prayer mats to give each person suitable room to pray properly.
- ✓ Prayers are led by an imam who is positioned at the front but also facing the Mihrab.
- ✓ Men and women pray at the same time but in separate spaces.
- ✓ It is normal for the imam's voice to be broadcast in to the women's prayer room at the same time so he can lead their prayers.

The rak'ah: The daily prayers are made up of a number of rak'ah. It is a set sequence of actions and recitations. 'So **woe to those who pray but are heedless of their prayer'. Qur'an 107:4-5**

Jummah prayer:

- The midday prayer every Friday is considered to be special. All male Muslims are expected to attend a mosque for this prayer, and women may do so if they wish.

Prayer at home:

- Muslims are allowed to pray at home/ they still have to perform Wudu/ many Muslims use a prayer mat, which they position facing Makkah.

Significance of prayer:

- Prayer is important as it is what God commanded them to do.
- It creates a greater awareness of God, which motivates them to do God's will.
- It unites Muslims worldwide, because they all pray in the same way.
- Reciting the Qur'an during prayer reminds them of its importance.

5. Sawm

- Ramadan is the ninth month - when they focus on fasting.
- Muslims fast during daylight hours, so will wake up before sunrise to eat and drink enough to keep them going until sunset.
- For Muslims fasting is not just about food or drink, smoking and sex are also forbidden in daylight hours.
- The whole focus during the month of Ramadan is on God, for which purity of thought is required in order to cleanse the soul and free it form harm.
- Fasting requires self-discipline, but allows Muslims to show they can sacrifice their physical needs as evidence of their submission to God.

Exceptions:

People can be excused for:
- health reasons – for example pregnant women
- those who are too ill to take part
- young children who need to eat
- nursing mothers
- those who are taking long journeys

The Night of Power:

- An important festival which marks the beginning of God's revelation to Muhammad.
- Observing the Night of Power gives Muslims the benefit of worshipping for a thousand months.
- Muslims try to keep awake throughout the night on each of the possible dates, devoting themselves to prayers and studying the Qur'an.

9. Festival of Id-ul-Fitr

It marks the end of the month of Ramadan.

How is it celebrated?

- Celebrated for either one, two or three days.
- Muslims gather together in mosques or outdoor areas to say prayers. There is also a sermon from the Imam reminding them to forgive and forget issues
- Everyone wears their best clothes and homes are decorated.
- Special foods are eaten, and there are processions through the street.
- In areas where Muslims live, they may be given the day off to enjoy the festival.

6. Zakah

- Zakah is giving alms (giving money to the poor).
- For Muslims who have enough savings it is compulsory to give 2.5 percent every year to help the poor.
- Only Muslims who have savings greater than a certain amount are required to give Zakah.
- The Qur'an makes it clear who should receive Zakah.
- In addition to giving Zakah Muslims are encouraged to voluntarily give their money and time to charity at any point of the year. This is called Sadaqh.

'Alms are meant only for the poor, the needy'. Qur'an 9:60

Significance of Zakah:

- Muslims are fulfilling a duty imposed by God.
- Gives Muslims a good attitude towards money. They learn to share wealth and not be greedy.
- Strengthens communities by making the rich support the poor.
- Links well with Salah. Zakah put the prayers of concern for others into action.

Khums:

- An important part of Shi'a practice in addition to Zakah.
- Requirement for Muslims to give 20% of excess earnings as a donation.

7. Hajj

Hajj is a pilgrimage. It should be made at least once in a Muslim's lifetime, provided they are healthy and wealthy enough to do so. Hajj starts and ends in the holy city of Makkah.

How Hajj is performed

1. State of Ihram
2. Circling the Ka'aba
3. Travelling to Arafat
4. Standing at Arafat
5. Throwing pebbles at Mina
6. Returning to Makkah

The significance of Hajj:

- Many Muslims go a number of times even though it is a requirement to only go once.
- It can bring about a deep spiritual transformation that makes them a better person.
- It teaches sincerity and humility in a person's relationship with God.
- It produces inner peace, which is shown in the values of justice, honesty, respect, kindness, mercy and forgiveness.
- It shows self-discipline. The physical and mental demands it imposes are great.
- It emphasises unity and equality.
- It reminds Muslims of the faith and examples set by Ibrahim, Hajira and Ishmael.

10. Festival of Id-ul-Adha

It is the festival of sacrifice or **Greater Eid.** It remembers and honours the Prophet Ibrahim, who was willing to sacrifice his son **How is it celebrated?**

- Begins with prayers in the mosque and a sermon from the imam about sacrifice.
- Animals are slaughtered to remember Ibrahim's sacrifice.
- Cards and presents are given and community celebrations organised.
- People living on their own receive invitations to go their neighbours to share meals. Those in hospital will receive visitors to make sure that everyone is included in the celebrations.

11. Ashura

Sunni Muslims refer to Ashura as the Day of Atonement. They remember it as the day when the Israelites were freed from slavery in Egypt.

How is it commemorated?

- In many Muslim countries, a public holiday takes place. During the day Shi'a Muslims take part in a public expression of grief and mourning. Some even hurt themselves to connect with Husayn's suffering and death. However, religious authorities have condemned these acts saying they are wrong for Muslims to do.
- Muslims in the UK, will go for a procession and to listen to speeches. They are encouraged to donate blood to remember the sacrifice instead of hurting themselves.
- For Sunni Muslims, Ashura is a day when many will voluntarily fast. Many give to charity, show kindness to their family and to the poor, recite prayers and learn from Islamic scholars.

COSHH stands for 'Control of Substances Hazardous to Health'

Hazardous Substances

- Chemicals
- Products Containing Chemicals
- Fumes
- Dusts
- Vapours
- Mists
- Nanotechnology
- Gases And Asphyxiating Gases
- Biological Agents
- Germs That Cause Diseases

The Health and Safety at Work Act 1974

As a brief overview, the HASAWA 1974 requires that workplaces provide:

- Adequate training of staff to ensure health and safety procedures are understood and adhered to
- Adequate welfare provisions for staff at work
- A safe working environment that is properly maintained and where operations within it are conducted safely
- Suitable provision of relevant information, instruction and supervision

For workplaces with five or more employees, employers must keep a written record of their health and safety policy, as well as consult with employees (or employee representatives) on relevant policies and associated health and safety arrangements.

Risk assessment

Hazards	Something with the potential to cause harm.
Risks	The likelihood the hazard will cause harm.
Control measures	Actions / activities / equipment that are used to prevent eliminate or reduce the risk of a hazard occurring.

Personal Protective Equipment - PPE

EYES AND EARS – goggles, safety glasses, visors and ear protectors

HEAD AND FACE – hard hats, helmets, bump caps

RESPIRATORY – disposable filtering face-piece, full face respirators, breathing mask

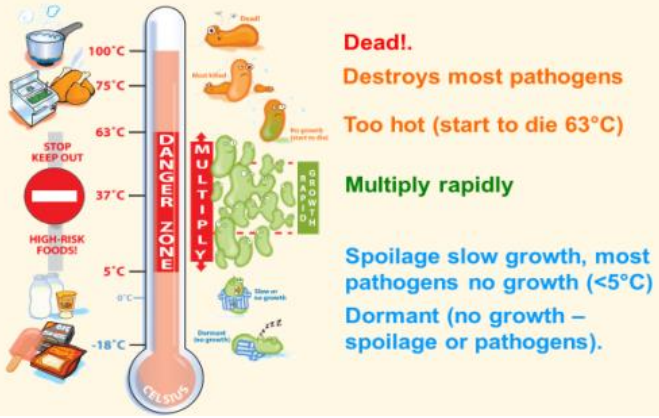
HAND AND ARM – gloves, gauntlets, mitts, armlets

Clothing – disposable overalls, high visibility vest, aprons and boile

footwear – safety boots with protective toe caps, gaiters, spats.

TECHNICAL VOCABULARY	
Radiation	Infra- red waves pass through surface of food- microwave
Conduction	Heat is in direct contact with food- fried egg
Convection	Heat moves in air or liquid to heat up food- pasta
Denaturation	Unravelling of bonds- whisking egg white
Oxidation	Reaction of cut surface fruit or veg with the air
Gelatinisation	Swelling of starch molecule until bursting, releasing amylose
Shortening	Flour is coated to prevent gluten formation- pastry
Dextrinisation	The browning of starch with heat- toast
Caramelisation	The browning of sugar with heat- caramel
Emulsification	The ability of water and oil to mix =egg yolk/mayo

Influence of temperature



Factors affecting food choice	
Biological	Hunger appetite and taste
Economic	Cost of food, income, availability
Physical	Access to shops, food skills, education, time
Social	Family, culture, meal patterns
Attitudes	Knowledge about food and beliefs
Seasonality	The food is locally grown at certain times, cheaper
Religion	Certain religions restrict certain foods
Ethical	Your beliefs prevent you from eating some foods
Medical	Some illnesses dictate your diet like diabetes
Age	Activity levels and mobility affect requirements

Nutritional needs of people at different life stages

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

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

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

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.

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.

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.

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,

YEAR 9 – TRINITY TERM- FOOD AND NUTRITION – INTERNATIONAL CUISINE, FOOD SCIENCE AND PROVENANCE

LEARNING - LOVING - LIVING

Scientific method for NEA 1

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

12. Evaluation

Keywords

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

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

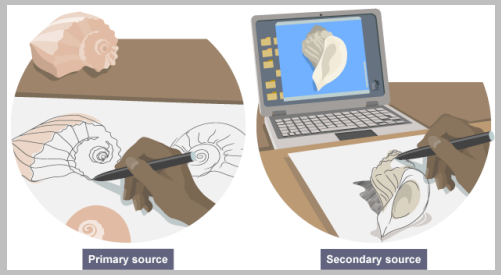
Other international cuisines include Chinese, Indian, and American; the style of dish and types of ingredients can vary considerably according to region

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

A. Key Terms

Keyword	Description
7. Pattern	A design that is created by repeating lines, shapes, tones or colors. The design used to create a pattern is often referred to as a motif. Motifs can be simple shapes or complex arrangements
2. Weight	**T**he 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. Presenting work



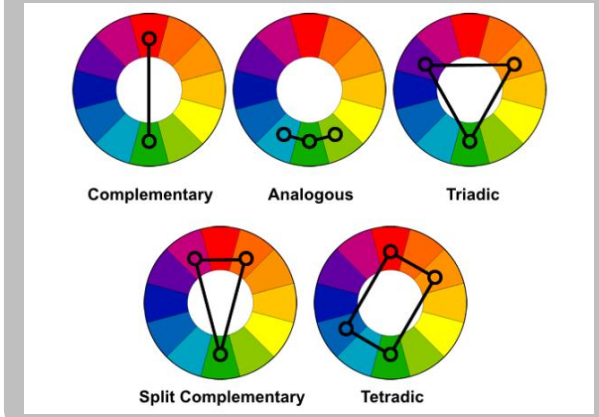
B1: Primary Source: Working from a first hand resource- something that is actually in front of you
B2: Secondary Source: Working from a second hand resource, such as a photograph.

Primary Sources allow you to:
B3: Examine your subject from different angles and change your viewpoint.
B4: Experience objects, images, people or places in different lighting conditions and compositions.
B5: Look at things close up or from further away.
B6: Take your own reference photographs from angles and in conditions that reflect your interests.
B7: Revisit your source material during your development process.

Secondary Sources cause problems such as:
B8: Not being able to draw from life will limit your decisions on viewpoint, composition and lighting.
B9: You will be relying on images generated by others based on their creative choices rather than your own.
B10: You may find it very difficult to carry out effective development like changing compositional arrangements.

C. Colour Harmony

12. Colour Harmonies are arrangements of colours which create a pleasing visual effect when paired together.



C1. Complementary colours are opposite each other on the colour wheel
C2. Analogous colours are directly next to each other on the colour wheel.
C3. A triadic colour scheme uses colours that are evenly spaced around the colour wheel
C4. The split-complementary colour scheme is a variation of the complementary colour scheme.
C5. Tetrad (rectangle) colour scheme uses two pairs of complementary colours.

RESPIRATION

1. **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 is kept open by rings of cartilage.**
2. **The Bronchi -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.**
3. **The Bronchioles - 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.**
4. **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.**
5. **Capillaries - carry the blood surrounding 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 MECHANISMS

6. 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.

7. Expiration

- 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.

GASEOUS EXCHANGE

8. Gaseous exchange The process where oxygen from the air in the alveoli moves into the blood in the capillaries. Carbon dioxide moves from the blood in the capillaries into the air in the alveoli. Gaseous exchange takes place by diffusion. Carbon Dioxide and oxygen move down a concentration gradient from a high concentration to a low concentration.

9. Oxygen in the alveoli that is at a relatively high concentration diffuses into the blood capillaries where the oxygen concentration is lower. The oxygen that diffuses out of the alveoli is replaced from the air that we continue to breath in.

10. Carbon Dioxide -Blood in the capillaries surrounding the alveoli contains a relatively high concentration of carbon dioxide and the alveoli contain a lower concentration. Thus, Carbon Dioxide diffuses into the alveoli from the blood and is eventually breathed out.

