# YEAR 10 KNOWLEDGE ORGANISER

## MICHAELMAS TERM 2020/21

**Name:**

**Family Group**:










# LEARNING - LOVING - LIVING

# CONTENTS PAGE

## GENERAL INFORMATION

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

When used effectively, Knowledge Organisers are useful in:

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

## HOMEWORK EXPECTATIONS

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

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

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

## SUBJECT HOMEWORK

All students will also be assigned **ENGLISH** reading activities on www.CommonLit.org with each assignment taking 20-30 minutes to complete and **MATHS** activities with short explanatory videos on the online platform 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. This extra reading will develop and broaden general understanding and context in all subjects.

## HOMEWORK TIMETABLE

| Year 10 | Subject 1 | Subject 2 | Subject 3 |
|---|---|---|---|
| **Monday** | Maths | Option A | Option C |
| **Tuesday** | English | Option B | Option C |
| **Wednesday** | Maths | RE | Option D |
| **Thursday** | English | Science | Option A |
| **Friday** | Maths | Science | Option B |

## EQUIPMENT CHECKLIST

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

## HOMEWORK CHECKLIST

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

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

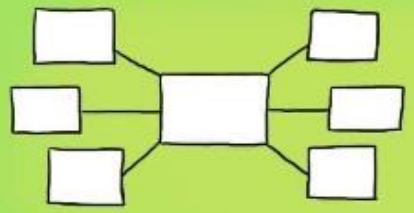
Before you start put away all your books & classroom materials.

**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

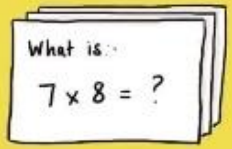
Create practice questions on a topic. Swap your questions with a partner & answer.

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

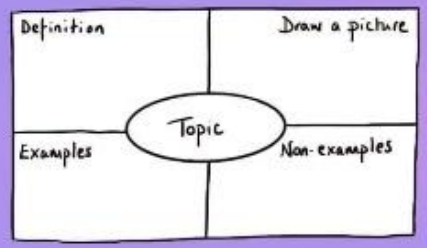
Create your own flashcards, question on one side answer on the other. Can you make links between the cards?




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.

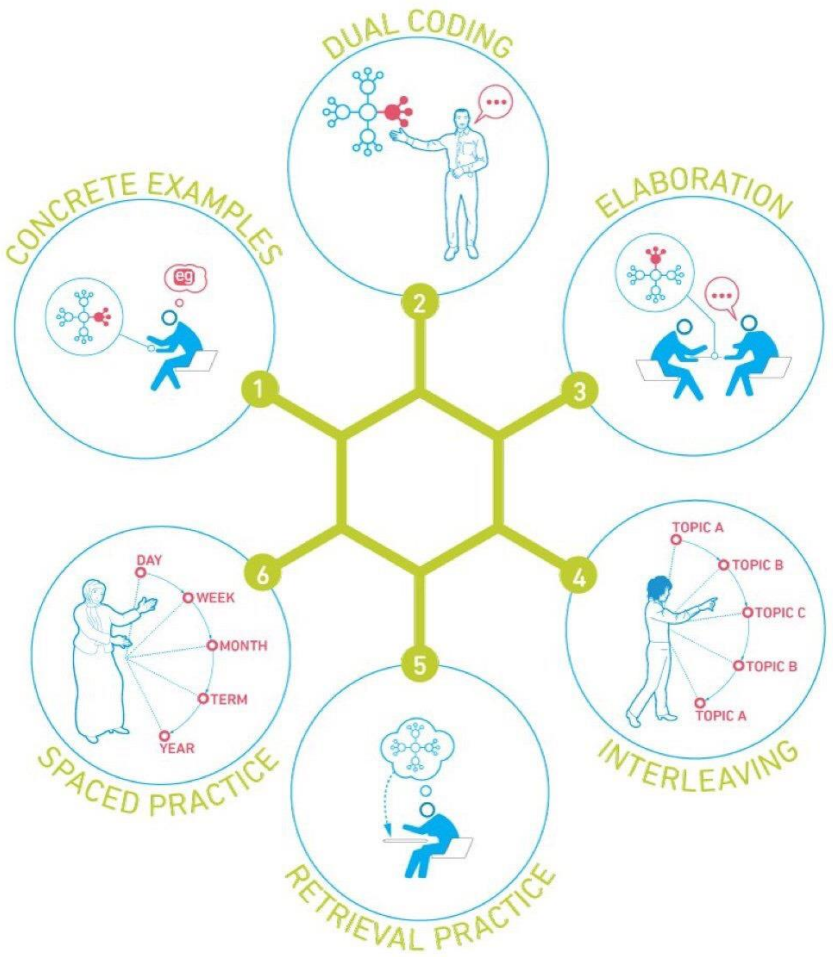
After you have retrieved as much as you can go back to your books & check what you've missed. Next time focus on that missing information

## 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

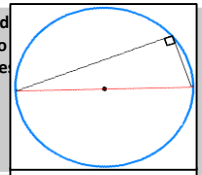
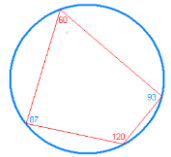
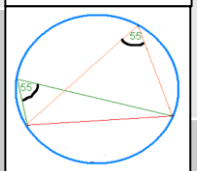
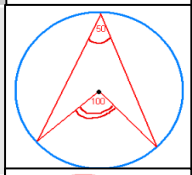
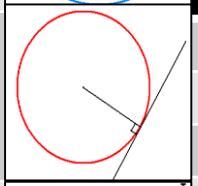
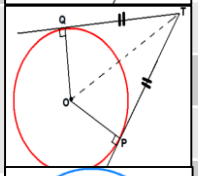
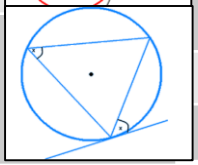
Through the act of retrieval, or calling information to mind, our memory for that information is strengthened and forgetting is less likely to occur. Retrieval practice ideas include: Read, cover, write, check, flashcards and brain dumps.

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

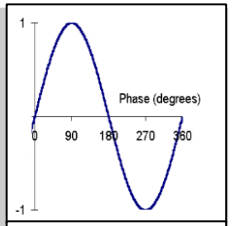
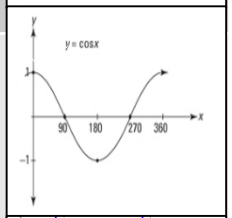
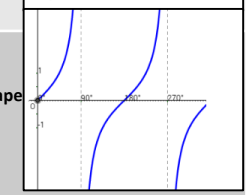
| Act Two Summary: Gerald and Mrs.B reveal links to Eva | | |
|---|---|---|
| **Who** | What | Notes |
| **Insp.** | You see, we have to share something. If there's nothing else, we'll have to share our guilt. | Birlings are immoral. They have contempt for collective responsibility. |
| **Insp.** | We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

| **Act 3 Summary: Inspector's final admonishment and exit. Aftermath: was it real? does it matter? Young are changed. Old refuse to accept responsibility.** | | |
|---|---|---|
| **Who** | **What** | **Notes** |
| **Eric** | I'm not very clear about it, but afterwards she told me that she didn't want me to go in but that-well, I was in that state when a chap easily turns nasty-and I threatened to make a row. | Threatened violence to get sex. alcoholic hedonistic life free from responsibilities. |
| **Eric** | Steals money from dad | Steals to help but stealing is wrong. |
| **Eric** | Castigates Mrs.B for killing Eva | Defiance: break from expected obedience to elders. E is incredulous at Mrs.B's callousness |
| **Eric** | You're not the kind of father a chap could go to when he's in trouble | Dysfunctional relationship with B. B focused on business, ignoring family |
| **Insp.** | But each of you helped to kill her. Remember that | Collective responsibility. |
| **Insp.** | There are millions and millions and millions of Eva Smiths and John Smiths still left with us, with their live, their hopes and fears, their suffering and chance of happiness, all intertwined with our lives, and what we think and say and do. We don't live alone. We are members of one body. We are responsible for each other. And I tell you that the time will soon come when, if men will not learn that lesson, then they will be taught it in fire and blood and anguish. | Marginalized are the majority (repetition of 'millions'). lower class life is precarious ('still). omnipresence of suffering. biblical rhetoric (tricolon at end), hinting at WW1. compare speech with B and Mrs.B's antithetical views. |
| **Eric** | The money's not the important thing. It's what happened to the girl and what we all did to her that matter. And I still feel the same about it, and that's why I don't feel like sitting down and having a nice cosy talk. | E is remorseful, like S. criminality is irrelevant: they have a moral duty to others |
| **Eric** | We did her in alright | Accepts responsibility. |
| **Ending** | is it a hoax? was Eva real? does this matter? | E and S have changed: remorse, responsibility, guilt. MrsB and B only care about reputation and scandal. Mrs.B and B mock E and S for being gullible.<br>Ending=final phone call: inescapability and absolute necessity of change. |

## Circle Theorems

| | | |
|---|---|---|
| Angles in a semi circle | **The angle formed from diameter to edge is 90 degree** |  |
| Angles in a Cyclic – Quadrilat--eral | **Opposite angles in a cyclic Quadrilateral add up to 180 degrees.** |  |
| Angles in the same segment | **The angles from are chord are equal if they are In the same segment.** |  |
| Angle at the centre and the circumfere nce | **The angle at the centre is double the angle at the tip.** |  |
| The angle between a tangent and the radius | **The angle from the radius to the tangent is 90°.** |  |
| Tangents that meet at a point | **The length of two tangents to a single point are equal.** |  |
| Alternate segment theorem | **The angles in two alternate segments are equal.** |  |

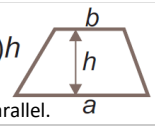
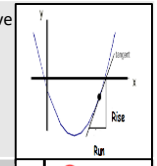
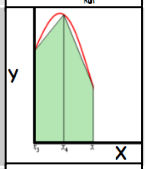
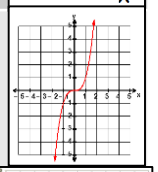
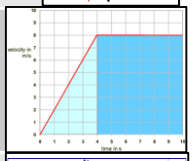
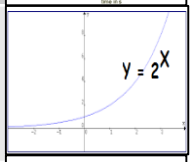
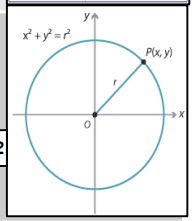
## Trigonometric Functions

| | | |
|---|---|---|
| Sine Graph<br>$y = \sin(x)$ | **A wave like graph that repeats itself over a 360° cycle. Starts at zero and goes between +1 and -1** |  |
| Cosine Graph<br>$y = \cos(x)$ | **A wave like graph that repeats itself over a 360° cycle. Starts at +1 and goes between +1 and -1** |  |
| Tange--nt Graph<br>$y = \tan(x)$ | **A repeating backwards S shape graph. Goes between -/+ Infinity.** |  |

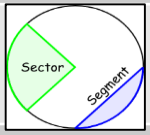
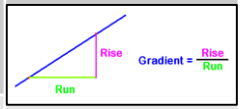
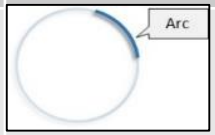
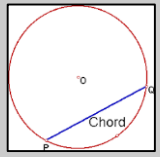
## MathsWatch References

| | |
|---|---|
| **183** | Circle Theorems |
| **184** | Proof of Circle Theorems |
| **197** | Equation of a circle |
| **208** | Perpendicular lines |
| **194** | Exponential functions |
| **161** | Cubic and exponential graphs |
| **140** | Simultaneous equations involving graphs |
| **195** | Trigonometric graphs |
| **216** | Velocity Time graphs |

## Key Facts, & Formulae

| | | |
|---|---|---|
| **Area of a Trapezium** | $= \frac{1}{2}(a + b)h$<br>$a$ and $b$ are parallel.<br>$h$ is the perpendicular height |  |
| Estimating the gradient of a curve at a point | Draw a tangent to curve then find the gradient of this line |  |
| Estimating the area under a curve | Split the area under the Curve into trapeziums. Find the area of each one and add them for the total srea. |  |
| Graph of a Cubic Function | Looks like a backwards S and extends to +/- Infinity as $x$ increases/ decreases. |  |
| Area under a speed-time graph | Represents the distance travelled. |  |
| Exponential graph | The X value is a power that varies, the base number is constant. |  |
| Equation of a circle | When the centre is at the origin use<br>$x^2 + y^2 = \text{radius}^2$ |  |

## Vocabulary

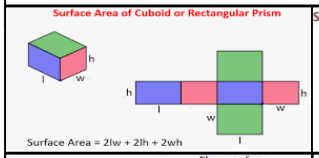
| | |
|---|---|
| Tangent | A line that touches the circumference of a circle at exactly one point at 90 degrees to the radius. |
| Sector/ Segment |  |
| Gradient is a measure of the slope of a line. | Change in $y$ (rise) ÷ change in $x$ (run)<br>  |
| Exponential | A curve which has a continuously changing gradient due to the X variable being a power. |
| Perpendicular | A line or plane that is at right angles to another line or plane. |
| Arc |  <br>A portion of a curve. Often used for a portion of a circle. |
| Chord |  <br>A straight line segment joining two points on a circle or other curve. |

## Important Ideas

**Surface area**

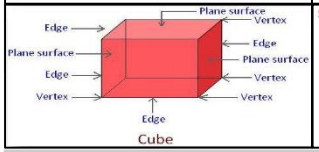
The surface area is simply the area of all of the outside surfaces of a three-dimensional object.

So the surface area of a cuboid is calculated from adding together the area of all six faces.