11. What helps assist Gaseous exchange?

- Alveoli are very small in size and there are millions of them! Therefore they provide a big surface area for the exchange of gases.
- The surface of the alveoli and the walls of the blood capillaries are very thin (only one cell thick) and moist which helps the exchange of gases.
- The alveoli and capillaries are touching each other so this is only a very short distance for diffusion (short diffusion pathway)
- Each alveolus is surrounded by a network of blood capillaries so there is a rich supply of blood for the gases to diffuse from/to.

AEROBIC/ANAEROBIC EXCERCISE

12. Aerobic exercise is in the presence of oxygen

Where the body breaks down food using glucose with the help of oxygen. The energy provided by glucose and oxygen makes the muscle contract and gives us the energy to move. Aerobic exercise occurs at low to moderate exercise intensity, when energy can be produced using oxygen. If maintained at a low intensity, can provide body energy for longer periods of time**.** E.g. walking, jogging. cycling all use aerobic exercise.

13. Anaerobic exercise is in the absence of oxygen

Where the energy required to muscles contract is provided in the absence of oxygen. Anaerobic exercise occurs at high exercise intensity and can only last for short periods of time. You can't carry on sprinting forever can you? E.g. sprinting, jumping, shot put etc.

	Features	KEYWORDS
elody	Mainly **Conjunct -** though there are leaps **Scalic** runs - extended from conjunct movement, especially in the harpsichord part. Rising **sequence -** b 137 **Ornaments – occasional use**: **trills** in the harpsichord part (b.19); **appoggiaturas** (b.148).	**1- Conjunct** - movement by step. **2- Scalic -** made up of notes that follow the order of a particular scale **3- Sequence** - the repetition of a musical phrase at a higher or lower pitch than the original.
hythm (incl. tempo & metre)	**2/4**, **duple time** metre – but could be notated in 6/8 compound time. It is essentially a Baroque gigue (a dance in compound duple time). **Triplets** and **dotted rhythms** The dotted quaver-semiquaver grouping (as in the first bar) would have been performed in triplet rhythm – so the dotted quaver would be two-thirds of a beat, and the semiquaver would be one-third of a beat. Semiquaver runs – particularly in harpsichord part.	**4- Ornament** – notes that decorate a melody. **5- Trill** - a musical ornament that rapidly alternates between two adjacent notes. **6- Appoggiatura** - often referred to as a 'leaning in' note, it leans on the main note commonly taking half its value and starting a semitone or tone higher. **7- Triplet** - three notes that should be played in the time it normally takes to play two. **8- Dotted rhythms -** a succession of notes composed of two note clusters, a dotted crotchet followed by a quaver, or a crotchet followed by a dotted minim.
exture	**Polyphonic/contrapuntal** **Fugal** style opening - This piece is not an actual fugue, but uses fugal characteristics (b.1-4). **Two-part imitation** - **subject** in the solo violin followed by answer in flute. **Two-part counterpoint** – 4-bars later the harpsichord LH enters with the subject, which is answered by the RH = **four-part counterpoint** Occasional playing in thirds – flute & violin as well as harpsichord. Unison doubling – in flute and violin when ripieno is playing (b.33). **Tonic pedal** on B - in bass line for middle section.	**9- Counterpoint** (polyphonic) - Multiple melodies playing together. **10- Fugue -** a complicated piece which uses **imitation** almost throughout. **11- Imitation** - the repetition of a phrase or melody in another part or voice, usually at a different pitch. **12- Pedal** - a sustained or repeated note in the bass. Pedals are usually on the tonic or dominant notes, so would be called either a tonic or a dominant pedal. **13- Concertino** - solo group **14- Ripieno -** string orchestra
nstrument (sonority)	**Concertino** – solo group, consists of flute, violin and harpsichord. **Ripieno** – Orchestra with **continuo,** only has one violin part (normally there would be two). The keyboard player would **realise** the harmony in the right hand. A **figured bass** guided the player as to what type of chord to play. **Virtuosic** solo harpsichord (first concerto for keyboard solo in musical history): rapid **scalic runs;** both hands play **trills** at same time. Only occasionally does the harpsichord play continuo chords (e.g. bars 29–37). In these passages there is figured bass. The mechanical action of the harpsichord prevented variations in **dynamics**.	**15- Continuo -** consists of one or more bass instruments, such as the cello and double bass, together with at least one chordal instrument such as a **harpsichord or Cembalo** **16- Realisation** - A musical composition that has been completed or enriched by someone other than the composer. **17- Figured Bass** - musical shorthand for the keyboard player used in the Baroque era. The figures indicate the chord to be played above the bass note and whether this is in root position, first or second inversion.
enre	**Johann Sebastian Bach** (1685–1750) is regarded as one of the greatest composers of the **Baroque** era. He worked mainly as a church organist, music director and composer in a number of cities in central Germany. At the time of the Brandenburg Concertos, however, he was employed as 'Kapellmeister' (court music director), at the town of Köthen from 1717 to 1723. The six Brandenburg Concertos were written between 1711 and 1720.	**18- Virtuosic -** characterized by exceptional technical skill. **19- Baroque** -The baroque style or period (1600-1750) **20- Dominant seventh –** Dominant chord with an added minor seventh. **21- Functional** - Tonal **harmony** based on major and minor keys is usually called **functional harmony**. Functional chords = subdominant, dominant, and tonic.
armony	Standard chords of the time (i.e. predominantly chords I, IV and V, with occasional use of II and VI), including **dominant sevenths** in various inversions. Mainly uses root position and 1st inversion chords. **Functional harmony.** **Perfect cadences** announce the ends of sections. **Suspensions** are used occasionally (i.e. 9–8 suspension at bar 130).	**22- Perfect cadence** - a cadence comprising two chords. A perfect cadence is chord V followed by chord I. **23- Suspension** Prolonging a note to create a dissonance with the next chord. Prepare – clash-resolve. **24- Diatonic** - using only notes from the key. **25- Modulation** - Change from one key to another.
onality	**D major** - used for most of the two A sections. Modulates to the **dominant** (A major) and **relative minor** (B minor) in B section. **Diatonic.**	**26- Concerto Grosso** - a concerto for a large number of solo instrumental parts. **27- Ternary** – structure describing a piece of music in 3 parts (ABA).
tructure	**Concerto grosso** **Ternary** structure (ABA). Very like the first movement, this third movement could be thought of as Ritornello form, although the return to original A section material is never entirely conclusive, within the middle section. This introduction of motifs from other sections was a common and clever technique often used by J S Bach. The A section begins in **fugal** style.	

elody	• Sequences • Arpeggiated (arpeggio)/broken chords • Stepwise/conjunct • Leaps/disjunct • Fanfare • Intervals • Ornamentation • Scalic • Syllabic (vocal pieces ONLY) • Melismatic (vocal pieces ONLY) • Range/tessitura (vocals) • Subject and countersubject	hythm (incl. tempo & metre)	**TEMPO** Allegro; Grave; Andante; free tempo; Moderato; 112bpm; 100bpm; rubato; Allegro di molto e con brio; ritardando **METRE** 4/4; 12/8; 2/4; 6/8; 3/2; 2/2 **RHYTHMIC DEVICES** · Syncopated · Triplets · Dotted rhythm · Swung · Sextuplets/septuplets · Semiquaver runs · Anacrusis
exture	· Monophonic · Homophonic Melody-dominated/melody & accompaniment Chordal accompaniment · Polyphonic Imitation Antiphony (antiphonal) Counterpoint (contrapuntal) · Heterophonic *(world music only)* · *2-part, 3-part, 4-part*	nstrument (sonority)	**ACCOMPANIMENT** · Describe what you hear the parts underneath the melody playing!! · Basso Continuo **ORCHESTRATION/INSTRUMENTATION** • Describe what instruments are doing • Describe what they are playing **INSTRUMENT TECHNIQUES (SONORITY)** · Articulation – legato/staccato · Double-stopping · Glissando/portamento · Hammer ons/pull offs · Pizzicato · Tremolo
enre	· Glam Rock · Baroque · Classical · Romantic · Concerto Grosso · Musical Theatre · Film Music · Fusion · Celtic · African · Bossa Nova	armony	• **HARMONY** = Frequently references successions of chords, r single chords. However, in a general manner, a HARMONIC DEVICE is anything that backs up and supports the tonality a piece is in. • **HARMONIC DEVICES** include: Chords, chord sequence, cadences, basslines (in relationship to other parts), dissonance, chromaticism, diatonic, drone, intervals, pedal, riff, ground bass, intervals, ostinato; extended chords; altered chords; open 5ths; circle of fifths; functional
onality	· **TONALITY** = The relationship of notes within a sclae or mode to a principal note. A wider term than KEY but often used synonymously with it. · Atonal, chromatic, major, minor, modal, pentatonic; ambiguous; bitonal	tructure	Verse-Chorus Form Da Capo Aria Ground Bass Ternary Form Fugal – subject and answer Sonata Form – Exposition, Development, Recapitulation, Coda Strophic
Dynamics	Forte (loud) Piano (Quiet) Crescendo (getting louder) Decrescendo (getting quieter)	Music Tech	Overdubbing Reverb Flanger Distortion

KEYWORDS
1- Performing: to play an instrument (including voice) to an audience.
2- Practice: To do something repeatedly in order to acquire or polish a skill.
3- Rehearsal: to prepare for a performance, typically as part of a group.
4- Maintenance: activities required or undertaken to conserve the original condition of an item.
5- Health & safety: regulations or procedures intended to prevent accident or injury.
5- technical ability: precise control; a skillful or efficient way of doing something.
5- dexterity: readiness and gracein a physical activity; skill and ease in using the hands/voice manually.
5- stamina: the ability or strength to keep doing something for a long time.
5- control: ability to manage an instrument; remaining in control of an instrument or piece.

Specific Instrumental Techniques to be learnt, developed & mastered:
DRUMS Rudiments Rolls – single stroke, multiple bounce, double stroke Diddles – single paradiddle, double, triple, paradiddle-diddle Flams; Drags; Triplets Fills
GUITAR Scales – major, minor, pentatonic Chords – power, major, minor Arpeggios Riffs
PIANO Scales – major, minor, pentatonic, modal Chords/Arpeggios – major, minor Single-handed or double-handed
All instruments Improvisation & Interpretation Sight-reading Performing solo Performing as a band

MAINTENANCE REQUIREMENTS
DRUMS 1) Regularly clean your drums 2) Replace the drum heads 3) Purchase the correct drum care equipment 4) Store your drums correctly 5) Give your kit a proper tune up
GUITAR 1) Clean your guitar body and strings 2) Protect from excessive heat or cold 3) Check and tighten all screws and fixings 4) Avoid things that can scratch and mark your guitar 5) Have it serviced once a year
PIANO 1) Position in an appropriate environment – avoid excessive humidity and temperatures 2) Cover the keys when not in use 3) Keep liquids away from the piano 4) Clean it regularly 5) Have it serviced once a year

Health & Safety whilst playing your instrument
Posture & good physical technique
Repetitive strain injury
Performance injuries
Hearing health
General physical and nutritional health

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PRACTICE TECHNIQUES
WARM UP - Technical exercises: scales, arpeggios, strokes, etc. - Understand the music – identify as much theory as possible – look for keys, scales, chords, patterns, rhythms).
SET A TARGET - Know what you want to achieve in the session - Be realistic
RECORD YOURSELF Compare this with what the piece **should** sound like and identify the problem areas
IDENTIFY THE PROBLEM AREAS Practice the parts you can't play (not the parts you can) first: - Use a metronome - Play it slowly, then speed it up - Try the part in different rhythms so that you get the pitches accurate - Aim to play it correctly **three time in a row** – if you make a mistake, start again!
BREAK IT DOWN - Play the piece section by section: split the piece into **small** parts; practice each one until right; combine each section as you work through the piece - Don't just play through the whole piece repeatedly, be focused - Try to memorise sections
IF YOU CAN PLAY IT – ADD EXPRESSION! - Add dynamics - Play with the tempo - Think about articulation & phrasing
PLAY ALONG WITH A RECORDING/ANOTHER PERSON
REWARD YOURSELF

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.

LO3 – Be able to officiate in a sporting activity.

1. Officials must know **how to apply rules and regulations relevant to the activity**. The rules and regulations of sports are written and enforced by the national governing body of that sport.

2. The **rules** define how a team or individual can win and are designed to make sure that the sport is played fairly.

3. The **regulations** define the area in which the sport can be played and, in some sports, also define the surface on which the sport is played. For example, tennis can be played on grass, clay or a hard surface and can also be played indoors or outdoors.

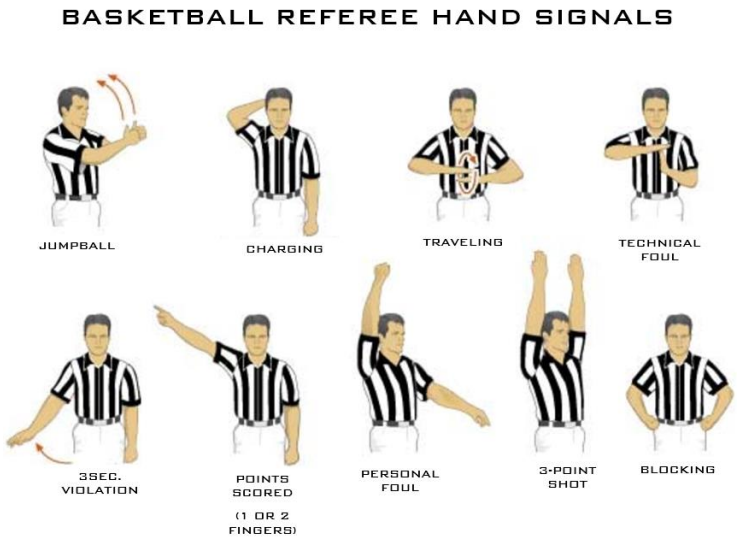
4. It is **important that consistency** is shown by officials. Many officials, specially young officials, have more difficulty with consistency than any other quality. This is usually because they tend to lack the necessary experience to realize when their decisions are inconsistent.

5. Officials are expected to know the rules of their sport. They need to not only know the rules, but it is important that they apply the rules **accurately** and correctly.

6. Referees use **signals** to indicate to players and spectators what infringement or foul has occurred and, in some sports, why the player has been penalised.

7. Communication can be accomplished in any ways and in most cases, the situation will dictate your appropriate response. In many team games, referees communicates through the use of a whistle, which is used to signify the beginning of the game and any stoppage time.

8. In order to make the correct decision, it is important that officials are best **position** to make that decision. For example, in tennis and badminton, the line judges stands or sit in exactly the right position to be able to see clearly whether the ball or shuttlecock is in or out.



LO4 – Be able to apply practice methods to support improvement in a sporting activity.

1. All performers want to improve because no performer is perfect. The difficulty is **identifying areas to improve upon in your own sporting activity**.

2. You can **identify the key skills in the activity**, this will help you to improve your performance.

3. Performers have some **key skills that are strengths** and some key skills where their performance is weaker. Being able to occasionally perform a skill is not a strength. Skilled performers can perform a skill consistently.

4. Which key skills are a weakness?
If you can not perform a skill regularly and accurately, it is a weakness. Many performances can not see that occasional success when attempting **key skills** is a **weakness**, not a strength.

5. Types of skills:
Simple skill – is one that needs limited decisions to be made while doing the skill. Simple skills tend to be taught while the performer may be regarded as a beginner and are learned fairly quickly. Simple skills include things like walking, running and jumping.
Complex skill – tends to be specific to a sport. It is non-transferable. For example, a tennis serve is a complex skill. It only works in tennis, it cannot be used in other sports such as hockey or trampolining.
Open skill – is one that it is performed slightly differently each time it is attempted, because the environment is unpredictable and frequently changes. For example, in netball the goal attack may have possession of the ball and is looking to pass and what type of pass they use depends on the circumstances they find themselves in.
Closed skill – is one that is performed in a predictable environment when, rather than having to adapt actions during the performance of the skill, the player can repeat actions consistently and there are fewer decisions to be made. For example, in basketball the free throw should be performed in exactly the same way each time it is attempted, because the environment is stable and unchanging.

OPEN	CLOSED
Affected by environment	Not affected by environment
Movement skills need to be adapted to suit the environment	Movement skills have a fixed pattern and don't change
Normally externally paced	Normally self paced
Saving a penalty (open or closed?)	Gymnastics sequence (open or closed?)
SIMPLE	**COMPLEX**
Technically easy to perform	Technically difficult to perform
Not much information to process	Lots of information to process
Few subroutines	Lots of subroutines
Forward Roll (simple or complex?)	Basketball lay up (simple or complex?)

LO4 – Types of Practice

1. Whole practice – involves performing the skill in its entirety without breaking up into parts. For example, repeatedly performing a basketball free throw is whole practice.

2. Part practice – is where the skill is broken down into its constituent parts, which are then practiced separately. This method of practice is useful for complicated skills such as triple jumping where, if appropriate, the jump phase could be practiced separately to try to improve the leg drive off the landing leg.

3. Variable practice – Variable practice is where practice is varied. This is best used for open skills where the environment is unpredictable and changes. This would involve repeating the skills in various situations. For example, shooting practice in football could involve the coach setting up drills where shooting is practised from a range of different positions around the goal, and could involve defenders being present, as is normally the case during a match.

4. Fixed practice – are sometimes also known as drills and involve repeatedly practising a skill in the same way each time, in order to develop it. This type of practice is best done with closed skill. For example, in badminton the short serve could be practised repeatedly to improve the skill.

Jours ordinaires, jours de fête

Semaine 1

Repas et nourriture	Meals and food
Je bois/mange/prends …	*I drink/eat/have …*
du café/lait/jus d'orange	*coffee/milk/orange juice*
du pain grillé/beurre	*toast/butter*
du yaourt/miel	*yogurt/honey*
du poulet/jambon/poisson	*chicken/ham/fish*
du saucisson/fromage	*sausage/cheese*
du pain/riz	*bread/rice*
du chou-fleur/raisin	*cauliflower/grapes*
de la confiture/glace	*jam/ice cream*
de la soupe/viande	*soup/meat*
de la mousse au chocolat/tarte au citron	*chocolate mousse/lemon tart*
de l'eau (minérale)	*(mineral) water*
des fruits (m)/bananes (f)	*fruit/bananas*
des fraises (f)/pêches (f)	*strawberries/peaches*
des pommes (f)/poires (f)	*apples/pears*
des légumes (m)/petits pois (m)	*vegetables/peas*
des champignons (m)/haricots verts (m)	*mushrooms/green beans*
des carottes (f)/pommes de terre (f)	*carrots/potatoes*
des céréales (f)/pâtes (f)	*cereal/pasta*
des crudités (f)/œufs (m)	*crudités/eggs*
Je ne mange pas de viande.	*I don't eat meat.*
Je suis végétarien(ne).	*I'm vegetarian.*
un paquet de …	*a packet of …*
un kilo de …	*a kilo of …*
une bouteille de …	*a bottle of …*
un pot de …	*a jar/pot of …*
cinq cents grammes de …	*500 grams of …*
quatre tranches de …	*four slices of …*
un morceau de …	*a piece of …*
un litre de …	*a litre of …*
une boîte de …	*a tin/can of …*
Il faut aller …	*You need to go …*
à la boucherie	*to the butcher's*
à la boulangerie	*to the baker's*
à la charcuterie	*to the deli/pork butcher's*
à la pâtisserie	*to the cake shop*
à l'épicerie (f)	*to the grocer's*
au marché	*to the market*

Semaine 2

Les vêtements	Clothes
D'habitude, je porte …	*Usually I wear …*
Je vais mettre …	*I'm going to put on …*
J'ai mis …	*I put on …*
un blouson	*a jacket*
un chapeau	*a hat*
un collant	*tights*
un costume	*a suit*
un jean moulant	*skinny jeans*
un manteau	*a coat*
un pantalon	*trousers*
un polo	*a polo shirt*
un pull	*a sweater*
un sac à main	*a handbag*
un short	*shorts*
un sweat à capuche	*a hoody*
un tee-shirt	*a T-shirt*
une casquette	*a cap*
une ceinture	*a belt*
une chemise	*a shirt*
une cravate	*a tie*
une écharpe	*a scarf*
une mini-jupe	*a mini-skirt*
une robe	*a dress*
une veste	*a jacket*
des baskets (f)	*trainers*
des bottes (f)	*boots*
des chaussettes (f)	*socks*
des chaussures (f)	*shoes*
des gants (m)	*gloves*
des lunettes de soleil (f)	*sunglasses*
blanc(he)(s)	*white*
bleu(e)(s)	*blue*
gris(e)(s)	*grey*
jaune(s)	*yellow*
kaki	*khaki*
marron	*brown*
mauve(s)	*purple*
noir(e)(s)	*black*
orange	*orange*
rose(s)	*pink*
rouge(s)	*red*
vert(e)(s)	*green*
en coton/cuir/laine/soie	*(made of) cotton/leather/wool/silk*
rayé(e)	*striped*
à carreaux	*checked*
de marque	*designer*
habillé(e)	*smart*
de couleur vive	*brightly coloured*
multicolore	*multi-coloured*
clair(e)	*light*
foncé(e)	*dark*

Semaine 3

La vie quotidienne	Daily life
J'ai cours …	*I have lessons …*
tous les jours sauf …	*every day except …*
(cinq) jours par semaine	*(five) days a week*
Je vais au lycée …	*I go to school …*
en bus/en scooter/en voiture/à pied	*by bus/by moped/by car/on foot*
Les jours d'école, …	*On school days …*
je dois me lever tôt	*I have to get up early*
je prends mon petit-déjeuner	*I have my breakfast*
je quitte la maison	*I leave the house*
Le dimanche, …	*On Sundays …*
je peux rester au lit/faire la grasse matinée	*I can stay in bed/have a lie in*
Le soir, …	*In the evening …*
je dois faire mes devoirs	*I have to do my homework*
je mange avec ma famille	*I eat with my family*
je regarde un peu la télé	*I watch a bit of TV*
Le mercredi/samedi après-midi, …	*On Wednesday/Saturday afternoon …*
je peux me détendre un peu	*I can relax a bit*
je reste à la maison/chez moi	*I stay at home*
Le week-end, …	*At the weekend …*
je sors avec mes copains	*I go out with friends*
je dois aider ma mère/mon père	*I have to help my mum/dad*
je vais au cinéma/au bowling	*I go to the cinema/bowling alley*

Semaine 4 - partie A

Les repas de fêtes	Food for special occasions
Ma fête préférée est …	*My favourite festival is …*
Noël/le 5 novembre/ Hanoukka/Aïd el-Fitr/Divali	*Christmas/5 November/ Hanukkah/Eid al-Fitr/Diwali*
parce que j'adore …	*because I love …*
D'abord, on mange/boit … suivi(e)(s) d' …	*First we eat/drink …, followed by …*
une dinde	*turkey*
une bûche de Noël	*a Yule log*
Dedans, il y a …	*Inside, there is …*

Semaine 4 - partie B

D'habitude, je le/la fête …	*I usually celebrate it …*	C'est mon/ma/mes … qui prépare(nt) …	*My … prepare(s) …*
en famille/chez nous	*with my family/at home*	Après le repas, on …	*After the meal we …*
chez mon/ma/mes …/avec …	*at my …'s house/with …*	s'offre (des cadeaux)	*give each other (presents)*
On fait/décore/se souhaite …	*We do/decorate/wish each other …*	admire (le sapin de Noël)	*admire the (Christmas tree)*
		chante/danse	*sing/dance*

Les repas à la maison	***Meals at home***		
Du lundi au vendredi, je prends le petit-déjeuner à … heures.	*From Monday to Friday I have breakfast at …*	Je ne grignote jamais en dehors des repas.	*I never snack between meals.*
Le week-end, je prends mon petit-déjeuner plus tard.	*At the weekend I have my breakfast later.*	Je regarde la télé en mangeant le soir.	*I watch TV while eating in the evening.*
Je grignote après l'école.	*I have a snack after school.*	Dans ma famille, on ne regarde pas la télé en mangeant.	*In my family, we don't watch TV while eating.*
		On dîne en famille tous les jours.	*We have dinner as a family every day.*

Semaine 5

Félicitations!	***Congratulations!***		
Je suis né(e) en …	*I was born in …*	Je suis allé(e) au mariage (de mon cousin) à la mairie avec toute ma famille.	*I went to (my cousin's) wedding at the town hall with all my family.*
Je viens de fêter …	*I have just celebrated …*	On a mangé/écouté/dansé/joué/fait/vu …	*We ate/listened to/danced/played/did/saw …*
Il y a (trois) mois, j'ai fêté …	*(Three) months ago I celebrated …*	C'était une excellente soirée!	*It was an excellent evening!*
C'était mon quatorzième/quinzième anniversaire …	*It was my fourteenth/fifteenth birthday.*	Pour fêter mon prochain anniversaire, je vais …	*To celebrate my next birthday, I'm going to …*
J'ai reçu beaucoup de …	*I received lots of …*		
J'ai invité … à un barbecue/une fête chez moi.	*I invited … to a barbecue/party at my house.*		

Les fêtes en France	***Festivals in France***		
le jour férié	*public holiday*	la fête des Mères	*Mother's Day*
le jour de l'An	*New Year's Day*	la fête de la Musique	*music festival in France on 21 June*
la fête des Rois/l'Épiphanie	*Twelfth Night/Epiphany*	la fête nationale	*Bastille Day, 14 July*
la Chandeleur	*Candlemas*	la Nuit blanche	*first Saturday of October, when many museums and art galleries stay open all night*
la Saint-Valentin	*St Valentine's Day*		
Mardi gras	*Shrove Tuesday*		
le 1er avril	*April Fool's Day*	la Toussaint	*All Saints' Day*
Pâques	*Easter*	le jour de Noël	*Christmas Day*
la fête du Travail	*May Day/Labour Day*	la Saint-Sylvestre	*New Year's Eve*