SUFACE AREA AND VOLUME OF CUBOID


- Total Surface Area: 2(lb+ bh +hl)
- Lateral Surface Area:2h(l + b)
- Volume: l x b x h




SUFACE AREA AND VOLUME OF FRUSTUM

- Volume: $1/3\pi h(r_1^2 + r_2^2 + r_1 r_2)$
- Curved Surface Area: $\pi l(r_1 + r_2)$
- Total Surface Area : $\pi l(r_1 + r_2) + \pi r_1^2 + \pi r_2^2$

### Units of measurement of area / volume

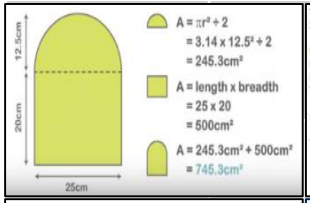
Units of measurement of area - $mm^2$, $cm^2$, $m^2$

Units of measurement of volume- $mm^3$, $cm^3$, $m^3$

### Vocabulary

| | |
|---|---|
| **Area of 2D shape** | The 2D space a shape covers |
| **Semi-circle**<br>**Hemisphere** | Half a circle<br>Half a sphere |
| **Surface area of a 3D shape** | The sum of the areas of all the faces |
| **Volume of a solid** | The 3D space enclosed by its surface |
| **Prism** | A solid(3D) object with the same cross-section all the way through. |
| **Frustum of a Cone or Pyramid** | A truncated cone or pyramid in which the plane cutting off the apex is parallel to the base |

## Q & A




The radius of the base and the height of a right circular cone are 7 cm and 24 cm respectively. Find the volume and total surface area of the cone.

Solution:
Radius of the base of a right circular cone is 7 cm.
Height of a right circular cone is 24 cm.
Volume of a right circular cone = $\frac{1}{3}\pi r^2 h = \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 24 = 1232\ cm^3$

Slant height of the cone = $\sqrt{24^2 + 7^2} = \sqrt{576 + 49} = \sqrt{625} = 25\ cm^3$

Total surface area of a right circular cone = $\pi r(r + l)$
$= \frac{22}{7} \times 7(7 + 25)$
$= \frac{22}{7} \times 7 \times 32$
$= 704\ cm^2$.

Two cubes each of volume 64 $cm^3$ are joined end-to-end. Find the total surface area of the resulting cuboid.

Solution:
Volume of the cube = 64 $cm^3$

$a^3 = 64$
$\Rightarrow \quad a = 4\ cm$

Length of resulting cuboid = 4 + 4 = 8 cm.
breadth = 4 cm and height = 4 cm.
Total surface area of the cuboid = 2(lb + bh + hl)
= 2(8 x 4 + 4 x 4 + 4 x 8)
= 160 $cm^2$

The diameter of the base of a right circular cylinder is 28 cm and its height is 21 cm. Find its
(i) curved surface area
(ii) total surface area
(iii) volume

Solution:
Diameter of the base of a right circular cylinder is 28 cm
Radius of the base of a right circular cylinder (r) is 14 cm
Height of a right circular cylinder is 21 cm.

(i) Curved surface area of a right circular cylinder = $2\pi rh = 2 \times \frac{22}{7} \times 14 \times 21$
= 1848 $cm^2$

(ii) Total surface area of a right circular cylinder = $2\pi r(r + h)$
$= 2 \times \frac{22}{7} \times 14(14 + 21)$
$= 2 \times \frac{22}{7} \times 14 \times 35$
= 3080 $cm^2$

(iii) Volume of a right circular cylinder = $\pi r^2 h = \frac{22}{7} \times 14 \times 14 \times 21 = 12936\ cm^3$

Find the surface area of a cube whose volume is given:
(i) 216 $cm^3$ (ii) 1000 $cm^3$

Solution:
Let the edge of the cube= a cm
Then volume of the cube = $a^3$ cu. cm and surface area = $6a^2$ sq. cm.

(i) $a^3 = 216 \Rightarrow a = 6\ cm$
∴Total surface area = $6a^2 = 6 \times (6)^2 = 216\ cm^2$

(ii) $a^3 = 1000 \Rightarrow a = 10\ cm$
Total S.A = $6a^2 = 6(10)^2 = 600$ sq. cm

Find the volume and the surface area of a metallic sphere having diameter 8.4 cm.

Solution:
Diameter of a sphere is 8.4 cm

Radius of a sphere is 4.2 cm

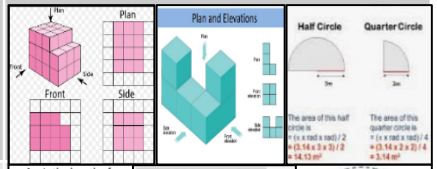
Volume of a metallic sphere = $\frac{4}{3}\pi r^3 = \frac{4}{3} \times \frac{22}{7} \times 4.2 \times 4.2 \times 4.2 = 310.464\ cm^3$
Surface area of a metallic sphere = $4\pi r^2 = 4 \times \frac{22}{7} \times 4.2 \times 4.2 = 221.76\ cm^2$.

### MathsWatch References

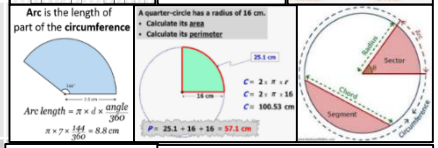
| | |
|---|---|
| **51** | Plans and elevations |
| **114a** | Surface area of cuboids |
| **114b** | Surface area of triangular prisms |
| **115** | Volume of a cuboid |
| **119** | Volume of a prism |
| **169** | Spheres |
| **171**<br>**172** | Cones<br>Frustums |
| **200** | Similarity-Area and Volume |

## Key Facts & Formulae

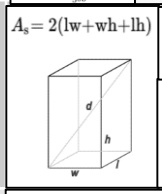
**Use 2D representation of 3D shapes-plans and elevations**



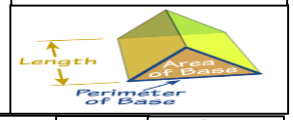

**Area and perimeter of sectors of circles**



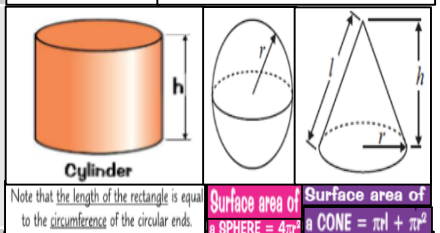

**Surface area of a prism**




A=2x(BaseArea) + (BasePerimeter) x Length




**Surface area of a cylinder, sphere and a cone**

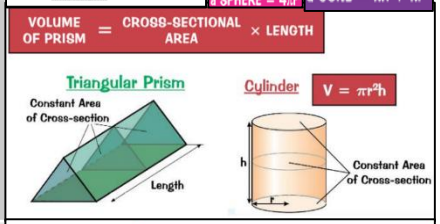



Note that the length of the rectangle is equal to the circumference of the circular ends.

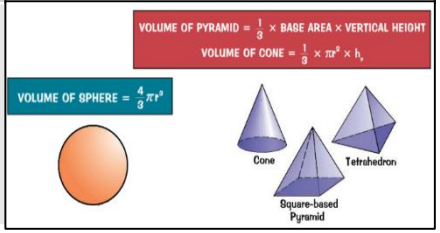
Surface area of a SPHERE = $4\pi r^2$

Surface area of a CONE = $\pi rl + \pi r^2$

**Volume of a prism-(includes cuboids)**




**Volume of a sphere, cone and a pyramid**



| MathsWatch References | |
|---|---|
| 26 | Simplifying fractions |
| 24 | Equivalent fractions |
| 70 | Comparing fractions |
| 42 | Proportions |
| 41 | Value for money |
| 38 | Introducing ratio |
| 106 | Sharing into a given ratio |
| 7 | Introducing Algebra |
| 33/34/35 | Simplifying expressions |
| 93 | Expanding brackets |
| 134 | Simplifying expressions – brackets |
| 137 | Forming equations |
| 136 | Rearranging formulae |
| 190 | Subject of the formula |
| 199 | Direct and Inverse proportions |
| 76 | Reciprocals |

| Vocabulary | |
|---|---|
| Fraction | Part of a whole |
| Numerator | The top number in a fraction |
| Denominator | The bottom number in a fraction |
| Equivalent Fractions | Fractions with the same value as one another. |
| Simplest form | When the Highest common Factor of numerator and denominator is 1 |
| Collect like terms | Bringing the same letters, powers or types of number together by addition or subtraction. |
| Ratio | A part to part comparison. The ratio of a to b is usually written a : b. |
| Expand | Multiply out. |
| Factorise | To express a number or an expressions as the product of its factors. |
| Term | A part of an expression or equation |
| Proportion | As one thing changes so does the other by the same multiplier. |
| Subject of a formula | the single variable to which everything else in the formula is equal. |

## Key Facts

**Simplifying a fraction**

Divide both the numerator and the denominator by the same number.

$\frac{3}{15} \xrightarrow{\div 3} \frac{1}{5}$

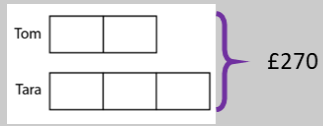
**Simplifying a ratio**

Divide all the parts by the same number.

3 : 15 → (÷3) 1 : 5

**Ratio**

Tom and Tara share £270 between them in the ratio 2:3. What else can you find out?




**Collecting like terms**

Add or subtract same variables and powers of variables.

$5X - 3X = 2X$

$3Y^2 + Y^2 = 4Y^2$

**Multiplying out brackets**

Multiply EVERYTHING inside the bracket by the number and/or variable outside.

$3(2A - 5) = 3 \times 2A - 3 \times 5 = 6A - 15$

**Multiplying out two or more brackets**

multiply every term in each bracket by each term in every other bracket

$(X + 5)(X + 4)$

$X^2 + 4X + 5X + 20$

$X^2 + 9X + 20$

## Key Facts

**Ratio proportion methods**

Same multiplier for both sides of the ratio.

Dave and John share some sweets in the ratio 2 : 3

Dave gets 10 sweets.

| | Dave | : | John | |
|---|---|---|---|---|
| ×5 | 2 | : | 3 | ×5 |
| | 10 | : | 15 | |

**Recipe proportion methods**

**Step1:** Find the value of one item by division
**Step 2:** Multiply this amount up to find the value of the number required

To make 3 cakes you need 150g of flour.

How much flour do you need for 5 cakes?

| | Cakes | : | Flour | |
|---|---|---|---|---|
| ÷3 | 3 | : | 150g | ÷3 |
| ×5 | 1 | : | 50g | |
| | 5 | : | 250g | ×5 |

**Value for money proportion methods**

Find the price per item/unit in order to compare deals

Deal 1: 2kg = £3 → (÷2) 1kg = £1.50

Deal 2: 5kg = £6 → (÷5) 1kg = £1.20

**Deal 1 is better value for money as it is cheaper per 1kg**

**Reciprocal**

**Step 1:** Turn the number into a fraction
**Step 2:** Turn the fraction upside down.

$0.5 = \frac{1}{2}$ **Reciprocal =** $\frac{2}{1}$

**Changing the subject of a formula**

Use inverse operation to get a given letter on its own. It is like solving but the answer may not be a number

**Make X the subject of the formula**

$3Y = 2X + 8$ (−8, −8)

$3Y - 8 = 2X$ (÷2, ÷2)

$\frac{3Y - 8}{2} = X$

## Important Ideas

**Essential knowledge:**

$a + a + a = 3a$

$4 \times d = 4d$

$y \times y \times y = y^3$

$7 \times e \times f = 7ef$

**Expanding brackets:**

- multiplying the term outside the brackets by every term inside

e.g. $3\,(5a - 2\,)$
$= (3 \times 5a) - (\,3 \times 2\,) = 15a - 6$

**Substitution:**

- Replace variables with values
- Always apply BIDMAS
- Use brackets for powers
- Fractions? Work out the top and bottom separately.

**Factorising expressions:**

To express a number or an expressions as the product of its factors.

- The inverse of expanding
- Look for Highest Common Factors (numbers and algebra)

e.g. $10a + 15 = 5\,(2a + 3\,)$
10 & 15 both have 5 as HCF
$10a = 5 \times 2a$ $\quad 15 = 5 \times 3$

## Vocabulary

| | |
|---|---|
| Expression | A mathematical form expressed symbolically: contains and perhaps numbers, but no = sign |
| Equation | A mathematical statement showing that two expressions are equal. The expressions are linked with the symbol = |
| Formula | An equation linking sets of physical variables. |
| Identity | An equation which is true for all possible values of the variable(s). The ≡ symbol denotes identity |

## Q& A

| | |
|---|---|
| 2a + 5a – a | 6a |
| 4p + 2q - 3p + 5 | $4p - 3p + 2q + 5 = p + 2q + 5$ |
| 2a × 4b | $2 \times a \times 4 \times b = 2 \times 4 \times a \times b = 8ab$ |
| $3a^2 + 5a + 4a^2$ | $7a^2 + 5a$ ( a and $a^2$ are NOT like terms) |
| Find the value of $5a^2 + 1$ given that: $a = 2, b = 3, c = -5$ | $5 \times 2^2 + 1 = 5 \times 4 + 1 = 20 + 1 = 21$ |
| Evaluate $7b - 3c$, given that: $a = 2, b = 3, c = -5$ | $7 \times 3 - 3 \times -5 = 21 - -15 = 21 + 15 = 36$ |
| Expand $3(5a - 2)$ | $3(5a - 2) = (3 \times 5a) - (3 \times 2)$ $= 15a - 6$ |
| Expand & Simplify $(a + 4)(a + 2)$ | $(a + 4)(a + 2)$ $= a^2 + 2a + 4a + 8$ $= a^2 + 6a + 8$ |
| Factorise $6x + 15$ | The HCF of 6x and 15 is 3. Place this outside the brackets, then work out what you need to multiply 3 by to get 6x and 15. ANS : $3(2x + 5)$ |

## Key Facts & Formula

| | |
|---|---|
| Simplifying | **Simplifying**<br>Means grouping *'like terms'* together<br>3e + 6r - e +5t<br>2e + 11t<br>If there is no sign in front of the term, it is *POSITIVE* |
| Expand | Expand $3(x + 5)$<br>Claw $3(x + 5) = 3x + 15$<br>Box: $x$, +5; 3, $3x$, +15 → $3x + 15$ |
| Expand & Simplify | $2(4m + 3) + 3(5m + 2)$<br>$8m + 6 + 15m + 6$<br>$23m + 12$ |
| BIDMAS | Gives the order we carry out operations Brackets, Indices, Divide, Multiply, Add and Subtract.<br>D and M have equal priority. A and S have equal priority |

## MathsWatch References

| | |
|---|---|
| 33,34, 35 | Simplifying Expressions |
| 75 | BIDMAS |
| 93 | Expanding Brackets |
| 94 | Simple Factorisation |
| 95 | Substitution |
| 134 | Expanding and Simplifying Expressions |
| 136 | Rearranging Formula |

# *3.1* Conservation of mass

- No atoms are lost or made during a chemical reaction
- Mass of the products equals the mass of the reactants.