Semaine 6 - Traduction spéciale en français : tous le vocabulaire plus …

Les mots essentiels	***High-frequency words***		
à part	*apart from*	si	*if*
bien sûr	*of course*	sinon	*if not*
chez (moi)	*at (my) house*	tôt	*early*
d'habitude	*usually*	vite	*quickly*
de temps en temps	*from time to time*	la moitié de	*half of*
en revanche	*on the other hand*	trois quarts de	*three quarters of*
ensuite	*next, then*	un quart de	*a quarter of*
jusqu'à	*until*	un tiers de	*a third of*
parfois	*sometimes*	une personne sur (cinq)	*one person out of (five)*
sauf	*except*		

Semana 1

¿Qué aplicaciones usas?	What apps do you use?		
Uso … para…	*I use … (in order) to…*	una red social	*a social network*
ver mis series favoritas	*watch my favourite series*	amplio/a	*extensive*
organizar las salidas con mis amigos	*organise to go out with my friends*	cómodo/a	*convenient*
controlar mi actividad física / las calorías	*monitor my physical activity / my calorie intake*	divertido/a	*fun*
		necesario/a	*necessary*
contactar con mi familia	*get in touch with my family*	peligroso/a	*dangerous*
chatear con mis amigos	*chat with my friends*	práctico/a	*practical*
La tengo desde hace … meses.	*I've had it for … months*	rápido/a	*quick*
Es una aplicación buena para…	*It's a good app for…*	fácil de usar	*easy to use*
buscar y descargar música	*looking for and downloading music*	popular	*popular*
pasar el tiempo / el rato	*passing the time*	útil	*useful*
sacar / editar / personalizar fotos	*taking / editing / personalising photos*	gratis	*free*
compartir / subir fotos	*sharing / uploading photos*	un canal de comunicación	*a channel / means of communication*
estar en contacto	*keeping in touch*	una pérdida de tiempo	*a waste of time*
conocer a nueva gente	*meeting new people*	Soy / Es adicto/a a…	*I am / He/She is addicted to…*
subir y ver vídeos	*uploading and watching videos*	Estoy / Está enganchado/a a…	*I am / He/She is hooked on…*
chatear y mandar mensajes	*chatting and sending messages*	Lo único malo es que…	*The only bad thing is that …*
Es / No es…	*It is / It isn't…*	te engancha	*it gets you hooked*

Semana 2

¿Qué estás haciendo?	What are you doing?		
Estoy…	*I am…*	está lloviendo	*it's raining*
actualizando mi página de Facebook	*updating my Facebook page*	tengo que…	*I have to…*
editando mis fotos	*editing my photos*	salir	*go out*
Estás / Está / Están…	*You are / He/She is / They are…*	visitar a (mi abuela)	*visit (my grandmother)*
escuchando música	*listening to music*	cuidar a (mi hermano)	*look after (my brother)*
esperando a (David)	*waiting for (David)*	hacer los deberes	*do homework*
descansando	*relaxing*	quiero…	*I want to…*
pensando en salir	*thinking about going out*	subir mis fotos a…	*upload my photos to…*
preparando algo para merendar	*preparing something for tea*	quedarme en casa	*stay at home*
repasando para un examen	*revising for an exam*	¡Qué rollo!	*What a pain!*
tomando el sol	*sunbathing*	¿A qué hora quedamos?	*What time shall we meet?*
haciendo footing	*jogging*	¿Dónde quedamos?	*Where shall we meet?*
haciendo el vago	*lazing about*	en la Plaza Mayor	*in the main square*
leyendo	*reading*	debajo de	*underneath*
viendo una peli	*watching a film*	detrás de	*behind*
escribiendo	*writing*	delante de	*in front of*
¿Quieres salir conmigo?	*Do you want to go out with me?*	enfrente de	*opposite*
No puedo porque…	*I can't because…*	al lado de	*next to*

Semana 3

¿Qué te gusta leer?	What do you like reading?		
los blogs	*blogs*	las novelas de ciencia ficción	*science fiction novels*
los tebeos / los cómics	*comics*	las novelas de amor	*romantic novels*
los periódicos	*newspapers*	las historias de vampiros	*vampire stories*
las revistas	*magazines*	las biografías	*biographies*
las poesías	*poems*		

¿Con qué frecuencia lees?	How often do you read?		
cada día / todos los días	*every day*	una vez a la semana	*once a week*
a menudo	*often*	dos veces al mes	*twice a month*
generalmente	*generally*	una vez al año	*once a year*
de vez en cuando	*from time to time*	nunca	*never*

¿Qué es mejor, leer en papel o en la red?	What is better, reading paper books or online?		
Leer en formato digital…	*Reading in digital format…*	no ocupan espacio	*don't take up space*
protege el planeta	*protects the planet*	Una desventaja es…	*One disadvantage is…*
no malgasta papel	*doesn't waste paper*	el uso de batería	*the battery use*
cansa la vista	*tires your eyes*	Me gusta / prefiero…	*I like / I prefer…*
depende de la energía eléctrica	*relies on electricity*	tocar las páginas	*to touch the pages*
te permite llevar contigo miles de libros	*allows you to take thousands of books with you*	pasar las páginas a mano	*to turn the pages by hand*
		escribir anotaciones	*to write notes*

Semana 4

cuesta mucho menos	*costs a lot less*	leer horas y horas	*to read for hours and hours*
fastidia porque no hay numeración de páginas	*is annoying because there is no page numbering*	un ratón de biblioteca	*a bookworm*
		un fan del manga	*a manga fan*
Los libros electrónicos / Los e-books…	*Electronic books / E-books…*	un libro tradicional	*a traditional book*
son fáciles de transportar	*are easy to transport*	un libro de verdad	*a real book*
son más ecológicos / baratos	*are more environmentally-friendly / cheaper*		

Semana 4 Parte B

La familia	Family		
el padre / la madre	*father / mother*	el primo / la prima	*male cousin / female cousin*
el padrastro / la madrastra	*step-father / step-mother*	el sobrino / la sobrina	*nephew / niece*
el hermano / la hermana	*brother / sister*	el marido / la mujer	*husband / wife*
el hermanastro / la hermanastra	*step-brother / step-sister*	el hijo / la hija	*son / daughter*
el abuelo / la abuela	*grandfather / grandmother*	el nieto / la nieta	*grandson / granddaughter*
el bisabuelo / la bisabuela	*great grandfather / great grandmother*	mayor / menor	*older / younger*
el tío / la tía	*uncle / aunt*		

Semana 5

¿Cómo es?	What is he/she like?		
Tiene los ojos…	*He/She has … eyes*	bigote	*a moustache*
azules / verdes / marrones / grises	*blue / green / brown / grey*	Es…	*He/She is…*
grandes / pequeños / brillantes	*big / small / bright*	alto/a / bajo/a	*tall / short*
Tiene el pelo…	*He/She has… hair*	delgado/a / gordito/a / gordo/a	*slim / chubby / fat*
moreno / rubio / castaño / rojo	*dark brown / blond / mid-brown / red*	calvo/a	*bald*
corto / largo	*short / long*	moreno/a	*dark-haired*
rizado / liso / ondulado	*curly / straight / wavy*	rubio/a	*fair-haired*
fino / de punta	*fine / spiky*	castaño/a	*brown-haired*
Tiene…	*He/She has…*	pelirrojo/a	*a redhead*
la piel blanca / morena	*fair / dark skin*	español / española	*Spanish*
la cara redonda / alargada	*a round / oval face*	inglés / inglesa	*English*
los dientes prominentes	*big teeth*	peruano / peruana	*Peruvian*
pecas	*freckles*	Mide 1,60.	*He/She is 1m60 tall.*
Lleva…	*He/She wears / has…*	No es ni alto ni bajo.	*He/She is neither tall nor short.*
gafas	*glasses*	(No) Nos parecemos físicamente.	*We (don't) look like each other.*
barba	*a beard*		

Semana 6

¿Cómo es de carácter?	What is he/she like as a person?		
Como persona, es…	*As a person, he/she is…*	enérgico/a / animado/a / tranquilo/a	*energetic / lively / calm*
optimista / pesimista	*optimistic / pessimistic*	pensativo/a	*thoughtful*
simpático/a / antipático/a	*nice / nasty*	comprensivo/a	*understanding*
trabajador(a) / perezoso/a	*hard-working / lazy*	honesto/a	*honest*
generoso/a / tacaño/a	*generous / mean*	alegre	*cheerful*
hablador(a) / callado/a	*chatty / quiet*	molesto/a	*annoying*
divertido/a / gracioso/a / serio/a	*fun / funny / serious*	ambicioso/a	*ambitious*
fiel / infiel	*loyal / disloyal*	egoísta	*selfish*
feliz / triste	*happy / sad*	Está feliz / triste.	*He/She is happy / sad.*
ordenado/a / caótico/a	*tidy / chaotic*		

¿Te llevas bien con tu familia?	Do you get on well with your family?		
(No) Me llevo bien con…porque…	*I (don't) get on well with… because…*	Me divierto con…	*I have a good time with…*
me apoya	*he/she supports me*	Me peleo con…	*I argue with…*
me acepta como soy	*he/she accepts me as I am*	Nos llevamos superbién.	*We get on really well.*
nunca me critica	*he/she never criticises me*	Nos llevamos como el perro y el gato.	*We fight like cat and dog.*
tenemos mucho en común	*we have a lot in common*	Nos divertimos siempre.	*We always have a good time.*

Semana7

¿Cómo es un buen amigo / una buena amiga?	What is a good friend like?		
Un buen amigo es alguien que…	*A good friend is someone who…*	Conocí a mi mejor amigo/a…	*I met my best friend…*
te apoya	*supports you*	Nos conocimos	*We met / got to know each other*
te escucha	*listens to you*	Nos hicimos amigos	*We became friends*
te conoce bien	*knows you well*	Nos hicimos novios	*We started going out*
te acepta como eres	*accepts you as you are*	convivimos	*we lived together*
te quiere mucho	*likes / loves you a lot*	nos casamos	*we got married*
te da consejos	*gives you advice*	Es el amor de mi vida.	*He/She is the love of my life.*
te hace reír	*makes you laugh*	Tenemos … en común.	*We have … in common.*
no te critica	*doesn't criticise you*	nos gustan (las mismas cosas)	*we like (the same things)*
nunca te juzga	*never judges you*	nos encantan (las películas)	*we love (films)*

YEAR 9 – TRINITY TERM - DRAMA – 'DNA'

LEARNING - LOVING - LIVING

Characters

Mark and Jan

These characters act as the 'chorus' or narrators. They throw the audience directly into the action at the beginning of each Act and are useful as they fill in any blanks for us.

Phil

Although on stage in many scenes, Phil rarely speaks. Usually his action involves eating (ice-cream/Starburst/waffles, etc.).

Cathy

From very early on in the play, Cathy is shown to have no remorse about the groups' actions. She finds the situation 'exciting' and 'better than ordinary life' (p16).

Danny

Danny is presented as a sensible character and appears as an opposite to the rest of the characters. He has plans to become a dentist.

Leah

She is clearly concerned about her and Phil's relationship – 'You need me as much as …' shows her insecurity and desire for some response from Phil and this sears through the text.

John Tate

John Tate only appears in Act 1 Scene 3. He leads through using fear to control others.

Richard

Richard first appears to be a strong character and potentially someone who is able to be a leader of the group. Lou is scared of him and he presents a challenge to John Tate's leadership.

Brian

Brian is the weakest link. The other characters must see him as weak and vulnerable and someone the police believe could be a victim.

Lou

Lou will follow whoever the leader is at the time. She is a 'yes' woman and will do as she is told. She is controlled by fear

Adam is our victim.

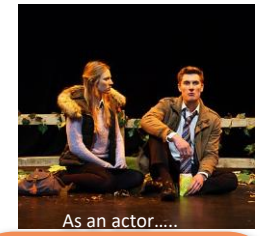
Themes

Friendship, Power, Bullying, Responsibility, Gangs, Violence, Fear

Structure

Part 1	A street	A field	A wood	A field
Part 2	A street	A field	A wood	A field
Part 3	A street	A field	A wood	A field
Part 4	A street	A field		

DNA



Key Quotations

"Better than ordinary life" Cathy, One, A Wood

"If everyone keeps their mouths shut we should be fine." Phil, One, A Wood

"That just leaves you Brian, you crying little piece of filth" John Tate, One, A Wood

"I mean, they're exactly like chimps, but the tiniest change in their DNA." Leah, One, A Field"

"Came outside.
I couldn't remember things.
I couldn't remember anything.
I was new.
A new
a new
a new me. And I felt Happy" Adam, Three, A Wood

What we wanted was the cover up what had happened, not frame someone else." Richard, Two, A Wood

Motivation (What does the character want in the scene)

Voice (Pitch, Pace, Pause, Projection, Tone, Emphasis, Accent)

Movement (Posture, Gesture, Pace, Space, Proxemics, Levels, Expression, Body Language)

Interaction **(Relationships, Status, Proxemics, Contact, Eye Contact, Body Language, Tone)**

As a Director…

Rehearsal techniques
Quote understanding
Links to themes
Character background
Contextual understanding
Social hierarchy

As a designer…

Costume Ideas
Set Design
Production Style
Play Structure
Lighting
Mood and Atmosphere
Stage type
Original staging

Sound

Diegetic – sound that comes 'from the world of a story'. This means any sound that is part of the action, and therefore experienced by the actors 'on stage'. Can include sound effects (SFX) and background noise.

Non-Diegetic doesn't come directly from the world of the story 'onstage'. Characters are not aware of it. It usually creates the atmosphere.

Mark a moment:	Various ways including Sound Effects (SFX) or silence
Volume:	Loud to quiet
Crescendo	Gradually getting louder
Pitch:	High to low
Pace:	Fast to slow
Pause:	Breaks in sound
Silence:	The removal of all sound
Contrast:	Opposing sounds (e.g. Loud/quiet, fast pace/slow pace)
Length of notes:	Sustained (Long notes) Staccato notes (Short sharp notes)
Reverb:	Echoing effect
Atmosphere:	The feeling created e.g. cold, scary, romantic, tense, relaxed/calm
Entrance:	How the sound is first played. (e.g. Dynamic and loud or soft fade in)
Foley sound:	Replace an original sound (e.g. the digital sound of footsteps)
Sound Bridge:	The sound from one scene carries over into the next scene.

Lighting

Stylised Lighting State

Covers specific sections of the stage, harsh colours, hard edges. This does not look like how the sun would light the stage. It is more alien in its appearance.

Naturalistic Lighting State

Soft lighting, covers whole stage, gentle colours. This would look like how the sun would like the stage.

Key Lighting Terms

Lantern: The correct term for stage lights
Gels: Sheets placed in front of the lights to change the colour
Intensity: Full beam or low light or black out
General Wash: Covering the stage with light
Spot Light: Focusing the light on a specific area of the stage
Transition: Slow fade or snap (quick) fade
Edge: The edges of the light can be soft or hard
Gobo: Create shapes in lighting (e.g. Batman's emblem)
Floor Lantern: Light from below. Creates non-naturalistic shadows. Can look scary
Cyclorama: Large white sheet onto which images are projected
Projection: Projected images onto a cyclorama
Crossfade: When the light travels from one side of the stage to the other
Lighting State: The light(s) used in a specific scene
Blackout: When the stage is completely dark

Costume, Hair and Makeup

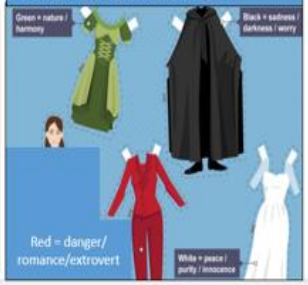
Costume, hair and make-up can suggest character, time and the style of the play, eg naturalistic or abstract. Look at the four pictures of actor Adrian Lester. Note how the change of costume helps the audience to understand the role he is playing.

Things to consider when designing costume, hair and make-up:

When is the play set?
Is the play naturalistic or non naturalistic?
What is the character's personality?
What is your character's status?
Do the actors need to change?
What materials will be used?
What colours will be used?

Make-Up
Bright stage lighting can wash out facial features and make performers appear pale, so make-up is used to enhance features and make sure that the audience can see the actors' facial expressions. It can also be used to age an actor who is playing an older character or to create fantasy characters. It is worn by both male and female actors.

Colour can be used symbolically. White may represent innocence and purity, and red may represent danger.



Set and Props

Set means the scenery and furniture onstage. Some theatre sets are very elaborate and detailed (naturalistic). However, a simple or minimalistic set can be also be very effective (non-naturalistic). The two images show a row of houses in two different plays. Which one is naturalistic and which one in non naturalistic?

Things to consider when designing Set and Props:

When is the play set?
Is the play naturalistic or non naturalistic?
How can levels create meaning?
How can proxemics create meaning?
Are there set changes?
What materials will be used?
What colours will be used?
Will images be projected onto a cyclorama or painted onto flats?

Props
Items that the actors use on stage.

Key Terms for Set and Props

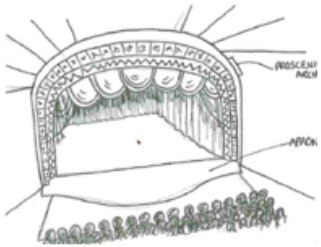
Flats: Large sheet of canvas or wood that the scenery is painted on to.
Fly: Ropes used to pull flats on/off stage.
Wings: The side of the stage
Apron: A small piece of stage in front of the Proscenium Arch
Trap door: Door covering exit hole in the stage
Cyclorama: A large cloth onto which scenery can be projected
Gobo: Creates shapes that can be projected
Birdseye View: Draw the stage looking down on it.

A row of houses in 'Curious Incident'

A row of houses in 'Blood Brothers'

Staging Configurations and Stage Positions

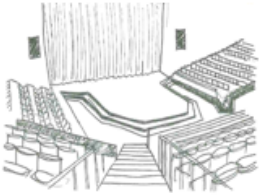
Proscenium Arch



Proscenium Arch is a common form of theatre. The proscenium is the frame around the stage. The area in front of the arch is called an **apron**.

- **Advantages**: Backdrops and large scenery can be used without blocking sightlines. There may be **fly space** and **wing space** to store scenery. The frame around the stage adds to the effect of a fourth wall.
- **Disadvantages**: Audience members may feel distant from the stage. **Audience interaction** is more difficult. It can feel very formal and rigid.

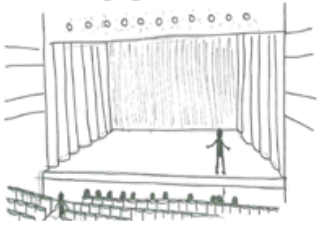
Thrust Staging



In a Thrust Stage, there is audience on three sides of the stage. This is one of the oldest theatre types of stage.

- **Advantage**: As there is no audience on one side of the stage, **backdrops**, **flats, cycloramas** or large **scenery** can be used. The audience may feel closer to the action as there are three front rows (one on each of the stages three sides).
- **Disadvantage**: **Sight lines** for those on extreme sides may be limited. The audience on the right and left have each other in view. **Box sets** (three sides of the room are constructed) cannot be used as this would block audience views.

End on Staging



End on Staging is similar to a Proscenium stage as the audience sit on one side of the stage directly facing it. However it doesn't have the large proscenium frame.

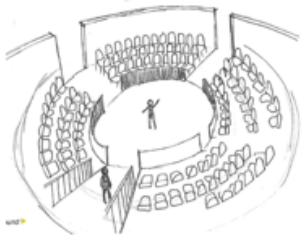
- **Advantages**: The audience all have a similar view. Stage pictures are easy to create. Large backdrops or projections onto a **cyclorama** may be used.
- **Disadvantages**: Audience members in the back rows may feel distant from the stage. It may not have **wing** or **fly** areas.

Traverse Staging

On a Traverse Stage the acting area is a long central space with audience seated on either side facing each other. Like a catwalk.

- **Advantages**: Audience feel very close to the stage. They can see the reaction of the other side who are facing them which can work well for interaction. Sometimes extreme ends of the stage can be used to create extra acting space.
- **Disadvantages**: Big **scenery**, **backdrops** and **sets** block **sightlines**. The long and thin acting area makes **blocking** difficult. Does not have **wing** or **fly** areas.

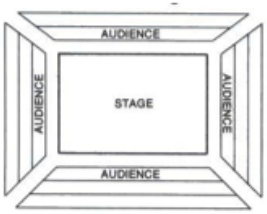
Theatre in the Round



Theatre in the Round is a staging conficuration when the audience are seated in a circle all around the stage.

- **Advantages**: Intimate space for a performance. It engages the audience because the actors enter and exit the stage through the audience. There is also no 'forth wall'
- **Disadvantages**: One cannot use **backdrops** or **flats**. Stage furniture needs to be small so as not to obstruct **sightlines**. Actors have to be carefully **blocked** so that they do not always have their back to one section of the audience.

Arena Staging



Arena Staging is a similar configuration to Theatre in the Round. The audience sit on all sides of the stage, however they tend to sit in straight lighes. This type of staging is often used in sporting venues.

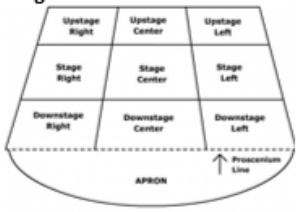
- **Advantages**: Intimate space for a performance. It engages the audience because the actors enter and exit the stage through the audience. There is also no 'forth wall'
- **Disadvantages**: One cannot use **backdrops** or **flats**. Stage furniture needs to be small so as not to obstruct **sightlines**. Actors have to be carefully **blocked** so that they do not always have their back to one section of the audience.

Promenade Theatre

Promenade Theatre is where the audience stand or follow the actors through a performance. This can happen in a theatre, but more often happens in a **site specific** show.

- **Advantage**: It is an interactive and exciting type of theatre where the audience feel involved.
- **Disadvantage**: Audience may get tired standing and walking. Actors or crew need to be skilled at moving the audience around. There can be health and safety risks.

Stage Positions



In order to discuss theatre, you need to be able to explain quickly and simply where you want something to occur. To do this, theatre makers divide the stage up into a grid.

Points to Remember

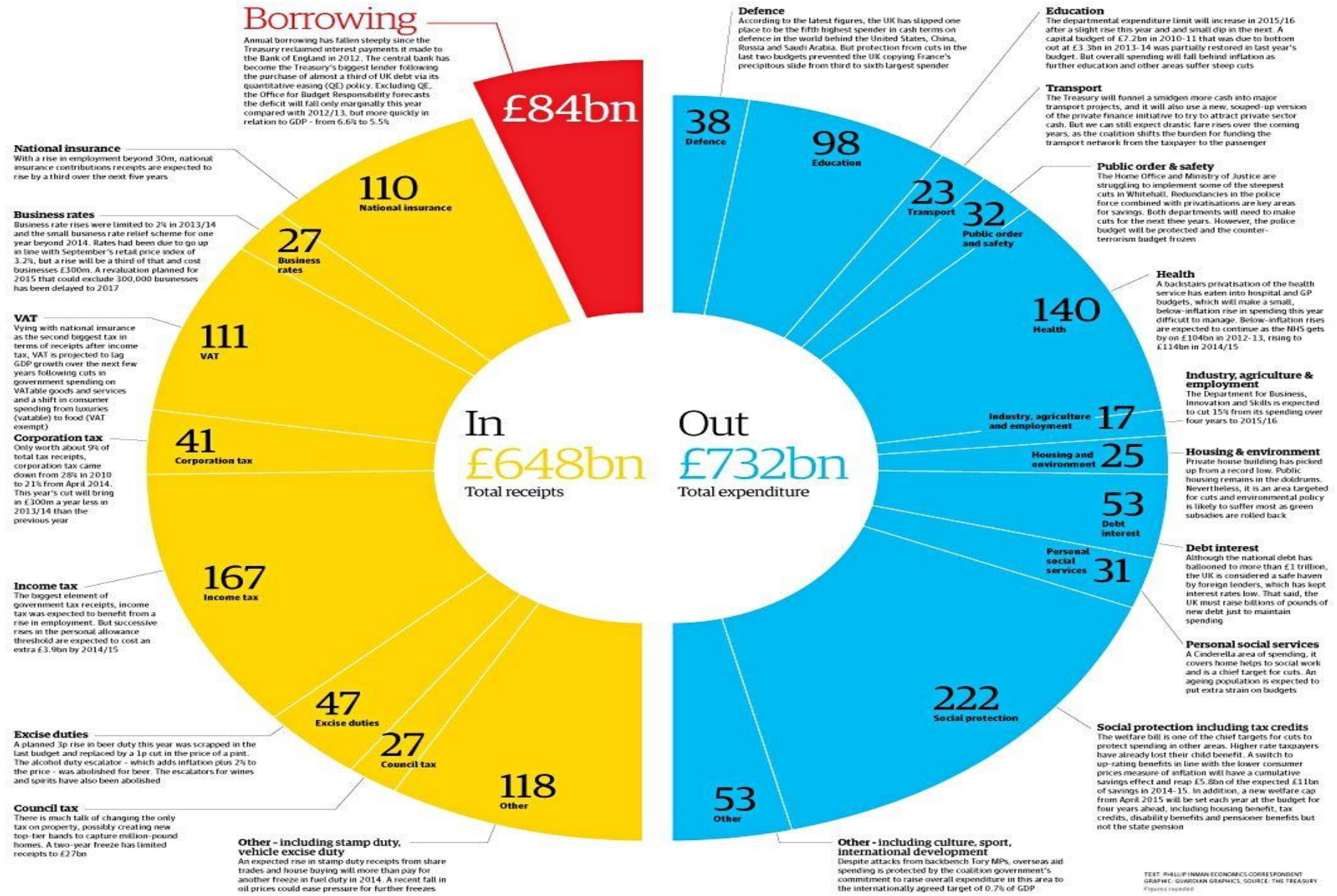
- Some stages are **raked** which means they are higher at the back. Therefore **upstage** is at the back and **downstage** at the front.
- The direction of stage is always seen from the perspective of the actor. This can be confusing as you will need to swap your left and right if looking at the stage from an audience perspective.