Balanced symbol equations

- Represent chemical reactions and have the same number of atoms of each element on both sides of the equation.

- $H_2 + Cl_2 \rightarrow 2HCl$
- Subscript numbers show the number of atoms of the element to its left.
- Normal script numbers show the number of molecules.

## 3.2 Relative formula mass ($M_r$)

The sum of the relative atomic masses of the atoms in the numbers shown in the formula.

The sum of the $M_r$ of the reactants in the quantities shown equals the sum of the $M_r$ of the products in the quantities shown.

$2Mg + O_2 \rightarrow 2MgO$

$48g + 32g = 80g$

$80g = 80g$

## 3.3 Mass changes when a reactant or product is a gas

Mass appears to increase during a reaction

Mass appears to decrease during a reaction

One of the reactants is a gas

One of the products is a gas and has escaped.

Magnesium + oxygen → magnesium oxide

Calcium carbonate → carbon dioxide + calcium oxide

## 3.4 Chemical measurements

Whenever a measurement is taken, there is always some uncertainty about the result obtained.

uncertainty can determine whether the mean value falls within the range of uncertainty of the result

1. Calculate the mean
2. Calculate the range of the results
3. Estimate of uncertainty in mean would be half the range

Example:

1. Mean value is 46.5s
2. Range of results is 44s to 49s = 5s
3. Time taken was 46.5s $\pm$2.5s

# 3.5 Moles (HT only)

| | | |
|---|---|---|
| **Chemical amounts are measured in moles (mol)** | **Mass of one mole of a substance in grams = relative formula mass** | **One mole of $H_2O$ = 18g (1 + 1 + 16)**<br>**One mole of Mg = 24g** |

| | | |
|---|---|---|
| **Avogadro constant** | ***One mole of any substance will contain the same number of particles, atoms, molecules or ions.*** | **$6.02 \times 10^{23}$ per mole**<br>**One mole of $H_2O$ will contain $6.02 \times 10^{23}$ molecules**<br>**One mole of NaCl will contain $6.02 \times 10^{23}$ $Na^+$ ions** |

***Number of moles = $\frac{\text{mass (g)}}{A_r}$ or $\frac{\text{mass (g)}}{M_r}$***

**How many moles of sulfuric acid molecules are there in 4.7g of sulfuric acid ($H_2SO_4$)?**
**Give your answer to 1 significant figure.**

$\frac{4.7}{98}$ = 0.05 mol ($M_r$ of $H_2SO_4$)

## 3.6 Amounts of substances in equations (HT only)

**If you have a 60g of Mg, what mass of HCl do you need to convert it to $MgCl_2$?**

**$A_r$ : Mg =24 so mass of 1 mole of Mg = 24g**
**$M_r$ : HCl (1 + 35.5) so mass of 1 mole of HCl = 36.5g**

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

***One mole of magnesium reacts with two moles of hydrochloric acid to make one mole of magnesium chloride and one mole of hydrogen***

**So 60g of Mg is 60/24 = 2.5 moles**
**Balanced symbol equation tells us that for every one mole of Mg, you need two moles of HCl to react with it.**
**So you need 2.5x2 = 5 moles of HCl**
**You will need 5 x 36.5g of HCl= 182.5g**

## 3.7 Using moles to balance equations (HT only)

**The balancing numbers in a symbol equation can be calculated from the masses of reactants and products**

***Convert the masses in grams to amounts in moles and convert the number of moles to simple whole number ratios.***

## 3.8 Percentage yield

**Percentage yield is comparing the amount of product obtained as a percentage of the maximum theoretical amount**

$$\% \text{ Yield} = \frac{\text{Mass of product made}}{\text{Max. theoretical mass}} \times 100$$

**A piece of sodium metal is heated in chlorine gas. A maximum theoretical mass of 10g for sodium chloride was calculated, but the actual yield was only 8g.**
***Calculate the percentage yield.***

**Percentage yield = 8/10 x 100 =80%**

**Yield is the amount of product obtained**

***It is not always possible to obtain the calculated amount of a product***

| |
|---|
| **The reaction may not go to completion because it is reversible.** |
| **Some of the product may be lost when it is separated from the reaction mixture.** |
| **Some of the reactants may react in ways different to the expected reaction.** |

**HT only:**

**200g of calcium carbonate is heated. It decomposes to make calcium oxide and carbon dioxide. *Calculate the theoretical mass of calcium oxide made.***

**$CaCO_3 \rightarrow CaO + CO_2$**

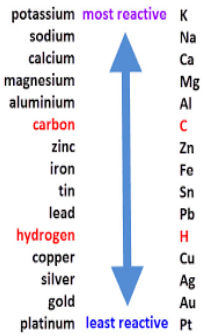
**$M_r$ of $CaCO_3$ = 40 + 12 + (16x3) = 100**
**$M_r$ of CaO = 40 + 16 = 56**
**100g of $CaCO_3$ would make 56 g of CaO**
**So 200g would make 112g**

## 1. Metal oxides

| | | |
|---|---|---|
| **Metals and oxygen** | *Metals react with oxygen to form metal oxides* | **magnesium + oxygen → magnesium oxide**<br>$2Mg + O_2 \rightarrow 2MgO$ |
| **Reduction** | *This is when oxygen is removed from a compound during a reaction* | e.g. metal oxides reacting with hydrogen, extracting low reactivity metals |
| **Oxidation** | *This is when oxygen is gained by a compound during a reaction* | e.g. metals reacting with oxygen, rusting of iron |

## 2. The reactivity series

| | | |
|---|---|---|
| **Metals form positive ions when they react** | *The reactivity of a metal is related to its tendency to form positive ions* | The reactivity series arranges metals in order of their reactivity (their tendency to form positive ions). |
| **Carbon and hydrogen** | *Carbon and hydrogen are non-metals but are included in the reactivity series* | These two non-metals are included in the reactivity series as they can be used to extract some metals from their ores, depending on their reactivity. |
| **Displacement** | *A more reactive metal can displace a less reactive metal from a compound.* | Silver nitrate + Sodium chloride → Sodium nitrate + Silver chloride |




## 3. Extraction of metals and reduction

**Extraction using carbon**

| | |
|---|---|
| *Metals less reactive than carbon can be extracted from their oxides by reduction.* | For example:<br>**zinc oxide + carbon → zinc + carbon dioxide** |

Unreactive metals, such as gold, are found in the Earth as the metal itself. They can be mined from the ground.

## 4. Oxidation and reduction

**Oxidation and reduction in terms of electrons (HT ONLY)**

Oxidation Is Loss (of electrons)
Reduction Is Gain (of electrons)

**Ionic half equations (HT only)**

| | | |
|---|---|---|
| **For displacement reactions** | *Ionic half equations show what happens to each of the reactants during reactions* | For example:<br>The ionic equation for the reaction between iron and copper (II) ions is:<br>$Fe + Cu^{2+} \rightarrow Fe^{2+} + Cu$<br><br>The half-equation for iron (II) is:<br>$Fe \rightarrow Fe^{2+} + 2e^-$<br><br>The half-equation for copper (II) ions is:<br>$Cu^{2+} + 2e^- \rightarrow Cu$ |

| | Reactions with water | Reactions with acid |
|---|---|---|
| **Group 1 metals** | *Reactions get more vigorous as you go down the group* | *Reactions get more vigorous as you go down the group* |
| **Group 2 metals** | *Do not react with water* | *Observable reactions include fizzing and temperature increases* |
| **Zinc, iron and copper** | *Do not react with water* | *Zinc and iron react slowly with acid. Copper does not react with acid.* |

## 5. Reactions of acids and metals

**HT ONLY:** Reactions between metals and acids **are redox reactions** as the metal donates electrons to the hydrogen ions. This displaces hydrogen as a gas while the metal ions are left in the solution.

| | | |
|---|---|---|
| **Reactions with acids** | *metal + acid → metal salt + hydrogen* | **magnesium + hydrochloric acid → magnesium chloride + hydrogen**<br>**zinc + sulfuric acid → zinc sulfate + hydrogen** |

## 6. Soluble salts

| | |
|---|---|
| **Soluble salts** | *Soluble salts can be made from reacting acids with solid insoluble substances (e.g. metals, metal oxides, hydroxides and carbonates).* |
| **Production of soluble salts** | *Add the solid to the acid until no more dissolves. Filter off excess solid and then crystallise to produce solid salts.* |

## 6. Neutralisation of acids and salt production

**sodium hydroxide + hydrochloric acid → sodium chloride + water**

**calcium carbonate + sulfuric acid → calcium sulfate, + carbon dioxide + water**

| | | |
|---|---|---|
| **Neutralisation** | *Acids can be neutralised by alkalis and bases* | An **alkali** is a soluble base e.g. metal hydroxide.<br>A **base** is a substance that neutralises an acid e.g. a soluble metal hydroxide or a metal oxide. |

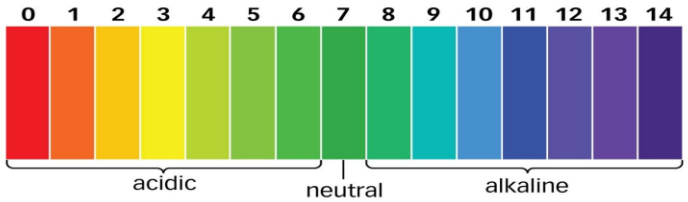
| Acid name | Salt name |
|---|---|
| *Hydrochloric acid* | Chloride |
| *Sulfuric acid* | Sulfate |
| *Nitric acid* | Nitrate |

## 7. The pH scale and neutralisation

In neutralisation reactions, hydrogen ions react with hydroxide ions to produce water:
$H^+ + OH^- \rightarrow H_2O$

| | |
|---|---|
| **Acids** | *Acids produce hydrogen ions ($H^+$) in aqueous solutions.* |
| **Alkalis** | *Aqueous solutions of alkalis contain hydroxide ions ($OH^-$).* |

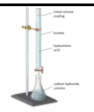
You can use universal indicator or a pH probe to measure the acidity or alkalinity of a solution against the pH scale.



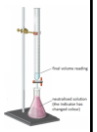
## 8. Titrations (Chemistry only)

Titrations are used to work out the precise volumes of acid and alkali solutions that react with each other.

1. Use the pipette to add 25 $cm^3$ of alkali to a conical flask and add a few drops of indicator.



2. Fill the burette with acid and note the starting volume. Slowly add the acid from the burette to the alkali in the conical flask, swirling to mix.



3. Stop adding the acid when the end-point is reached (the appropriate colour change in the indicator happens). Note the final volume reading. Repeat steps 1 to 3 until you get consistent readings.

**Calculating the chemical quantities in titrations involving concentrations in mol/$dm^3$ and in g/$dm^3$ (HT ONLY):**

**$2NaOH(aq) + H_2SO_4(aq) \rightarrow Na_2SO_4(aq) + 2H_2O(l)$**

It takes 12.20$cm^3$ of sulfuric acid to neutralise 24.00$cm^3$ of sodium hydroxide solution, which has a concentration of 0.50mol/$dm^3$.