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	**Party 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.


Borrowing
Annual borrowing has fallen steeply since the Treasury reclaimed interest payments it made to the Bank of England in 2012. The central bank has become the Treasury's biggest lender following the purchase of almost a third of UK debt via its quantitative easing (QE) policy. Excluding QE, the Office for Budget Responsibility forecasts the deficit will fall only marginally this year compared with 2012/13, but more quickly in relation to GDP - from 6.6% to 5.5%
£84bn
National insurance
With a rise in employment beyond 30m, national insurance contributions receipts are expected to rise by a third over the next five years
110
National insurance
Business rates
Business rate rises were limited to 2% in 2013/14 and the small business rate relief scheme for one year beyond 2014. Rates had been due to go up in line with September's retail price index of 3.2%, but a rise will be a third of that and cost businesses £300m. A revaluation planned for 2015 that could exclude 300,000 businesses has been delayed to 2017
27
Business rates
VAT
Vying with national insurance as the second biggest tax in terms of receipts after income tax, VAT is projected to lag GDP growth over the next few years following cuts in government spending on VATable goods and services and a shift in consumer spending from luxuries (vatable) to food (VAT exempt)
111
VAT
Corporation tax
Only worth about 9% of total tax receipts, corporation tax came down from 28% in 2010 to 21% from April 2014. This year's cut will bring in £300m a year less in 2013/14 than the previous year
41
Corporation tax
Income tax
The biggest element of government tax receipts, income tax was expected to benefit from a rise in employment. But successive rises in the personal allowance threshold are expected to cost an extra £3.9bn by 2014/15
167
Income tax
Excise duties
A planned 3p rise in beer duty this year was scrapped in the last budget and replaced by a 1p cut in the price of a pint. The alcohol duty escalator - which adds inflation plus 2% to the price - was abolished for beer. The escalators for wines and spirits have also been abolished
47
Excise duties
Council tax
There is much talk of changing the only tax on property, possibly creating new top-tier bands to capture million-pound homes. A two-year freeze has limited receipts to £27bn
27
Council tax
Other - including stamp duty, vehicle excise duty
An expected rise in stamp duty receipts from share trades and house buying will more than pay for another freeze in fuel duty in 2014. A recent fall in oil prices could ease pressure for further freezes
118
Other
In
£648bn
Total receipts
Out
£732bn
Total expenditure
Defence
According to the latest figures, the UK has slipped one place to be the fifth highest spender in cash terms on defence in the world behind the United States, China, Russia and Saudi Arabia. But protection from cuts in the last two budgets prevented the UK copying France's precipitous slide from third to sixth largest spender
38
Defence
Education
The departmental expenditure limit will increase in 2015/16 after a slight rise this year and and small dip in the next. A capital budget of £7.2bn in 2010-11 that was due to bottom out at £3.3bn in 2013-14 was partially restored in last year's budget. But overall spending will fall behind inflation as further education and other areas suffer steep cuts
98
Education
Transport
The Treasury will funnel a smidgen more cash into major transport projects, and it will also use a new, souped-up version of the private finance initiative to try to attract private sector cash. But we can still expect drastic fare rises over the coming years, as the coalition shifts the burden for funding the transport network from the taxpayer to the passenger
23
Transport
Public order & safety
The Home Office and Ministry of Justice are struggling to implement some of the steepest cuts in Whitehall. Redundancies in the police force combined with privatisations are key areas for savings. Both departments will need to make cuts for the next three years. However, the police budget will be protected and the counter-terrorism budget frozen
32
Public order and safety
Health
A backstairs privatisation of the health service has eaten into hospital and GP budgets, which will make a small, below-inflation rise in spending this year difficult to manage. Below-inflation rises are expected to continue as the NHS gets by on £104bn in 2012-13, rising to £114bn in 2014/15
140
Health
Industry, agriculture & employment
The Department for Business, Innovation and Skills is expected to cut 15% from its spending over four years to 2015/16
Industry, agriculture and employment
17
Housing & environment
Private house building has picked up from a record low. Public housing remains in the doldrums. Nevertheless, it is an area targeted for cuts and environmental policy is likely to suffer most as green subsidies are rolled back
Housing and environment
25
Debt interest
Although the national debt has ballooned to more than £1 trillion, the UK is considered a safe haven by foreign lenders, which has kept interest rates low. That said, the UK must raise billions of pounds of new debt just to maintain spending
53
Debt interest
Personal social services
A Cinderella area of spending, it covers home helps to social work and is a chief target for cuts. An ageing population is expected to put extra strain on budgets
31
Personal social services
Social protection including tax credits
The welfare bill is one of the chief targets for cuts to protect spending in other areas. Higher rate taxpayers have already lost their child benefit. A switch to up-rating benefits in line with the lower consumer prices measure of inflation will have a cumulative savings effect and reap £5.8bn of the expected £11bn of savings in 2014-15. In addition, a new welfare cap from April 2015 will be set each year at the budget for four years ahead, including housing benefit, tax credits, disability benefits and pensioner benefits but not the state pension
222
Social protection
Other - including culture, sport, international development
Despite attacks from backbench Tory MPs, overseas aid spending is protected by the coalition government's commitment to raise overall expenditure in this area to the internationally agreed target of 0.7% of GDP
53
Other
TEXT: PHILLIP INMAN ECONOMICS CORRESPONDENT
GRAPHIC: GUARDIAN GRAPHICS, SOURCE: THE TREASURY
Figures rounded

2.2.4 Market Types

a) Mass Market;

Characteristics are:

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

b) Niche Market;

Characteristics are:

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

2.2.5 Orientation types

a. Market

Characteristics are:

- customer led
- high levels of market research

b. Product

Characteristics are:

- focus on business strengths
- low levels of customer engagement

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

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.

3.1 Operations Management

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.

There are 4 main reasons that businesses outsource:

- Time
- Financial
- Staffing
- Physical resource

3.1.2 Lean Production

Mass production is when hundreds or thousands of identical products are made, this is usually on a production line.
Mass production often requires many individual items to make up the whole product, for example, a washing machine.
Sometimes individual items can be bought from other companies. Usually production lines are automated and can be overseen by a small number of staff.

Lean Production

- Lean production is a strategy businesses can use to make production more efficient
- In lean production, the businesses aims to use as few as resources as possible and to have as little waste as possible
- Workers can also be encouraged to think about ways to improve their productivity too

Just in time (JIT)

- JIT means that stock arrives on the production line just as it is needed. This minimises the amount of stock that has to be stored (reducing storage costs).
- JIT has many benefits and may appear an obvious way to organizes production but it is a complicated process which requires efficient handling.

3.1.3 Maintaining and improving quality

What is quality? - Quality is about meeting the minimum standard required to satisfy customer needs. High quality products meet the standards set by customers.
For example, a high quality washing powder can claim that one scoop is sufficient to clean a washing load. A budget or standard quality washing powder may require 2 or 3 scoops.

Quality Standard - In many industries a quality standard is laid down by independent organisations such as the British Standards Institution (BSI).
Firms benefit by adjusting the way they work to meet these standards.
Businesses hope that the cost of improving quality will be more than covered by extra sales.

Why does **quality** matter?

If a business produces low quality products, it can:

- Damage its reputation which can impact on future sales and loss of repeat custom
- Cost money of replacement and repairs to products
- Lowers morale of staff

Quality Control - There are two main approaches to achieving quality.
Quality control where finished products are checked at the end by quality control inspectors to see if they meet the set standard.
Quality assurance where quality is built into the production process. All staff check the product as it is produced at every stage of production.

Successful quality assurance results in no defects or poor quality products.

Total Quality Management (TQM)
Quality assurance requires Total Quality Management (TQM)
This means a change in business culture which requires employees to care about the products they make and the service they give and doing their best to ensure high standards are maintained.

Benchmarking: - Benchmarking is another method of quality assurance. Benchmarking means copying the best practice or product in your industry and then ensure your product exceeds this level of quality.
For example, a battery manufacturer may copy the technology of the market leader and ensure their battery life is longer than the market leader. This is **quality benchmarking**.

3.1.4 Production methods

Job production - Job production or one-off production, involves producing custom work, such as a one-off product for a specific customer or a small batch of work in quantities usually less than those of mass-market products.

Batch production - Batch production is when a small quantity of identical products are made. For example, a baker makes a batch of rolls.
Flow production - Flow production (often known as mass production) involves the use of production lines such as in a car manufacturer where doors, engines, bonnets and wheels are added to a chassis as it moves along the assembly line.

Mass customisation - Mass customisation is a marketing and manufacturing technique that combines the flexibility and personalisation of custom-made products with the low unit costs associated with mass production.
4.1 Customer Service and Internal influences and Challenges of growth
Customer service measurements: - Why do businesses measure customer service?

To inform future product development
It is important that business always know what their customers want. This allows them to feedback to the product development team.
For example, customers might tell a mobile phone company that they want to reduce the time it takes to fully charge their phone.

To increase customer retention
Once businesses have new customers they want them to keep coming back!
Companies should record how many customers come back and give them repeat business. They should then set targets to aim for even higher customer retention.

Why do businesses measure customer service?

To become even more competitive

- Customers need to feel listened to.
- If businesses ask the customers what they want and then act on this information, they will have the 'competitive edge'.

To identify areas of strength and weakness so they can improve their business

- Businesses should never stand still! There is always something they can do better.
- If businesses listen to the feedback their customers give them then this will help them to recognise both their strengths and weaknesses so that their business can improve, grow and ultimately be more profitable.

4.1.3 How customer service is measured

Some of the most common ways to measure customer service are:

- Customer satisfaction scores
- Repeat business data
- Levels of complaints/compliments
- Customer surveys
- Mystery shoppers

4.2 Internal Influences

Operational issues of Customer Service - Operational issues describe the daily running of the business.

Financial position

Why does the financial position of the business affect customer service?

- May not be able to invest in staff training
- May have low number of staff
- Slow staff response to communications – upsetting customers who are now receiving poor customer service
- Low wages effecting morale – miserable staff!
- Lack of focus on customer service
- Small businesses may not see it as a priority so staff will not prioritise this either

4.2 Internal Influences

What is motivation? - Motivation is about the ways a business can encourage staff to give their best. Motivated staff care about the success of the business and work better.

Why does motivation matter in business? - A motivated workforce results in:

- Increased output caused by extra effort from workers.
- Improved quality as staff take a greater pride in their work.
- A higher level of staff retention. Workers are keen to stay with the firm and also reluctant to take unnecessary days off work.

Motivational theories: - Managers can make use of a number of motivational theories to help encourage employees to work harder.

Maslow: - Maslow suggests there are five hierarchies or levels of need that explain why people work.
Staff first want to meet their survival needs by earning a good wage.
Safety needs such as job security then become important, followed by social, self-esteem and self-fulfilment needs.
Moving staff up a Maslow level is motivational.

Maslow - hierarchy of needs

4.3 Internal Challenges of Growth

What are economies of scale?

Large firms often enjoy economies of scale. Larger businesses often benefit from economies of scale because they can buy their materials at lower unit costs because the buy such large quantities.

In the same way if you buy a small bag of crisps it may cost you 50p.
But if you bought a bag of 6 for £2
each bag would be 33p
They can spread the costs of overheads e.g. administration and staff costs over more items.

For example…

If a larger business can produce a chocolate bar for 20p while it costs its smaller rival an average of 30p, then the larger firm has a 10p per unit cost advantage.
This allows larger firms to charge lower prices or enjoy a higher profit margin than smaller businesses
Economies of scale are a **major advantage** for large firms.

Diseconomies of scale

Diseconomies of scale occur when a business grows so large that the costs per unit increase. As output rises, it is not inevitable that unit costs will fall. Sometimes a business can get too big!

Diseconomies of scale occur for many reasons, but all are linked to the issues of employing and managing a larger workforce.
Levels of customer service can decline rapidly leading to major issues for the company in levels of customer satisfaction, complaints and reputation.

Diseconomies of scale affect

- control
- co-ordination
- communication

5.1 External influences

External influences – influences beyond the control of a business that affect its success or failure.

For example:

- Gross Domestic Product (GDP)
- Interest rates
- Changes in living wage
- Changes in fashions and trends
- Changes in the competitive environment
- Level of employment
- Availability of skills locally
- Changes to legislation
- Changes in tax rates
  - VAT
  - income tax
  - corporation tax

5.2 Challenges of Growth

When businesses expand they need to consider the following:

- **Additional physical resource requirements**
  - Can they find suitable premises within the budget?
  - Do they need to borrow more funds or use reserves?
  - How long is the lease?
  - Do they need to make improvements to the building?
  - What are transport links like?
  - Where will staff park?
- **Additional human resource requirements**
  - Are there suitable employees in the vicinity?
  - Will they require training?
  - Are there suitable transport links to get them to your premises?
  - What training is available locally to upskill your staff?