*Calculate the concentration of the sulfuric acid in g/$dm^3$*

**0.5 mol/$dm^3$ x (24/1000) $dm^3$ = 0.012 mol of NaOH**

The equation shows that 2 mol of NaOH reacts with 1 mol of $H_2SO_4$, so the number of moles in 12.20$cm^3$ of sulfuric acid is **(0.012/2) = 0.006 mol of sulfuric acid**

*Calculate the concentration of sulfuric acid in mol/ $dm^3$*

**0.006 mol x (1000/12.2) $dm^3$ =0.49mol/$dm^3$**

*Calculate the concentration of sulfuric acid in g/ $dm^3$*

**$H_2SO_4$ = (2x1) + 32 + (4x16) = 98g**

**0.49 x 98g = 48.2g/$dm^3$**

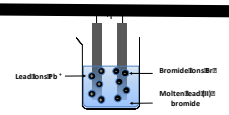
## 9. Strong and weak acids (HT ONLY)

| | |
|---|---|
| **Strong acids** | ***Completely ionised in aqueous solutions e.g. hydrochloric, nitric and sulfuric acids.*** |
| **Weak acids** | ***Only partially ionised in aqueous solutions e.g. ethanoic acid, citric acid.*** |
| **Hydrogen ion concentration** | ***As the pH decreases by one unit (becoming a stronger acid), the hydrogen ion concentration increases by a factor of 10.*** |

| | | |
|---|---|---|
| **Process of electrolysis** | ***Splitting up using electricity*** | When an ionic compound is melted or dissolved in water, the ions are free to move. These are then able to conduct electricity and are called electrolytes. Passing an electric current though electrolytes causes the ions to move to the electrodes. |
| **Electrode** | ***Anode Cathode*** | The positive electrode is called the anode. The negative electrode is called the cathode. |
| **Where do the ions go?** | ***Cations Anions*** | Cations are positive ions and they move to the negative cathode. Anions are negative ions and they move to the positive anode. |

**Higher tier:** **You can display what is happening at each electrode using half-equations:**
**At the cathode: $Pb^{2+} + 2e^- \rightarrow Pb$**
**At the anode: $2Br^- \rightarrow Br_2 + 2e^-$**

## 10. Electrolysis




| | |
|---|---|
| **At the negative electrode** | Metal will be produced on the electrode if it is less reactive than hydrogen. Hydrogen will be produced if the metal is more reactive than hydrogen. |
| **At the positive electrode** | Oxygen is formed at positive electrode. If you have a halide ion ($Cl^-$, $I^-$, $Br^-$) then you will get chlorine, bromine or iodine formed at that electrode. |

The ions discharged when an aqueous solution is electrolysed using inert electrodes depend on the relative reactivity of the elements involved.

**Extracting metals using electrolysis**

***Metals can be extracted from molten compounds using electrolysis.***

***This process is used when the metal is too reactive to be extracted by reduction with carbon.***

***The process is expensive due to large amounts of energy needed to produce the electrical current.***
***Example: aluminium is extracted in this way.***

| State | *Particle arrangement* | Properties |
|---|---|---|
| Solid | *Packed in a regular structure. Strong forces hold in place so cannot move.* | Difficult to change shape. |
| Liquid | *Close together, forces keep contact but can move about.* | Can change shape but difficult to compress. |
| Gas | *Separated by large distances. Weak forces so constantly randomly* | Can expand to fill a space, easy to compress. |

| | | |
|---|---|---|
| Density | *Mass of a substance in a given volume* | Density = mass ÷ volume. |

## Pressure

**PHYSICS ONLY:** when you do work the temperature increases e.g. pump air quickly into a ball, the air gets hot because as the piston in the pump moves the particles bounce off increasing kinetic energy, which causes a

Reducing the volume of a fixed mass of gas increases the pressure.

Halving the volume doubles the pressure.

PV = constant.

$P_1V_1 = P_2V_2$

## Change of state

| | |
|---|---|
| Freezing | Liquid turns to a solid. Internal energy decreases. |
| Melting | Solid turns to a liquid. Internal energy increases. |
| Boiling / Evaporating | Liquid turns to a gas. Internal energy increases. |
| Condensation | Gas turns to a liquid. Internal energy decreases. |
| Sublimation | Solid turns directly into a gas. Internal energy increases. |
| Conservation of mass | When substances change state, mass is conserved. |
| Physical change | No new substance is made, process can be reversed. |

## Kinetic theory of gases

Pressure of a fixed volume of gas increases as temperature increases (temperature increases, speed increases, collisions occur more frequently and with more force so pressure increases).

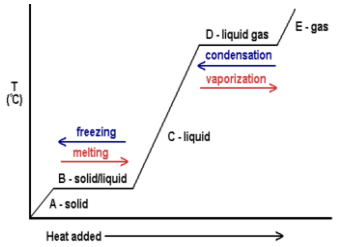
Temperature of gas is linked to the average kinetic energy of the particles.

If kinetic energy increases so does the temperature of gas.

No kinetic energy is lost when gas particles collide with each other or the container.

Gas particles are in a constant state of random motion.

P = m ÷ V




## Internal energy and energy transfers

| | | |
|---|---|---|
| Specific Heat Capacity | *Energy needed to raise 1kg of substance by 1°C* | Depends on:<br>• Mass of substance<br>• What the substance is<br>• Energy put into the |

Change in thermal energy = mass **X** specific heat capacity **X** temperature change.

$\Delta E = m \times c \times \Delta\theta$

| | | |
|---|---|---|
| Internal energy | *Energy stored inside a system by particles* | Internal energy is the total kinetic and potential energy of all the particles (atoms and molecules) in a system. |
| | *Heating changes the energy stored within a system* | Heating causes a change in state. As particles separate, potential energy stored increases. Heating increases the temperature of a system. Particles move faster so kinetic energy of particles increases. |

| | |
|---|---|
| Specific Latent Heat | *Energy needed to change 1kg of a substance's state* |
| Specific Latent Heat of Fusion | *Energy needed to change 1kg of solid into 1 kg of liquid at the same temperature* |
| Specific Latent Heat of Vaporisation | *Energy needed to change 1kg of liquid into 1 kg of gas at the same temperature* |

Energy needed = mass **X** specific latent heat.

Energy needed = mass **X** specific latent heat.

$\Delta E = m \times L$

## 1. Pathogens

Pathogens are microorganisms that cause **infectious disease**

Pathogens may infect plants or animals and can be spread by **direct contact**, **water** or **air**

| Viruses | Bacteria (prokaryotes) | Protists (eukaryotes) | Fungi (eukaryotes) |
|---|---|---|---|
| ***e.g. cold, influenza, measles, HIV, tobacco mosaic virus*** | ***e.g. tuberculosis (TB), Salmonella, Gonorrhoea*** | ***e.g. dysentery, sleeping sickness, malaria*** | ***e.g. athlete's foot, thrush, rose black spot*** |
| DNA or RNA surrounded by a protein coat | No membrane bound organelles (no chloroplasts, mitochondria or nucleus). Cell wall. Single celled organisms | Membrane bound organelles. Usually single celled. | Membrane bound organelles, cell wall made of chitin. Single celled or multi-cellular |
| Viruses live and reproduce inside cells causing damage | Bacteria may produce toxins that damage tissues and make us fell ill | | |

## 2. Communicable diseases

| *Disease* | Pathogen | Symptoms | Method of transmission | Control of spread |
|---|---|---|---|---|
| ***Measles*** | **Virus** | Fever, red skin rash. | Droplet infection from sneezes and coughs. | Vaccination as a child. |
| ***HIV*** | **Virus** | Initially flu like systems, serious damage to immune system. | Sexual contact and exchange of body fluids. | Anti-retroviral drugs and use of condoms. |
| ***Tobacco mosaic virus*** | **Virus** | Mosaic pattern on leaves. | Enters via wounds in epidermis caused by pests. | Remove infected leaves and control pests that damage the leaves. |
| ***Salmonella*** | **Bacteria** | Fever, cramp, vomiting, diarrhoea. | Food prepared in unhygienic conditions or not cooked properly. | Improve food hygiene, wash hands, vaccinate poultry, cook food thoroughly. |
| ***Gonorrhoea*** | **Bacteria** | Green discharge from penis or vagina. | Direct sexual contact or exchange of body fluids. | Use condoms. Treatment using antibiotics. |
| ***Malaria*** | **Protists** | Recurrent fever. | By an animal vector (mosquitoes). | Prevent breeding of mosquitoes. Use of nets to prevent bites. |
| ***Rose black spot*** | **Fungus** | Purple black spots on leaves. | Spores carried via wind or water. | Remove infected leaves. Spray with fungicide. |

## 3. Non-specific defence systems

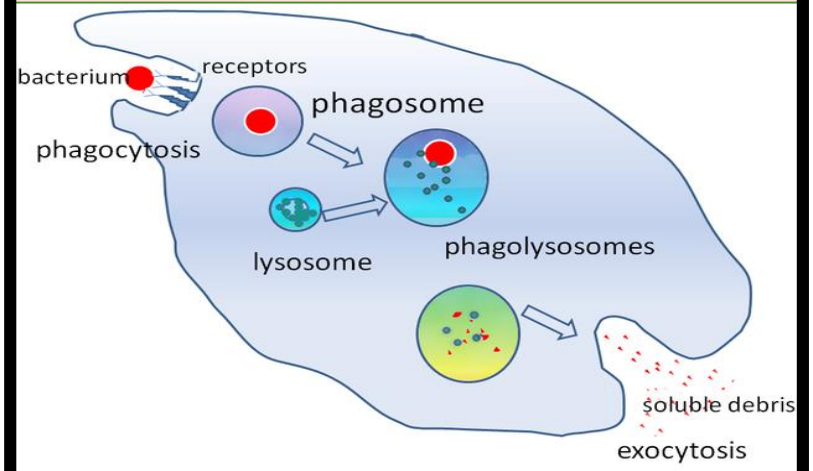
| | | |
|---|---|---|
| **The human body has several non specific ways of defending itself from pathogens getting in** | ***Nose*** | Nasal hairs, sticky mucus and cilia prevent pathogens entering through the nostrils. |
| | ***Trachea and bronchus (respiratory system)*** | Lined with mucus to trap dust and pathogens. Cilia move the mucus upwards to be swallowed. |
| | ***Stomach acid*** | Stomach acid (pH1) kills most ingested pathogens. |
| | ***Skin*** | Hard to penetrate waterproof barrier. Glands secrete oil which kill microbes |

## 5. Antibiotics painkillers

| | | |
|---|---|---|
| **antibiotics** | ***e.g. penicillin*** | Kill infective **bacteria only** inside the body. Specific bacterial infections require specific antibiotics. |
| ***Bacteria can mutate*** Sometimes this makes them resistant to antibiotic drugs. | | |
| **Painkillers and other medicines** | ***e.g. aspirin, paracetamol, ibuprofen*** | Drugs that are used to treat the symptoms of a disease. They do not kill pathogens |

## 4. Immune system

### White blood cells are part of the immune system




| | | |
|---|---|---|
| **Phagocytes** | ***Phagocytosis*** | Phagocytes engulf the pathogens and digest them. |
| **Lymphocytes** | ***Antibody production*** | Specific antibodies destroy the pathogen. This takes time so an infection can occur. If a person is infected again by the same pathogen, the lymphocytes make antibodies much faster. |
| | ***Antitoxin production*** | Antitoxin is a type of antibody produced to counteract the toxins produced by bacteria. |

Pathogens are identified by white blood cells by the different proteins on their surfaces **ANTIGENS.**

## 6. Vaccinations

| | | | |
|---|---|---|---|
| **Vaccination** | ***Small amount of dead or inactive form of the pathogen*** | ***1st infection by pathogen*** | White blood cells detect pathogens in the vaccine. Antibodies are released into the blood. |
| | | ***Re-infection by the same pathogen*** | White blood cells detect pathogens. Antibodies are made much faster and in larger amounts. |

**Used to immunise a large proportion of the population to prevent the spread of a pathogen**

## 8. Drug trials

Preclinical trials - using cells, tissues and live animals - must be carried out before the drug can be tested on humans.

**Clinical trials use healthy volunteers and patients**

| ***Stage 1*** | ***Stage 2*** | ***Stage 3*** | ***Stage 4*** |
|---|---|---|---|
| Healthy volunteers try small dose of the drug to check it is safe record any side effects | A small number of patients try the drug at a low dose to see if it works | A larger number of patients; different doses are trialled to find the optimum dose | A **double blind** trial will occur. The patients are divided into groups. Some will be given the drug and some a **placebo**. |

**Double blind trial**: patients and scientists do not know who receives the new drug or placebo until the end of the trial. This avoids bias.

A **placebo** can look identical to the new drug but contain no active ingredients

## 7. Drug development

Most new drugs are synthesised by chemists in the pharmaceutical industry.

**Traditionally drugs were extracted from plants and microorganisms**

| ***Digitalis*** | ***Aspirin*** | ***Penicillin*** |
|---|---|---|
| Extracted from foxglove plants and used as a heart drug | A painkiller and anti-inflammatory that was first found in willow bark | Discovered by Alexander Fleming from the *Penicillium* mould and used as an antibiotic |

**Drugs have to be tested and trialled before to check they are safe and effective**

| | | |
|---|---|---|
| **New drugs are extensively tested for:** | ***Efficacy*** | Make sure the drug works |
| | ***Toxicity*** | Check that the drug is not poisonous |
| | ***Dose*** | The most suitable amount to take |

## What is a drainage basin?

1. A drainage basin is an area of land drained by a river and its tributaries.

## How does a long profile of a river change downstream?

1. In the mountains the velocity of the river varies.
2. Water is sallow and turbulent as tere is frictiojn with the bed and bank slowing the rate of flow down
3. Were the channel becomes narrow it is deeper and the flow is muc faster.
4. Further downstream, the river's channel is much deeper because of tributaries bringing additional water.
5. Less water is in contact with the bed and banks so velocity increases, even though the gradient is less steep than in the mountains.

## River processes – how the river is shaped through erosion, transportation and deposition.

### Erosion

There are two main types of erosion: **Vertical** and **Lateral.** However, four processes can be identified. These are:

1. **Hydraulic action** – the force of the water hitting the river bed and banks.
2. **Abrasion** – when the load carried by the river repeatedly it's the bed or banks dislodging particles into the flow of water.
3. **Attrition** – when stones carried by the river knock against each other, gradually making stones smaller and less rounded.
4. **Solution** – when the river flows over limestone or chalk, the rock is slowly dissolved. This is because it is soluble in mildly acidic river water.

### Transportation

The material transported by a river is called its load. The four main processes of transportation are:

1. **Traction** – large particles rolled on the river bed.
2. **Saltation** – 'bouncing' of particles too heavy to suspend.
3. **Suspension** – small sediment held in the river.
4. **Solution** – dissolved load.

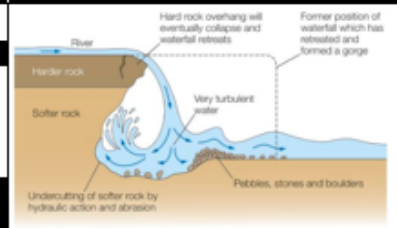
The size and total amount of load that can be carried will depend on the river's rate of flow – its **velocity.**

### Deposition

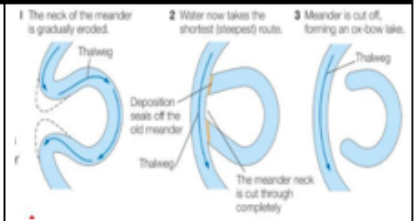
Deposition occurs when the velocity of the water decreases. It no longer has enough energy to transport its sediment so it is deposited.

1. Larger rocks tend to be deposited in the upper course of a river. They are only transported for b=very short distances, mostly by traction, during periods of very high flow.
2. Finer sediment is carried further downstream, mostly held in suspension. This material will be deposited on the river bed and banks, where velocity is slowed by friction.
3. A large amount of deposition occurs at the river mouth, where the interaction with tides, along with the very gentle gradient, greatly reduces the river's velocity.

## Waterfall formation




## Meanders and ox-bow lakes




| Keywords | Definition |
|---|---|
| 1. **Source** | The starting point of a river. |
| 2. **Mouth** | The area where the river flows into the sea. |
| 3. **Long profile** | A line showing the gradient of a river from source to mouth. |
| 4. **Cross profile** | A cross-section drawn across the river valley. |
| 5. **Weathering** | The breaking up of rocks that occurs in situ (the same place) with no major movement taking place |
| 6. **Erosion** | The breaking up of rocks that is the result of movement. |
| 7. **Sediment** | Material moved and deposited in a different location. |
| 8. **Bedload** | Larger particles moved along a river bed. |
| 9. **Meander** | A large ben in the river. |
| 10. **Waterfall** | A steep fall of water along the course of a river. |
| 11. **Flood plain** | Area of flat land which is prone to flooding |
| 12. **Estuary** | Wide part of a river were it nears the sea. |
| 13. **Velocity** | Speed of flow, usually measured in metres per second. |
| 14. **Discharge** | The volume of water at a given point in a river (measured in cumecs) |
| 15. **Flash floods** | Rapidly rising river levels leading to a rapidly developing flood situation. |

## Flood risk

### Factors increasing flood risk

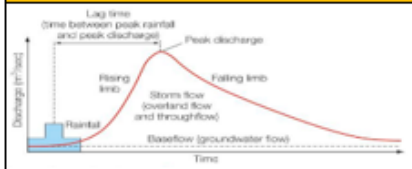
**Physical factors**

1. **Precipitation** – torrential rainstorms can lead to sudden flash floods as river channels cannot contain the sheer volume of water.
2. **Geology** – impermeable rocks such as shales and clays encourage water to flow overland and into river channels.
3. **Steep slopes** – in mountain environments steep slopes encourage rapid transfer of water towards river channels.

**Human factors**

1. **Urbanisation** – building on a floodplain creates impermeable surfaces. Water is transferred quickly which makes flooding more likely
2. **Deforestation** – much of the water that falls on trees is evaporated or stored on leaves. When trees are removed much more water reaches the river channel leading to flooding.
3. **Agriculture** – soil left exposed to the elements allows surface runoff. When land is ploughed the water flows along the furrows rapidly into channels.

### Flood Hydrograph




1. **Lag time** – time between peak rainfall and peak discharge
2. **Rising limb** – rapid increase of discharge in river
3. **Peak discharge** – total volume of water.
4. **Falling limb** – discharge decreasing in river
5. **Baseflow** – amount of water that is normal to the river channel.

## Managing floods

### Hard engineering

Flood prevention methods using hard engineering include:

1. **Afforestation** to increase interception, reduce soil erosion and use up some of the water.
2. Construction of **reservoirs** to regulate water flow
3. **Land use zoning** – ensuring new developments are constructed away from flood risk areas.
4. **Controlled flooding** to reduce serious floods downstream.
5. **Channel straightening** to speed up flow of water.
6. Creation of **wetland areas** for water storage.
7. **Channel widening** to increase capacity.
8. **Embankments** to enlarge the channel and reduce the likelihood of flooding
9. **Concrete lined channel** – semi-circular in shape to increase speed of flow.
10. **Flood relief channels** to bypass urban areas to reduce the threat from flooding.

### Soft engineering

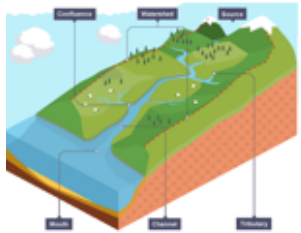
Flood reduction methods using soft engineering include:

1. **Wetlands and flood storage areas** – areas that are deliberately allowed to flood to form flood storage areas.
2. **Floodplain zoning** – restricts certain land uses in locations on flood plain. Land next to river channels is used as farmland for pasturing instead of housing and industry.
3. **River restoration** – when the course of a river has been changed artificially, river restoration changes it back to its original course.
4. **Flood preparation**

This includes: flood watch, flood warning and severe flood warning.

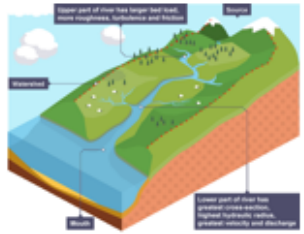
5. **The Environment Agency** makes maps identifying areas at risk. They encourage people to make plans which may include:

5a) Planning what to do
5b) Using flood gates
5c) Using sandbags.



A **drainage basin** is the area of land around the river that is drained by the river and its tributaries.

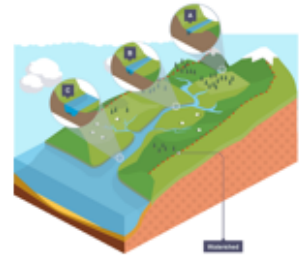
- **Watershed** - the area of high land forming the edge of a river basin
- **Source** - where a river begins
- **Mouth** - where a river meets the sea
- **Confluence** - the point at which two rivers meet
- **Tributary** - a small river or stream that joins a larger river
- **Channel** - this is where 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.



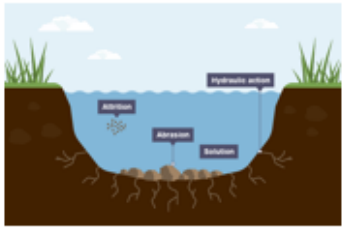
channel and valley at a certain point along the river's course.

**A** – as the river flows downhill there is an increase in vertical erosion. The channel is shallow and narrow because there is not a lot of water in the channel.

**B** – as the river flows into the middle course, there is some vertical erosion but more lateral erosion. The channel is wider and deeper as a result.

**C** – in the lower course there is a lot less erosion, with only some lateral erosion. The channel is at its widest and deepest.

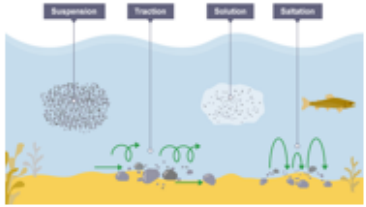
## Erosion




Erosion is the process that wears away the river bed and banks. Erosion also breaks up the rocks that are carried by the river.

- **Hydraulic action** - This is the sheer power of the water as it smashes against the river banks. Air becomes trapped in the cracks of the river bank and bed, and causes the rock to break apart.
- **Abrasion** - When pebbles grind along the river bank and bed in a sand-papering effect.
- **Attrition** - When rocks that the river is carrying knock against each other. They break apart to become smaller and more rounded.
- **Solution** - When the water dissolves certain types of rocks, e.g. limestone.

## Transportation




The river picks up sediment and carries it downstream in different ways.

- **Traction** - large, heavy pebbles are rolled along the river bed. This is most common near the source of a river, as here the load is larger.
- **Saltation** - pebbles are bounced along the river bed, most commonly near the source.
- **Suspension** - lighter sediment is suspended (carried) within the water, most commonly near the mouth of the river.
- **Solution** - the transport of dissolved chemicals. This varies along the river depending on the presence of soluble rocks.

## Deposition

When the river loses energy, it drops any of the material it has been carrying. This is known as deposition.

Factors leading to deposition:

- **shallow** water
- at the end of the river's journey, at the river's **mouth**
- when the **volume** of the water decreases

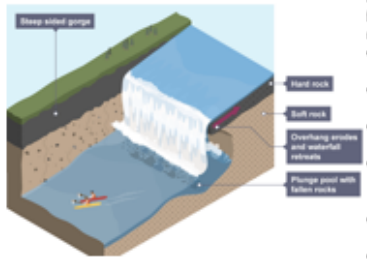
## Erosional Landforms

The erosional features are often found in the upper course of the river.


**Interlocking Spurs**

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.

## Landforms




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.

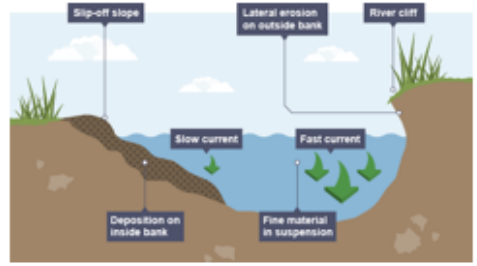
## Erosional & Depositional Landforms

As the river makes its way to the middle course, it gains more water and therefore more energy. Lateral erosion starts to widen the river. When the river flows over flatter land they develop large bends called **meanders**.

- As a river goes around a bend, most of the water is pushed towards the outside. This causes increased speed and therefore increased erosion (through hydraulic action and abrasion).
- The lateral erosion on the outside bend causes undercutting of the bank to form a river cliff.
- Water on the inner bend is slower, causing the water to slow down and deposit the eroded material, creating a gentle slope of sand and shingle.
- The build-up of deposited sediment is known as a slip-off slope (or sometimes river beach).

**Oxbow lakes**

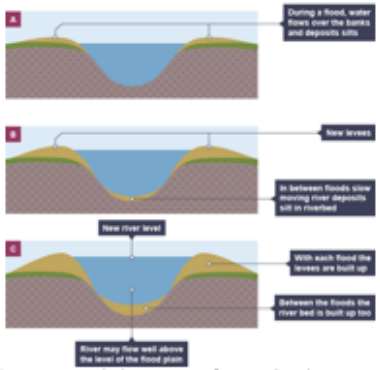
Due to erosion on the outside of a bend and deposition on the inside, the shape of a meander will change over a period of time. Erosion narrows the neck of the land within the meander and as the process continues, the meanders move closer together. When there is a very high discharge (usually during a flood), the river cuts across the neck, taking a new, straighter and shorter route. Deposition will occur to cut off the original meander, leaving a horseshoe-shaped oxbow lake.




## Depositional Landforms


A **floodplain** is an area of land which is covered in water when a river bursts its banks.

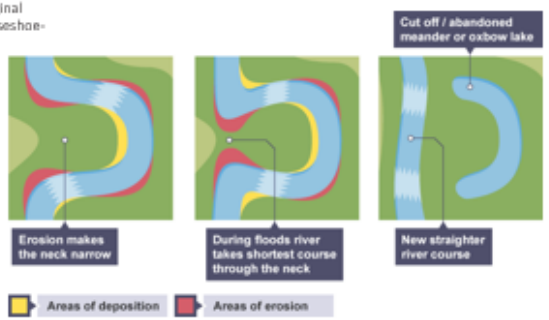
Floodplains form due to both erosion and deposition. Erosion removes any interlocking spurs, creating a wide, flat area on either side of the river. During a flood, material being carried by the river is deposited (as the river loses its speed and energy to transport material). Over time, the height of the floodplain increases as material is deposited on either side of the river. Floodplains are often agricultural land, as the area is very fertile because it's made up of alluvium (deposited silt from a river flood). The floodplain is often a wide, flat area caused by meanders shifting along the valley.




**Levees** occur in the lower course of a river when there is an increase in the volume of water flowing downstream and flooding occurs.

- Sediment that has been eroded further upstream is transported downstream.
- When the river floods, the sediment spreads out across the floodplain.
- When a flood occurs, the river loses energy. The largest material is deposited first on the sides of the river banks and smaller material further away.
- After many floods, the sediment builds up to increase the height of the river banks, meaning that the channel can carry more water (a greater discharge) and flooding is less likely to occur in the future.

An **estuary** is where the river meets the sea. The river here is tidal and when the sea retreats the volume of the water in the estuary is less reduced. When there is less water, the river deposits silt to form mudflats which are an important habitat for wildlife.

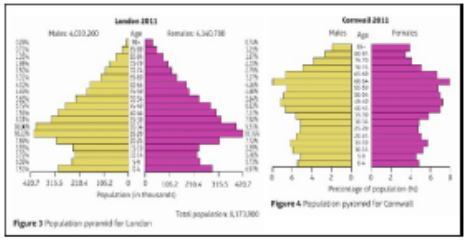


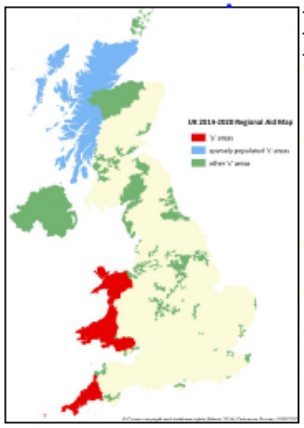
# Unit 2: Topic 5a The UK's Evolving Human Landscape

**Why are population, economic activity and settlements key elements of the human landscape?**

**How do the urban core and rural periphery compare?**

| | Urban core E.g. | Rural periphery E.g. |
|---|---|---|
| Population density | High, over 200 people per km$^2$ | Low,1-100 people per km$^2$ |
| Age structure | Young adults, single people | Older people, some single |
| Economic Activities | Retailing, large shops, offices, HQ's, many jobs | Farming, fishing, forestry, mining, working from home, tourism, renewable energies |
| Settlement | Conurbation, large town, high and low rise buildings. expensive | Market towns, villages, farms, low rise generally cheaper |





**How are the regional disparities being reduced?**

There are certain areas that qualify for assistance from the government. Assisted Areas in north Wales, north west Scotland and Cornwall are rural areas facing isolation and a lack of jobs. In general people are poorer here than other parts of the UK. Other Assisted Areas include former industrial areas such as South Wales and North-East England where a decline in coal, steel and ship building left unemployment and poverty.