Challenges of growth

When businesses expand they need to consider the following:

- **Local cultural sensitivities**
  - Is there anything locally that the business should be aware of?
  - Are local people against growth in an industrial area?
  - Are local people complaining about large lorry congestion on their roads?
- **Understanding of local legislation**
  - Is there any local legislation to be aware of?
  - Are there incentives for new businesses coming to the area?

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

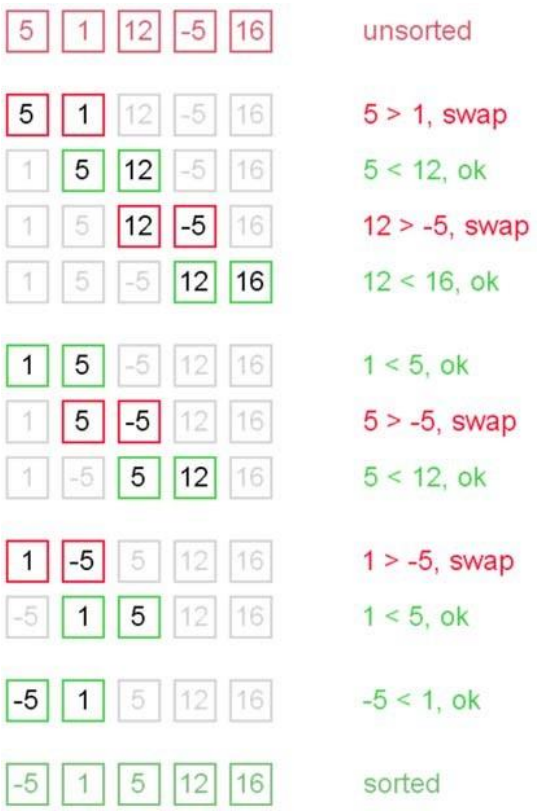


Figure 1: bubble sort

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

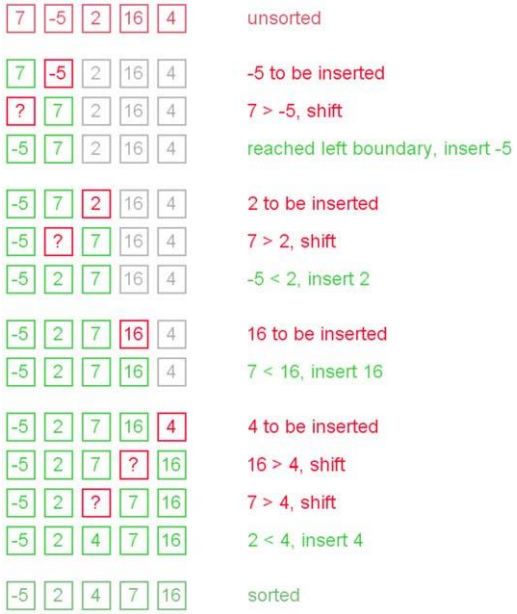


Figure 2: insertion sort

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

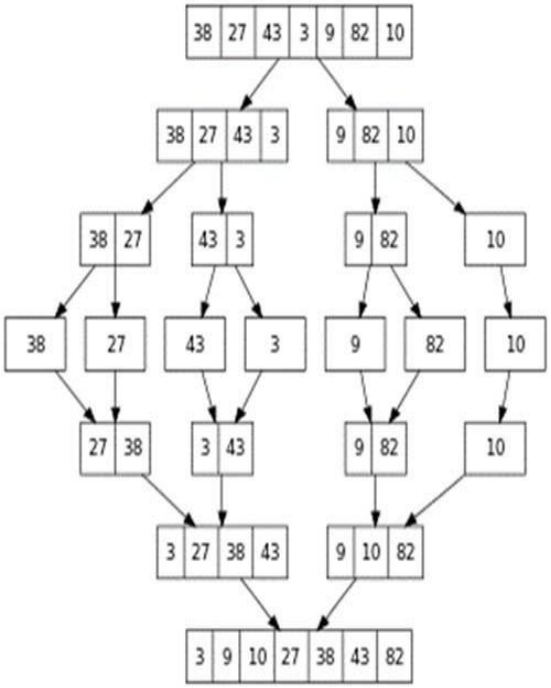


Figure 1: merge sort

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.

https://medium.com/karuna-sehgal/an-simplified-explanation-of-linear-search-5056942ba965

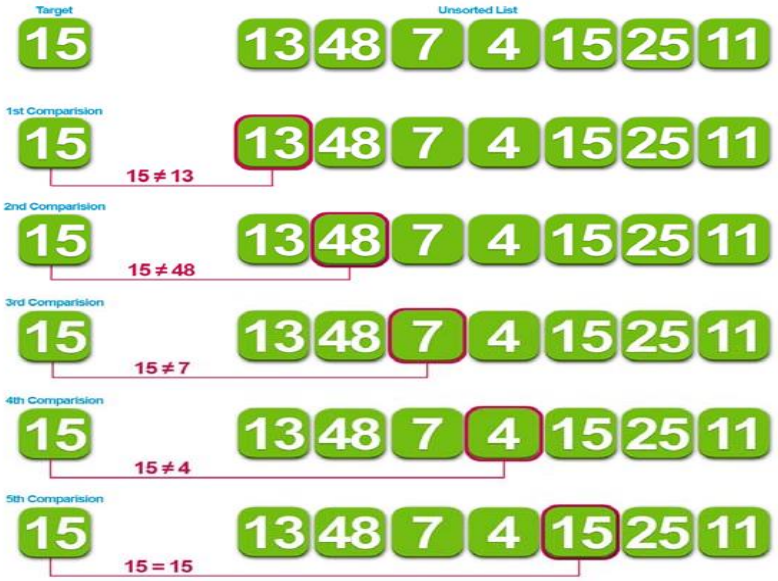


Figure 1 - Linear search example

https://www.geeksforgeeks.org/binary-search/

Figure 2 - Binary search example

Key vocabulary	
Linear Search	Data may be in any order to complete a linear search. Each item is inspected in turn to see whether it is what is being searched for. If an item is found, then True is returned, else the next element is inspected until all items have been searched. If nothing is found by the end of the algorithm then False is returned.
Binary Search	If a list is sorted (numerical or alphabetical order) then a more efficient algorithm can be used. It works by repeatedly dividing the list into half and searching in the appropriate half.

Variables and arrays

Syntax	Explanation of syntax	Example
SET Variable TO <value>	Assigns a value to a variable.	SET Counter TO 0 SET MyString TO 'Hello world'
SET Variable TO <expression>	Computes the value of an expression and assigns to a variable.	SET Sum TO Score + 10 SET Size to LENGTH(Word)
SET Array[index] TO <value>	Assigns a value to an element of a one-dimensional array.	SET ArrayClass[1] TO 'Ann' SET ArrayMarks[3]TO 56
SET Array TO [<value>, ...]	Initialises a one-dimensional array with a set of values.	SET ArrayValues TO [1, 2, 3, 4, 5]
SET Array [RowIndex, ColumnIndex] TO <value>	Assigns a value to an element of a two dimensional array.	SET ArrayClassMarks[2,4] TO 92

Repetition

Syntax	Explanation of syntax	Example

WHILE <condition> DO
<command>
END WHILE
	Pre-conditioned loop. Executes <command> whilst <condition> is true.	WHILE Flag = 0 DO
		SEND 'All well' TO DISPLAY
		END WHILE

REPEAT <command> UNTIL <expression>	Post-conditioned loop. Executes <command> until <condition> is true. The loop must execute at least once.	REPEAT SET Go TO Go + 1 UNTIL Go = 10
REPEAT <expression> TIMES <command> END REPEAT	Count controlled loop. The number of times <command> is executed is determined by the expression.	REPEAT 100-Number TIMES SEND '*' TO DISPLAY END REPEAT

FOR <id> FROM <expression> TO <expression> DO
<command>
END FOR
	Count controlled loop. Executes <command> a fixed number of times.	FOR Index FROM 1 TO 10 DO
		SEND ArrayNumbers[Index] TO DISPLAY
		END FOR

FOR <id> FROM <expression> TO <expression> STEP <expression> DO
<command>
END FOR
	Count controlled loop using a step.	FOR Index FROM 1 TO 500 STEP 25 DO
		SEND Index TO DISPLAY
		END FOR

FOR EACH <id> FROM <expression> DO <command> END FOREACH	Count controlled loop. Executes for each element of an array.	SET WordsArray TO ['The', 'Sky', 'is', 'grey'] SET Sentence to '' FOR EACH Word FROM WordsUArray DO SET Sentence TO Sentence & Word & ' ' END FOREACH

Selection

Syntax	Explanation of syntax	Example

IF <expression> THEN
<command>
END IF
	If <expression> is true then command is executed.	IF Answer = 10 THEN
		SET Score TO Score + 1
		END IF

IF <expression> THEN
<command>
ELSE
<command>
END IF
	If <expression> is true then first <command> is executed, otherwise second <command> is executed.	IF Answer = 'correct' THEN
		SEND 'Well done' TO DISPLAY
		ELSE
		SEND 'Try again' TO DISPLAY
		END IF

Syntax	Explanation of syntax	Example
SEND <expression> TO DISPLAY	Sends output to the screen.	SEND 'Have a good day.' TO DISPLAY
RECEIVE <identifier> FROM (type) <device>	Reads input of specified type.	RECEIVE Name FROM (STRING) KEYBOARD RECEIVE LengthOfJourney FROM (INTEGER) CARD_READER RECEIVE YesNo FROM (CHARACTER) CARD_READER

Subprograms

Syntax	Explanation of syntax	Example
PROCEDURE <id> (<parameter>, ...) BEGIN PROCEDURE <command> END PROCEDURE	Defines a procedure.	PROCEDURE CalculateAverage (Mark1, Mark2, Mark3) BEGIN PROCEDURE SET Avg to (Mark1 + Mark2 + Mark3)/3 END PROCEDURE
FUNCTION <id> (<parameter>, ...) BEGIN FUNCTION <command> RETURN <expression> END FUNCTION	Defines a function.	FUNCTION AddMarks (Mark1, Mark2, Mark3) BEGIN FUNCTION SET Total to (Mark1 + Mark2 + Mark3)/3 RETURN Total END FUNCTION
<id> (<parameter>, ...)	Calls a procedure or a function.	Add (FirstMark, SecondMark)

Arithmetic operators

Symbol	Description
+	Add
-	Subtract
/	Divide
*	Multiply
^	Exponent
MOD	Modulo
DIV	Integer division

Relational operators

Symbol	Description
=	equal to
<>	not equal to
>	greater than
>=	greater than or equal to
<	less than
<=	less than or equal to

File handling

Syntax	Explanation of syntax	Example
READ <File> <record>	Reads in a record from a <file> and assigns to a <variable>. Each READ statement reads a record from the file.	READ MyFile.doc Record
WRITE <File> <record>	Writes a record to a file. Each WRITE statement writes a record to the file.	WRITE MyFile.doc Answer1, Answer2, 'xyz 01'

Important Ideas

You can compare distributions by looking at measures of central tendency and dispersion.

Measures of central tendency identify the centre of a set of values – this gives us an average value that represents the data. Common measures of central tendency include the mean, median, and mode

Measures of dispersion look at the spread of data from the mean – this tells us how consistent (or otherwise) the data is.

Key Facts & Formula

Weighted mean	$\bar{x} = \frac{\sum wx}{\sum w}$
Geometric mean	$\sqrt[n]{value_1 \times value_2 \times \ldots \times value_n}$
Standard deviation (1)	$\sqrt{\frac{1}{n}\sum (x - \bar{x})^2}$
Standard deviation (2)	$\sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$

Question	Answer
Range and IQR	
A scientist counted the number of spots on 16 leaves of a rose bush. 3 8 0 7 4 0 8 3 2 4 3 1 1 0 2 5 (a) Work out the range. (b) Work out the interquartile range. (c) Give one advantage and one disadvantage in using the range as a measure of spread.	a) 8 b) 3.75 c) Advantage is it is easy to calculate. Disadvantage is it is affected by outliers
Standard deviation	
The number of visits, x, to a dentist was recorded over 10 days. $\sum x = 200, \sum x^2 = 4800$ Work out the mean and the standard deviation.	Mean number of visits per day = 20 Standard deviation = 8.9
Mean	
1. The geometric mean of two numbers is 2.5 One number is increased by 12%, the other decreased by 15%. Calculate the new geometric mean to 3 decimal places. 2. An exam has three papers: A, B and C. Paper A is worth 60 marks, paper B is worth 60 marks and paper C is worth 80 marks. The percentage marks on the papers are equally weighted. Ahmed got 45 on Paper A, 26 on paper B and 60 on Paper C. What is his mean percentage?	1. 2.439 2. 70%

Vocabulary

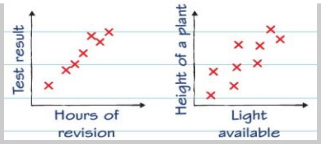
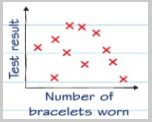
Weighted mean	The weighted mean is used to compare different sets of data when one is more important than the other.
Geometric mean	The geometric mean can be used to find the mean of a set of data values that aren't immediately comparable (e.g. a set of scores out of 10 and a set of scores out of 50)
Range	The range tells us how far the data spreads. It is the difference between the highest and lowest values.
Interquartile range (IQR)	The interquartile range is the difference between the upper quartile and the lower quartile.
Percentile	Percentiles divide the data into one hundred equal groups.
Interpercentile range	The interpercentile range is the difference between the percentiles. E.g. the 20th to 80th percentile range is $P_{80} - P_{20}$.
Interdecile range	The interdecile range gives the range of the middle 80% of the data.
Standard deviation	Standard deviation measures spread from the mean.
Outlier	Outliers are points that don't fit the general pattern.