**What is regional development and transport infrastructure?**

The EU's Regional Development Fund supports UK regions by economic regeneration for example projects connecting businesses to fast broadband enabling people to live in Cornwall and work form home. Investment in transport for example rail routes linking Manchester with Sheffield.

**How does migration shape the UK economy and society?**

**Retirement migration**

Older people moving within in a country when they retire. The SW attracts many retirement migrants because of beautiful scenery, slower pace of life, lower crime rates and a sense of community.

**Rural to urban migration**

| Advantages | Disadvantages |
|---|---|
| Creates demand for services, shops and social activities creating jobs locally | Healthcare pressure, house price rise, young people move out |

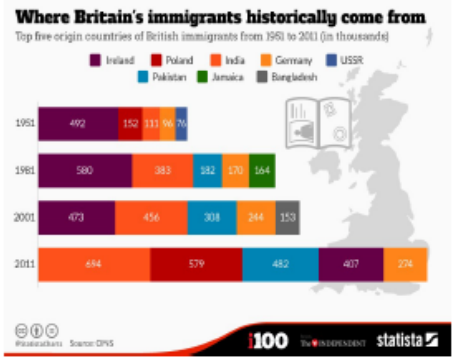
In rural areas, apart from a few jobs in farming, fishing or mining/quarrying jobs opportunities are scarce so young people leave to find better jobs in the city leaving a concentration of older people.

**International migration**

The UK government encouraged immigration from former British colonies in the Caribbean, India and Bangladesh during the 1950's in response to shortage of workers reaching 1million by 1971. During the 1970's there was no longer a shortage of workers and immigration was controlled by the government. Around 2004 and the enlargement of the EU saw young immigrants, 80% aged 18-34, from Eastern Europe especially Poland to cities such as London and Birmingham for jobs in industries or fruit farming. In 2014 560,000 immigrants arrived in the UK and during the period 2012-15 people fled from fighting in Syria and Afghanistan arrived in cities like Birmingham.

**What are the impacts of international migration?**

| Advantages | Disadvantages |
|---|---|
| Source of cheap unskilled (construction) and skilled labour (doctors/nurses). Benefits of a youthful population. Introduced to new cultures and cuisines | Puts pressure on services e.g. housing, healthcare, education, social unrest |




**How is the UK economy changing?**

There have been many changes in the UK economy in the last 50years in the primary, secondary, tertiary and quaternary sectors. These changes are best seen in two contrasting regions on the country, the NE and SE of England.

**How has the North East changed?**

The economy of the NE used to be dominated by heavy industry e.g. coal mining/ shipbuilding. In the last 50years this has declined due to foreign competition, high land and labour costs and end of coal deposits. In 1971, manufacturing was 40% of employment but in 2011, this was only 10%. Between 2007 – 2013, unemployment rose quickly to 8%. The contribution of the area to national GDP is only 2%. Between 2011-12, child poverty rates in Middlesbrough and Newcastle rose 39% on average. In rural areas, economy still relies heavily on agriculture. Mining, fishing and quarrying are very small scale. Manufacturing is based in urban areas but employs fewer people due to increase in machines and new technology. Manufacturing, especially chemicals, are still important but employ fewer people with improved technology and Nissan employ 4000. Tertiary activities have increased (257,000) which has reduced unemployment slightly, 22% of all employment.

**How has the South East changed?**

Primary industries are mainly centred on farming in rural areas with some of the most prosperous farms in Britain. Manufacturing industry is growing rapidly, mainly in urban areas and along the M4 corridor, a centre for light industries in electronic s and engineering. The region is very important for tertiary and quaternary industries in financial and business service firms. Unemployment is low,6% and prosperity is high compared to the NE.


**Why is the South East so attractive to industries?**

**Transport**—M25 motorway network and railways. 72% of UK freight was carried on roads in the south-east. It has 4 major airports e.g. Heathrow and ports e.g. Southampton.

**Markets and labour**— a market of 19million people, skilled labour from Oxbridge and London Universities

**Political**— Close to national government. Previous governments encouraged movement from London to the South East.

**Geographical**—transport routes radiate from London and its close to the channel tunnel giving access to Europe.

| | % of UK pop | Median age | Unemployment % | Manufacturing employment 2011 |
|---|---|---|---|---|
| NE | 4 | 41.5 | 8.2 | 10.2 |
| SE | 14 | 40.8 | 6.0 | 7.2 |

**What are the effects of Globalisation, trade and investment?**

**Globalisation**

'The growing importance of international operations for all economic sectors and for the culture and way of life of people around the world'.

Manufacturing, tertiary and quaternary industries are being increasingly affected by decisions and events in other parts of the world. The three key elements of the global economy are:

**Networks** – linking countries together e.g. internet/ trading blocs

**Flows** – goods and services that move through networks e.g. raw materials, manufactured goods or migrant workers

**Global players** – organisations that have a big impact on the working of the global economy e.g. TNCs, World Bank, IMF

**Privatisation**

Privatisation of many UK industries e.g. steel, railways, computers, airports, docks, petroleum, electricity, water, gas and postal services.

The Effects of privatisation include:

- Increased Foreign Direct Investment (FDI) from businesses wanting to invest in the UK.
- Increased awareness of markets and increased competition
- Increased foreign ownership of UK firms
- Dividends and profits from some UK based firms going abroad
- Loss of jobs in the UK due to increased efficiency

**Free trade**

Firms want to and need to take part in international trade to increase their profits. Global links can significantly increase the market for a firm. Not all trade is free trade which is trade without tariffs or import duties. Some countries have high import duties to protect their industries. The UK, as part of the EU, has pursued a policy of promoting free trade with the EU to allow the free movement of goods and services which should make them cheaper.

**Foreign Direct Investment (FDI)**


FDI is composed of the flows of money (capital) from businesses in one country to another. The flow of finance allows the companies to become involved in the business life and markets of the receiving country – for the UK, this is the EU markets. The companies can vary from giant TNCs e.g. GlaxoSmithKline. In 2014, the largest investor in the UK was the USA. 50% of investment into the UK came from European countries. Most of the investment was in energy projects e.g. wind and nuclear or infrastructure e.g. airports and hotels.

**Transnational Companies (TNCs)**

TNCs are large companies that operate in a range of other countries. They are powerful players in the global economy and link up national economies in many different parts of the world. The top TNCs are involved in 3 main industries – oil, electronics and motor vehicles. Some TNCs are specialised e.g. Nestle (food & drinks) or Rio Tinto (mining) where are others e.g. Mitsubishi have a range of interests e.g. vehicles, air transport and food processing.

| 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. |

## 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.<br>• They must observe the five pillars to bring them closer to God.<br>• Muslims must devote their lives to God by avoiding temptations like drugs and alcohol.<br>• Some try to improve life for people in the community<br>• By completing these things, Muslims improve themselves spiritually and deepen their relationship with God. | • Less important that greater Jihad. Outward struggle to defend Islam.<br>• There are texts in the Qur'an which appear to allow extreme violence but they cannot be used to defend terrorism.<br>• Muslims must follow the rules set about by Holy War when taking on the task of lesser Jihad.<br>• 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.

## 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.

## 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.

## 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.

| Key Ideas | | |
|---|---|---|
| **Worship + Prayer**  | **Liturgical Worship**<br>- This form of worship takes place in a church and is led by a priest<br>- **Formal, set prayers** are read out<br>- A more **traditional**, and formal form of worship<br><br>**Non-liturgical Worship**<br>- Also takes place in a church but **less formal**<br>- No set prayers, instead people take turns to preach and read from the **Bible**<br>- Can be modern and appealing to young people | **Prayer**<br>- Prayer means **communicating with God**, either silently or out loud, sometimes through song<br>- 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<br>- **Intercessions** are prayers made on behalf of others<br>- **Thanksgiving** is when people pray to say thank you to God<br>- **Set prayers** are written down and used in liturgical worship<br>- **Informal prayer** is off-the-cuff and often used in non-liturgical worship |
| **Eucharist + Baptism**  | **Eucharist**<br>- Eucharist and baptism are both sacraments meaning special occasions in a Christian's life<br>- In Eucharist a priest **consecrates** (blesses) **bread** and **wine** and the congregation then receives these<br>- **Catholics** believe the Holy Spirit transforms the bread and wine into Jesus' body and blood<br>- **Anglicans** believe the bread and wine are symbolic<br>- Christians take part in this ritual in order to remember the **sacrifice** Jesus Christ made for them by being **crucified** on the cross<br>*"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**<br>- This is a **formal** service welcoming a new child into the Christian church<br>- **Holy water** is sprinkled over the baby's head<br>- All Catholics baptise their children close to birth in order to ensure they go to heaven<br><br>**Believer's Baptism**<br>- A believer's baptism welcomes someone into the church who is **old enough** to decide themselves<br>- They are submerged in a pool of **holy water**<br>- They make promises to stay away from evil<br>- **Baptists** only practice this type of baptism |
| **Pilgrimage + Festivals**  | **Pilgrimage**<br>- A pilgrimage is a journey made by a Christian to a holy site<br>- Catholics go on pilgrimage to Lourdes where a vision of Mary was once seen, they believe the water there has healing effects | **Christmas**<br>- Christmas celebrates the incarnation (birth) of Jesus Christ<br>- Christians give gifts to commemorate the gift of God sending his own son to the world<br><br>**Easter**<br>- Easter celebrates the resurrection of Jesus Christ<br>- 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)<br>- 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.<br>- 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 |

## PART 1 - Strengths and Weaknesses of Performance

*To gain maximum marks in your coursework you have to be thorough in explaining your strengths and weaknesses.*

E.g. strengths should include:

1) What is the skill/fitness component, describe what is good technique.

2) Why is this skill important in your chosen sport?

3) Can you give examples of how you KNOW you are good at this?

4) What impact did it have on your performance/team/score/competition? What would happen if you weren't strong at this skill/fitness component?

# Year 9 GCSE PE

Evaluation and Analysis of Performance

COURSEWORK (10%)

**KEY TERMINOLOGY**

Skill Fitness component Principles of Overload Feedback Guidance Diet/Nutrition Impact on performance F.I.T.T. Information Processing Recovery Methods of Training Training Thresholds Muscles Warm up/Cool Down Mental Preparation Stress/Arousal Planes and Axis Technique Physiology Injury Prevention Peer influence Training seasons Results Types of Practice

**Useful sentence starters:**

*I know this is a strength of mine because…*
*If I was not able to do this then…*
*This skill is useful, however, I think that… is more important because…*
*This has an impact on my overall performance because…*
*An example of how I used this skill successfully recently is…*
*If I could improve this skill then this would affect my performance positively by…*
*I have chosen to train … amounts because…*
*In order to apply principles of overload then I need to…*
*The reason I have chosen this drill is because…*
*This drill is more challenging than the previous because…*
*This method of training is the most appropriate because…*

## PART 2 - Action Plan to improve weaknesses

Fitness Component:

What type of training are you choosing to improve your fitness weakness? Why is it the best method of training – compare it with others and evaluate why it is better and SPECIFIC to your sport and weakness.

Design a training programme that includes:

a)How often you are going to train and for how many weeks

b) An example of a training session – what does it include?

c) How you will apply principles of overload (Frequency, Intensity, Time and Type) to make it more difficult every week or so?

Skill/Tactic:

d)How many times will you train a week and for how long?

e)How does this fit in with your fitness training? Same day or a different day?

f) You need 4 drills that will help improve your skill/tactic. You need to describe each drill, how you do it, what equipment you need, and explain how it improves your weakness. Your drills should start off easy and get more difficult so that they are challenging.

**Example of Action Plan**

Fitness Weakness: Cardiovascular Endurance

*I have chosen Fartlek training as the most appropriate to improve my cardiovascular endurance in Football because I believe this this is the most appropriate due to the changes in intensity. In football I am constantly having to change my pace depending on what is happening in the game. For example, as a defender once the ball moves up front I tend to stop and recover, watching the game and maybe walking into position to track a defender if needed. But as soon as there is a counter attack I need to sprint to an opposition who cause a threat to get goal side and mark them down, staying with them until they release the ball or if I am able tackle or intercept the ball. I then might need to jog back into a more central position, or recover or make another sprint if I am needed in a different area of the pitch. It is always changing. Fartlek training is good for this, as I will be able to cater it to my individual needs, making sure that the intensities vary but that I am also training for longer periods of time so that it reflects the full length of a football game. Continuous training would not be appropriate, despite it being a great way to improve cardiovascular endurance, as it does not reflect the type of endurance I need in football. I wont be working at on continuous pace and therefore is not as effective. Interval training would also help my endurance and in particular my high intensity sprints. Interval training would also take less time than perhaps fartlek would as sessions are shorter due to the high intensity workload. But despite this I have decided that I am committed to trying fartlek as I think this is the most specific to my weakness and it will mean I am able to train both my aerobic and anaerobic system.*

YEAR 10/11 – MICHAELMAS TERM – SPORT STUDIES –

Box 1: Sport is a reflection of society and many of the issues that affect society are also prevalent in sport. For the same reasons, sport can also be a force for good at local, national and international level because it ability to bring people together.

Box 2: Different **user groups** who may participate in sport:

- Ethnic minorities,
- Retired people / people over 50,
- Families with children / teenagers,
- Disabled people,
- Unemployed / socially disadvantaged.

Box 3: Some of the **barriers** that may affect participation in sport:

- Not much free time available due to work / school commitments,
- Family commitments (looking after children),
- Disposable income (unable to afford cost of participation),
- Accessibility to facilities / equipment,
- Awareness of what is available (activities not advertised),
- Portrayal of gender issues in sport / role models with perfect figures.

Box 4: Some **solutions** that may affect participation in sport (**provision**):

- Specific sessions for different demographic groups for example wheelchair sports,
- Planning times to suit different groups for example Mummy and baby activities in morning (not late at night).

Box 5: Some **solutions** that may affect participation in sport (**promotion**):

- Targeted promotion (promoting in places visible by that demographic),
- Using role models to encourage participation,
- Initiatives aimed at promoting participation (free swimming for over 60's, reduced rates at certain times).

Box 6: Some **solutions** that may affect participation in sport (**access**):

- Access to facilities (transport in rural areas, ramps for wheelchair access),
- Sensible pricing / concessions (unemployed / young children).

Box 7: What factors can **impact upon the popularity** of sport in the UK:

- Participation: football is a wide spread, mass participation sport as a result of strong infrastructure being in place, not just in the UK but in many other countries,
- Provision: tennis lacks easily accessible courts and as a result base level participation is low,
- Environment / climate: snow sports for example are impractical in many places particularly in the UK therefore following and participation in this is low.
- Spectatorship / media coverage: making it easy for people to view live sport.
- Role models / acceptability: are there any female footballers from minority ethnic groups? Is it acceptable to 'hurt the opponent' in boxing?

Box 8: Trends in the popularity of different sports in the UK are always changing for different reasons. Statistics and studies show that current growth sports in the UK in terms of numbers are recreational walking, fishing/angling, cycling and swimming. Growth of new emerging sports and activities in the UK include ultimate frisbee.

**Questions:**

1. State the different demographic user groups who may participate in sport.
2. Different demographic user groups experience differing barriers to participation. Can you explain some of the barriers to participation for different demographic user groups.

Box 1: What values can be promoted through sport?

- Team spirit (learning how to work together and support others by playing fairly as a team),
- Fair play (learning the importance of adhering to the rules and being fair to others),
- Citizenship (being involved in your local community through sport),
- National pride (supporters and performers unite over events),
- Excellence (striving to be the best possible, to make the team).

Box 2: Olympics and Paralympics:

The symbol of the five interlocking rings represents the union of five continents.

The Olympic and Paralympic values include Respect, Excellence, Friendship, Courage, Determination, Inspiration and Inequality.

Other initiatives and events promoting values through sport include: *Sport Relief, Sport England, FIFA's Football for Hope Campaign,* England Cricket '*Chance to Shine*' programme.

Box 3: Sporting behavior is important for both performers and spectators including:

- Fairness, promoting values, safety of participants / spectators etc.
- Sportsmanship (giving the ball to the opposition when they have kicked it out when an injury occurs to the your team),
- Gamesmanship (also known as time wasting if your team are winning),
- Spectator etiquette (quiet during rallies at the tennis, quiet during play in snooker),
- Sports initiatives to break down barriers ('Kick racism out of football')

Box 4: There are many arguments for and against performance enhancing drugs in sport and many reasons why they are used including:

- Performers having pressure to succeed as an individual as well as pressure from team, supporters etc.
- One of the negatives of performance enhancing drugs is long term health effects, consequences when found to be guilty, knowing you have an unfair advantage over opponent.
- The impact of taking drugs will damage a performers reputation.
- One of the arguments in sport with regard to drug taking is should there be a distinction between use of performance enhancing drugs vs recreational drugs – should performance enhancing drug takers compete in a separate league?

**Questions:**

1. State 3 reasons for and against drug taking in sport.
2. Explain some of the values that can be promoted through sport.
3. Research some of the initiatives promoting values in sport for example *Sport Relief*.

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

Box 1: Hosting a major sporting event such as The Olympics / Paralympics, The World Cup or a Master Event will only happen once in any given city / country in a generation.

A regular event for example the UEFA Champions League Final is an annual event in the UK which a city would host more than once in a relatively short period of time but it is shared around as a rule.

Regular and recurring events would include hosting a Formula 1 Grand Prix annually. It would normally be contracted for a period of years to the host country / city.

If a country / city are going to host a large scale sporting event for example The London Olympics in 2012 a large amount of investment is required and also sponsorship deals with companies to aid the costs. However there is a legacy to be achieved as a result including increased profile of sport, a social legacy and an economic one such as new buildings and facilities.

**Questions:**

1. What are some of the barriers to cities hosting major sporting events?
2. What are some of the benefits to cities of hosting major sporting events?
3. Discuss some of the of National Governing Bodies in sport and these link to the benefits of hosting a major sporting event.

Box 2: **The potential barriers and benefits to cities hosting major sporting events:**

Barriers:

- Bidding to host can be an expensive exercise and you may not be awarded the event.
- Can cost host more than raised in revenue.
- Facilities can end up being left after the event.
- Can have a negative effect on the country if the event is not run properly/disorganized.
- May help to promote one sport but others may suffer as a consequence.

Benefits:

- Investment in developing/improving transport system.
- Increased direct / indirect tourism.
- Commercial benefits.
- Participation may increase in some sports.
- Improvements in sporting facilities which can be used by people in the local area.
- Raise the morale of the country.

Box 3: There are links between potential barriers and benefits of hosting a major sporting events. Many of the benefits and drawbacks are relevant to more than one legacy areas (sporting, social, economic) (e.g. sports facilities could have both sporting and social legacy).

Box 4: What are the roles of National Governing Bodies in sport:

- Promotion: promoting participation (equal opportunities), increasing popularity (particularly in schools), exposure in the media.
- Development: elite training and development, coaching awards and qualifications, training of officials.
- Infrastructure: competitions / tournaments, rule making and disciplinary procedure, providing a vision.
- Policies and initiatives: promoting etiquette and fair play, anti doping policy, community programmes.
- Funding: lobby for a receive funding from different streams and then distribute these funds fairly including grants, memberships, subscriptions, lottery funding, fundraising events.
- Support: providing technical advice and providing location and contact information for clubs, how to get started with the sport and introducing *grass routes* programmes.

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

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

**Flowchart**: a graphical representation of an algorithm. Each step in the algorithm is represented by a symbol. Symbols are linked together with arrows showing the order in which steps are executed.
**Pseudocode** is structured code like language, not a programming language, it is a simple way of describing a set of **instructions**.
**Bubble sort:** works its way through the list, making comparisons between a pair of adjacent items. Any items found to be in the wrong order are then exchanged.
**Merge sort:** a technique called divide and conquer. The list is repeatedly divided into two until all the elements are separated individually. Pairs of elements are then compared, placed into order and combined.
**Linear search**: is sequential as it moves through the list item by item.
**Binary search: S**earch a sorted array by repeatedly dividing the search interval in half. Begin with an interval covering the whole array. If the value of the search key is less than the item in the middle of the interval, narrow the interval to the lower half. Otherwise narrow it to the upper half. Repeatedly check until the value is found or the interval is empty.
**Decomposition**: It involves breaking down a complex problem or system into smaller parts that are more manageable and easier to understand.
**Variable:** They also provide a way of labeling data with a descriptive name, so our programs can be understood more clearly by the reader and ourselves.
**Sequence**: the order that commands are executed by a computer, allows us to carry out tasks that have multiple steps.
**Selection**: Sometimes you only want some lines of code to be run only if a condition is met, otherwise you want the computer to ignore these lines and jump over them. This is achieved using IF statements.
**Iteration: S**ometimes you want the computer to execute the same lines of code several times. This is done using a loop.

**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.

## Programming techniques

- **Sequence**
- **Selection**
  - IF… ELSE…
- **Iteration**
  - For & While
- **Basic string manipulation**

**Data types**
- **Integer** e.g. 23
- **Real** e.g. 23.7
- **Character** e.g. A or 5
- **String** e.g. A546TH
- **Boolean** e.g. TRUE or FALSE.

- **Arrays**
  - one dimensional arrays
  - two dimensional arrays

| Comparison Operator | What it means |
|---|---|
| == | Is equal to |
| < >Or != | Is not equal to |
| < | Is less than |
| > | Is greater than |
| <= | Islessthanor equal to |
| >= | Is greater than or equal to |

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

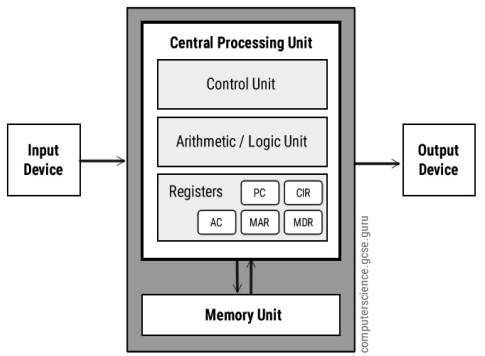
**Hardware**
- Definition
- Input devices
- Process Devices
- Storage devices
- Output devices
- Von Neumann Architecture

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

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

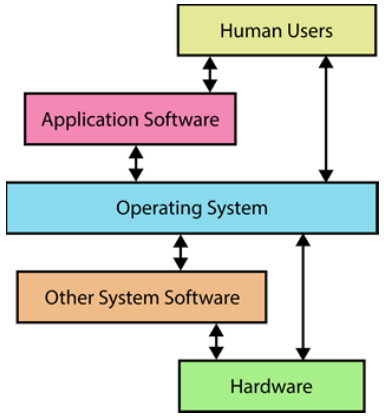
**Output devices**
Move data out of the computer
- Monitor
- Printer
- Plotter
- Speakers
- Actuators
- LEDs

**Von Neumann Architecture**




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

**System Software**
- Software that controls the hardware: OS and Drivers




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

| | | |
|---|---|---|
| 1 | Binary conversion | Understand that computers use binary to represent data (numbers, text, sound, graphics) and program instructions |
| 2 | Integers | Understand how computers represent and manipulate numbers (unsigned integers, signed integers (sign and magnitude, two's complement)) |
| 3 | | Be able to convert between binary and denary whole numbers (0–255) |
| 4 | Binary arithmetic | Understand how to perform binary arithmetic (add, shifts (logical and arithmetic)) and understand the concept of overflow |
| 5 | Data size | Understand how to convert between the terms 'bit, nibble, byte, kilobyte (KB), megabyte (MB), gigabyte (GB), terabyte (TB)' |
| 6 | Storage | Understand that file storage is measured in bytes and be able to calculate file sizes |
| 7 | Binary conversion to ASCII | Understand how computers encode characters using ASCII |
| 8 | Binary conversion to images | Understand how bitmap images are represented in binary (pixels, resolution, colour depth) |
| 9 | Binary conversion to sound | understand how sound, an analogue signal, is represented in binary |
| 10 | Binary representation | Understand the limitations of binary representation of data (sampling frequency, resolution) when constrained by the number of available bits |
| 11 | Data encryption | Understand the need for data encryption |
| 12 | Caesar cipher | Understand how a Caesar cipher algorithm works |
| 13 | Characteristics | Understand the characteristics of structured and unstructured data |
| 14 | Data structures | Understand that data can be decomposed, organised and managed in a structured database (tables, records, fields, relationships, keys) |

**Example: 8-bit overflow**

An example of an 8-bit overflow occurs in the binary sum 11111111 + 1 (denary: 255 + 1).

In binary, 11111111+00000001=100000000 but the leftmost 1 is an overflow number
The total is a number bigger than 8 digits, and when this happens the CPU drops the overflow digit because the computer cannot store it anywhere, and the computer thinks 255 + 1 = 0.

**Negative numbers: Sign and magnitude**

8-bit pattern, the first bit would be used to indicate positive or negative.0 can indicate a positive number and a 1 can indicate a negative number. The other seven bits would be used to store the actual size of the number.
For example, 10001001 could represent -9:

the first bit, 1, indicates a negative number
the other seven bits indicate the number, 0001001 = 9
The smallest possible number using this method of representation is -127 (or 11111111) and the largest possible number is +127 (or 01111111).

**Using two's complement for negative numbers**
1.Find the positive binary value for the negative number you want to represent.
2.Add a 0 to the front of the number, to indicate that it is positive.
3.Invert or find the complement of each bit in the number.
4.Add 1 to this number.

Another method of representing **signed** numbers is **two's complement**. Most computers use this method to represent negative numbers.

Find -1 using two's complement numbers
1.1 = 001
2.Adding 0 to the front becomes **0001**
3.'Inverted' becomes **1110**
4.Add 1 = **1111** (**-8 + 4 + 2 + 1 = -1**)

**Calculating File Size**

One quick way to calculate the file size of your new system is to calculate the total number of pixels in the detector, multiply that by the number of bits of bit depth and divide the result by 8 (because there are 8 bits in a byte)

*1 Byte = 8 Bit 1 Kilobyte = 1,024 Bytes 1 Megabyte = 1,048,576 Bytes 1 Gigabyte = 1,073,741,824 Bytes*

**Step 1:** Multiply the detectors number of horizontal pixels by the number of vertical pixels to get the total number of pixels of the detector.