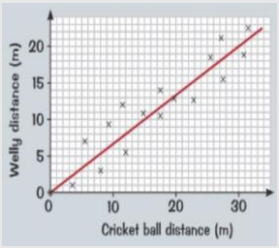
Important ideas

You can investigate whether there is a link between bivariate data using visual and numerical methods.

We can quantify the strength of any link using a numerical scale.

Key Facts & Formula

Positive correlation	
Negative correlation	
No correlation	
Coordinates of the mean point	$\bar{x} = \frac{\sum fx}{\sum f}, \bar{y} = \frac{\sum fy}{\sum f}$
Equation of LoBF	$y = ax + b,$
SRCC	$1 - \frac{6\sum d^2}{n(n^2-1)}$

Question	Answer
Correlation	
Describe the correlation you would expect for each of the following pairs of variables: a) Adult shoe size and waist size b) Hours of sunshine in a day and hours of rain in a day c) Power cuts and no. of candles sold	a) No / weak positive b) Weak negative c) strong positive
Regression lines	
The water in a water tank is measured every 30 minutes, as shown.  a) Find the equation of the regression line given on the scatter diagram b) The value of the gradient of the line c) The height of the water after 100 minutes	a) $y = 465 - \frac{7}{9}x$ b) For every minute that passes, the height of the water in the tank decreases by 7/9 of a centimetre. c) 387 cm to 3 s.f
Lewis and Dee tried eight flavours of ice-cream (A-h) and gave each flavor a mark from 1-20 where 20 is the best mark. Their results are shown in the table. a) Calculate the SRCC b) How do their tastes compare?	a) -0.405 to 3 d.p. b) There is moderately strong negative correlation, so their tastes are quite different.

	A	B	C	D	E	F	G	H
Lewis	13	19	1	10	14	18	15	6
Dee	20	6	15	13	2	8	16	10

Vocabulary

Explanatory variable	The variable that you change
Response variable	The variable that responds to the explanatory variable
Interpolation	Using a line of best fit to estimate values within a given data set.
Extrapolation	Predicting values beyond the given set of data
Regression line	Another name for the line of best fit.
SRCC (Spearman's Rank Correlation Coefficient)	A measure of the strength of correlation between two sets of data. The values lie between -1 and 1. The closer to 0, the weaker the correlation.
PMCC (Pearson's Product Moment Coefficient)	A measure of linear correlation used to measure the strength of the association between sets of data.
LoBF (Line of best fit)	You can use a line of best fit to summarise the relationship shown on a scatter diagram. It can be used to predict value.

YEAR 9 – TRINITY TERM - CORE PHYSICAL EDUCATION- ATHLETICS

LEARNING - LOVING - LIVING

Athletics is made up of 3 disciplines; track (running), throwing and jumping.

Section 1 - Track events include; sprints (100m, 200m, 300m), middle distance (800m, 1500m) and relays.

Sprints:
The most important aspect of a sprint is the start (known as a sprint start) as a poor start can lead to the rest of the runners getting past you.
It is also important that you consider:

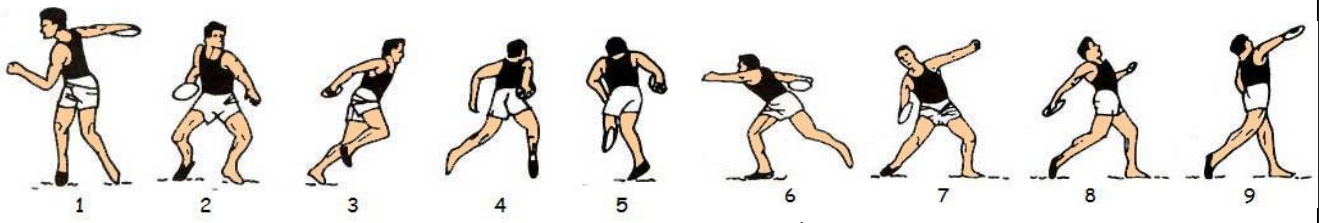
- Leg action (driving forward),
- Arm action (powering forward),
- Upright posture.

Middle distance running:
When running a middle or long distance event it is essential to **pace** yourself. This means not sprinting off but running or jogging at a constant speed for the duration of the event.

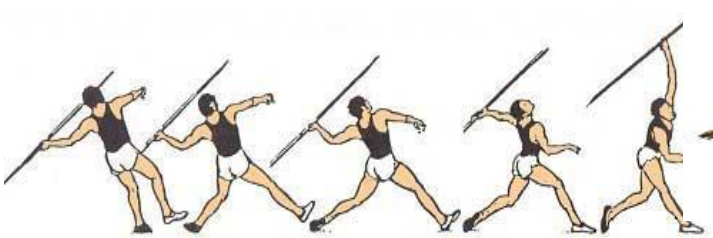
Section 2 - Throwing events include; discus, javelin, shotput.

Teaching points:
Discus: wide stance, hand on top of discus, spread fingers, swing arm back, release high.
Javelin: stand side on, fully extend arm behind, bring arm forward, transfer weight.
Shotput: stand side on; *dirty fingers, clean palm*, shot starts in neck and **pushes** through, arm points the way shot goes.

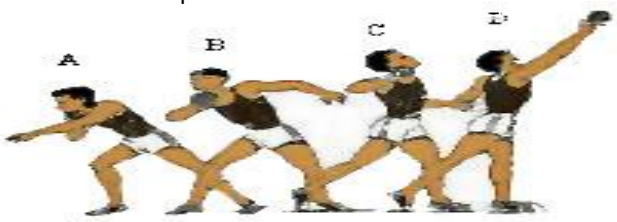
Discus:



Javelin:

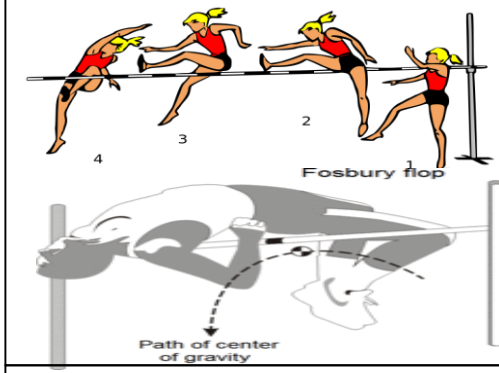


Shot put:



To be successful at any athletics discipline you need speed and power:
Speed: the differential rate at which an individual is able to perform a movement or cover a distance in a period of time or how quickly an individual can move. Helps sprinters get off the blocks quickly.
Power: The ability to perform strength performances quickly.

Section 3: High jump (scissor kick vs fosbury flop)



Questions:
1. What is the main difference between the high jump techniques? Use the diagrams to help.
2. What is essential in middle and long distance running and what does this mean?
3. What do I need to be successful at athletics? Why?
4. Explain the sprinting technique diagram above.

First Aid Key term	Definition
1. Abrasion	Medical term for a graze to the skin. An abrasion is damage to the superficial layers of the skin.
2. Adrenaline	A hormone released by the adrenal glands (just above the kidneys). It increases the heart rate and causes blood vessels to constrict. This hormone is responsible for the 'fight or flight' response.
3. Anaphylaxis	A life-threatening whole body allergic reaction which causes airway swelling and shock.
4. Concussion (head injury)	An injury to the brain which causes 'shaking' / 'jarring' of the brain.
5. Contusion	A bruise (bleeding beneath the skin)
6. Epi-pen	An auto-injecting syringe containing adrenaline used to counteract a major allergic reaction
7. Epilepsy	A medical condition characterised by repeated seizures. May be controlled by medication
8. Hyperglycaemia	High blood sugar levels
9. Hypoglycaemia	Low blood sugar levels
10. Insulin	A hormone produced by the pancreas that reduces blood sugar levels
11. Cardio	Relating to the heart
12. Pulmonary	Relating to the lungs
13. Resuscitation	the action or process of reviving someone from unconsciousness
14. Primary survey	The quick initial assessment of a patient. Often structured in an 'ABC' approach (airway, breathing, circulation)

First Aid Tips

MAJOR BLEEDING

1. ✓ Call 911 and put on gloves (or a plastic bag) ✓ Have person lie down with head lower than body.
2. ✓ Remove obvious objects from wound, but don't clean it.
3. ✓ If organs have been displace, do not push them back in, simply cover the wound.
4. ✓ Apply direct pressure with gauze / clothing until bleeding stops (don't "look" for at least 20 min), and apply pressure around deeply embedded objects, not over them.
5. ✓ Do not remove gauze / bandage. Simply keep adding more as needed
6. ✓ If limb (arm / leg) is bleeding, elevate it.

HANDS-ONLY CPR (Cardio Pulmonary Resuscitation)

1. ✓ Call 911
2. ✓ Push hard and fast at the center of the chest
3. ✓ IMPORTANT: Hands-Only CRP is most effective if used after you SEE a teen or adult suddenly collapse. If you are trained in conventional CPR, you should use it if victim is found unconscious.

15. Laceration	**An injury where there is cutting or tearing of the skin**
16. Recovery position	A position where the casualty is laying on their side to protect their airway

1. HEALING	2. ENERGIZE	3. AWARENESS	4. LIVE	5. TIME	6. HELP
Practice: **Heal your hurt & pain. Deal with the past or existing issues that are currently causing you problems.**	**Practice:** **Empower your body & mind by looking after yourself. Eat well and exercise.**	**Practice:** **Begin to take notice of what you are experiencing i.e. your bodily reactions or change in mood.**	**Practice:** **Live & learn. Live life in all its fullness. Take opportunities & make opportunities. Look at life as a lesson, learn from your mistakes whilst moving on better equipped.**	**Practice:** **Make time for yourself. Find a comfortable balance, whilst doing the things you have to do, as well as doing the things you enjoy.**	**Practice:** **Help yourself as well as others. Be patient and kind to yourself. Believe in your value and that you are good enough.**
Why? Avoiding pain will over time increase it. Painful experiences can result in defining you, shaping you & clouding your judgements. Ultimately avoidance will eventually steal away a life of self-fulfilment & reaching your full potential. Self-actualization. Talk and make connections with others. Talking can release stress & is particularly a helpful way of offloading, making sense of situations & giving your thoughts a voice. Talking allows for relationships to grow, strengthen & perceive problems from a different perspective**.**	Why? Becoming active both physically & mentally will rebalance you emotionally. Powerful chemical endorphins in the brain are released when we exercise. The same endorphins that make us feel energized & give a feel good feeling are the same endorphins that promote calm & wellbeing. A healthy nutritious diet reduces the risk of chronic diseases & increases concentration and high mood.	Why? Be mindful of not only what is happening for you, but also try to connect with your surroundings & what is happening around you. Once you begin to make these connections, you'll be able to connect & empathise with how others might feel, ultimately promoting the tolerance of people.	Why? We are curious beings. Our learning never comes to an end. What we learn (including the motivation we have for it) can positively have an impact on self-esteem & efficacy, our life satisfaction, our confidence & our capacity to cope. 	Why? Give time to your strengthens, without forgetting to work on the weaknesses. Consider what it is you need and how these needs can be met. Surrounding yourself with people that will bring the best out in you will encourage you and create confidence.	Why? Learn to accept your uniqueness, as well as other's differences. Offering your support can reduce isolation. It can create a sense of belonging & in general make the world more habitable. Your act of kindness can increase low self-esteem, optimism, self-satisfaction & happiness.
How? Seek advice from your GP. Support groups. Self-help books. Twelve step programs. Counselling. Reach out to friends/family**.**	How? Drink plenty of water. Relax & get the recommended 8 hours of sleep. Exercise & keep active - Join the gym/dance class/drama group. Try Tai Chi/swimming/walking/jogging. Read. Learn something new/take a course.	How? Mindfulness/meditation Learn how to actively listen to others, as well as yourself.	How? Try new things. Visit new places. Set realistic goals/ create a bucket list.	How? Volunteer your time to a worthwhile cause. Partake in a creative activity. Take small steps in challenging your fears & weaknesses. Spring clean & organise your home as well as your mind by getting rid of what you no longer need or want.	How? Ask for help when you feel the need. Offer your support where you can. Trust in your capability. Do not let False Evidence that Appears Real (fear) hold you back from reaching your full potential.