**Step 2:** Multiply total number of pixels by the bit depth of the detector (16 bit, 14 bit etc.) to get the total number of bits of data.

**Step 3:** Dividing the total number of bits by 8 equals the file size in bytes.

**Step 4:** Divide the number of bytes by 1024 to get the file size in kilobytes. Divide by 1024 again and get the file size in megabytes.

**Examples:**

Perkin Elmer 1621: 2048 x 2048 = 4,194,304 (4.2 megapixel Detector)

4,194,304 pixels X 16 bit = 67,108,864 ÷ 8bits = 8,388,608 Bytes ÷1024 = 8,192 Kilobytes ÷ 1024 = 8 Megabytes

VARIAN 2520: 1,920 x 1536 = 2949120 (2.95 Megapixel Detector)

2,949,120 X 16 bit = 47185920 ÷ 8bits = 5,898,240 Bytes 5,760 Kilobytes ÷ 1024 = 5.625 Megabytes)

**In Sumary:**

# Of Pixels X Bit Depth ÷ 8 ÷ 1024 ÷ 1024 = File Size in Megabytes (MB)

**Converting Audio File Size**

The bit rate of a file tells us how many **bits** of data are processed every second. Bit rates are usually measured in **kilobits per second (kbps)**.

**Calculating bit rate**

The bit rate is calculated using the formula:

**Frequency × bit depth × channels = bit rate**

A typical, uncompressed high-quality audio file has a **sample rate** of 44,100 **samples** per second, a bit depth of 16 bits per sample and 2 channels of stereo audio. The bit rate for this file would be:

**44,100 samples per second × 16 bits per sample × 2 channels = 1,411,200 bits per second (or 1,411.2 kbps)**

A four-minute (240 second) song at this bit rate would create a file size of:

**14,411,200 × 240 = 338,688,000 bits (or 40.37 megabytes)**

| Features | Lossy | Lossless |
|---|---|---|
| Image reconstruction | Quality degraded compare to original image source | Quality remain the same with original image |
| Compression size rate | High compression up to 50% of original data file size | 2:1 , the most is 3:1 ratio |

**Adding binary numbers is similar to adding denary numbers.**

Example: Adding the binary numbers 11 and 100

Write the numbers out using the column method. Start from the right, and simply add the numbers.

In binary, 011+100=111

111 is 7 if converted back to denary.

Example: Adding two 1s in the same column

Sometimes a binary addition will require you to carry over values into the next highest place-value column, e.g. when finding the sum of the binary numbers 0010 and 0111:

There is a clash when adding two ones in the same column. In binary, 1+1 is 10 - it has to become 0 with 1 carried over.

In binary, 0010+0111=1001

1001 is 9 if converted back to denary. 2 + 7 = 9 in denary.

## Devised: Explanation

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

**Higher Level Challenge**

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

- **Social Context:** A social setting or environment which people live.
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A performance live on stage which is designed to realise your original intentions.

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

**Devising Log: Evaluation**
An analysis and evaluation of your individual contribution to the devising process and the final devised piece.

## Stanislavski – A Brief Background

Stanislavski's real name was Konstantin Sergeyevich Alexeyev but he adopted the stage name of Stanislavski in 1884. Born in 1863 to a life of considerable comfort as a member of one of the most affluent families in Russia, he died in 1938 at the age of 75. His family loved the theatre and he was able to indulge in amateur theatricals as a boy. But when he took a stage name it was to conceal his theatrical work from his family. However, in 1887 he had his father's approval and eventually became an established figure.

Stanislavski was disappointed with theatre in his time. Actors didn't care much about their work. So Stanislavski came up with a system. He wrote a series of techniques for actors to help the act. He wrote the books below which were like a guide for the actors to follow. The A B C of acting!

- *My Life in Art*
- *An Actor Prepares*
- *Building a Character*
- *Creating a Role*


He wanted actors to be interested in their performances and he wanted their acting to become believable.

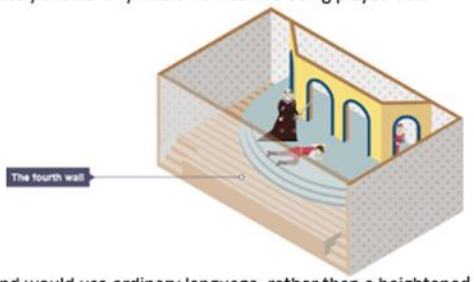
In 1898 The Moscow Art Theatre was founded by Stanislavski and Vladimir Nemirovich Danchenko. It was both successful and hugely influential in the world of the theatre. It was, of course, affected by the political turmoil in Russia from 1917.

When Stalin controlled Russia, Stanislavski was keen to appease him to ensure the survival of the theatre. During this time the company's work reflected the political voice of the USSR, as represented by Socialist realism. Realism was a 19th-century theatrical movement, seeking to portray **real life** on the stage.

## Realism in Theatre

What makes up a realistic production? It's hard to come up with a 'recipe', but there are a number of important elements that you might expect to be present:

**The Fourth Wall.**
The set of a realistic production will be solid, three dimensional, and most often in a proscenium theatre that enhances the sense of that fourth wall. The performers present the action realistically, without using techniques such as addressing the audience or a tableau, which immediately shatter any illusion of real life being played out.




**Everyday conversations and style of speaking.**
A realistic play would use prose rather than poetry and would use ordinary language, rather than a heightened emotional vocabulary.

**Ordinary people.** Generally, the stories are about people who are more readily defined as middle or working class. For Stanislavski, it was substantially the middle class or **bourgeois**, to use the right term in the Russia of his day that he put on stage.

**Acting Style**
A carefully rehearsed acting style that creates or confirms the impression of reality. This is true whatever approach is adopted.

**Real settings.** These plays are set in realistic contexts. They won't have fairy tale or fantasy settings and are likely to be contemporary.

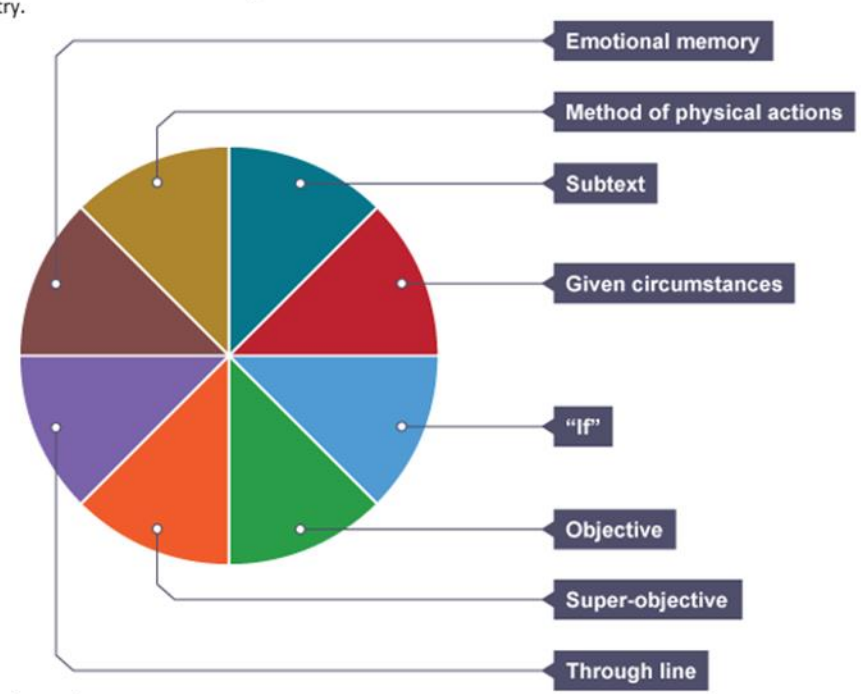
**Are you ready to go on the journey that many actors before you have been on? Turn over to learn more about Stanislavski's System.**

**Stanislavski The System**

These are the techniques that Stanislavski created and wrote about in his books. They are designed to help the acting to closer reflect real life and give the audience the sense that they are watching real life.

**The System**

This term refers to the methods used by Stanislavski to foster a good performance in his actors. It focuses mainly on helping an actor recall the emotions needed for a role. Don't confuse 'method acting' with the System. Method acting is how Stanislavksi's work was interpreted by others, in particular, actors and directors in the film industry.




**Given circumstances**

The given circumstances are the information about the character that you start off with and the play as a whole. How old is the character? What's their situation in the play and in relation to the other characters? Are there any notes provided about the play and its characters? Such notes and stage directions may not tell you everything you need to build a character but they are the starting point from which you'll work to examine the other questions.

**Emotional memory**

Emotional memory is when the actor finds a real past experience where they felt a similar emotion to that demanded by the role they are playing. They then 'borrow' those feelings to bring the role to life.

**Method of physical actions**

Imagine a simple activity like cleaning your teeth and then imagine a husband cleaning his teeth whilst deliberating on how to tell his wife about his mistress. This is a simple illustration of how a physical action can release the necessary emotions.

**Magic If**

Stanislavski said that the character should answer the question, 'What would I do if I was in this situation?' Also known as the **'magic if'**, this technique means that the actor puts themselves into the character's situation. This then stimulates the motivation to enable the actor to play the role.

**Subtext**

The script of a play could be called the text. The **subtext** is the actual meaning and motivation behind the lines that are spoken and the actions taken. For example, the heroine might say to the hero, "I love you" and we might assume that it is the happy ending fairy tale moment. But the delivery would be very different if she was worried that he was about to walk out on her.

**Objective, super-objective and the through line**

An **objective** is the reason for our actions. What are we trying to achieve? Life, people and circumstances constantly put up barriers in our way. Each of these barriers presents us with the objective of getting through them. You shouldn't try to express the meaning of your objective in terms of a noun, always use a verb, eg 'I wish to...' The **super-objective** is an over-reaching objective, probably linked to the overall outcome in the play. We use the word super-objective to characterise the essential idea, the core, which provided the impetus for the writing of the play. A character's objectives are likely to be stages in the journey towards the super-objective. If that journey is perceived as a clear path to the super objective, then you have your **through line**.

**Circles of attention**

Stanislavski believed that an actor needed a sense of isolation in order to produce a characterisation and avoid unnecessary tension. They needed to concentrate on themselves. This is the **first circle of attention**. Stanislavski referred to it as **Solitude in Public**. Beyond this, the actor might, in the 'second circle', be aware of the character he is addressing and in the 'third circle', the rest of the production. There's no direct awareness of the audience in this. These circles of attention are achieved through focus and concentration.

**Tempo and rhythm**

Stanislavski felt that an inner and an outer tempo and rhythm were vital if you were to enact movements truthfully and link them to the expression of emotions and feelings. He linked tempo to the speed of an action or feeling and the rhythm to the intensity or depth of the experience.

**Physical action**

If a musician plays a musical instrument, they ensure before they start that the instrument is in tune so that they play the right notes and can do justice to the composer's work. Stanislavski felt that an actor should regard their body in the same light. It should be trained or tuned so the actor can call on it to perform effectively. Stanislavski didn't want to accept that an actor couldn't measure up to the physical demands of a role. The demands of a role may not just be athletic, but may have to do with vocal power or intensity of emotion.

**Improvisation**

Improvisation is a crucial part of the rehearsal process and Stanislavski wanted the actor to reach far into themselves in creating the role. If all the actors in a production took their emotions into the inner circle of attention, it's easy to see that a production could lose cohesion. It's the director's job to keep that cohesion, at the same time as drawing out as much truth in performance as possible from each performer.

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## Bertolt Brecht – A Brief Background

The playwright Bertolt Brecht was born in 1898 in the German town of Augsburg. After serving as a medical orderly in the First World War and appalled by the effects of the war, he went first to Munich and then to Berlin in pursuit of a career in the theatre. That period of his life came to an end in 1933 when the Nazis came to power in Germany. Brecht fled and during this period the Nazis formally removed his citizenship, so he was a stateless citizen.

In 1941 Brecht became resident in the USA but returned to Europe in 1947 after appearing before the House Un-American Activities Committee. Ostensibly against communism, this committee also targeted intellectuals. By the time of his death in 1956, Brecht had established the **Berliner Ensemble** and was regarded as one of the greatest theatrical practitioners.

As an artist, Brecht was influenced by a diverse range of writers and practitioners including Chinese theatre and Karl Marx. The turmoil of the times through which Brecht lived gave him a strong political voice. The opposition he faced is testament to the fact that he had the courage to express his personal voice in the world of the theatre. He also had an original and inspired talent to bring out a dynamic theatrical style to express his views.

His most acclaimed work is *Mother Courage and Her Children*. Although it's set in the 1600s, the play is relevant to contemporary society and is often regarded as one of the finest anti-war plays. *Fear and Misery of the Third Reich* is Brecht's most overtly anti-fascist play. This work analyses the insidious way the Nazis came to power.

## Why is Brecht so important?

Bertolt Brecht was a **theatre practitioner**. He made and shaped theatre in a way that had a huge impact upon its development. Many of his ideas were so revolutionary that they changed the theatrical landscape forever. Modern theatre owes a lot to his methods.

When naturalistic theatre was at its height and acted as a mirror to what was happening in society, he decided to use it as a force for change. He wanted to make his audience think and famously said that theatre audiences at that time "hang up their brains with their hats in the cloakroom".

In naturalistic or **dramatic theatre** the audience care about the lives of the characters onstage. They forget their own lives for a while and escape into the lives of others. When an audience cries for a character or feels emotion through the events happening to them it's called catharsis.

Brecht was against cathartic theatre. He believed that while the audience believed in the action onstage and became emotionally involved they lost the ability to think and to judge. He wanted his audiences to remain objective and distant from emotional involvement so that they could make considered and rational judgements about any social comment or issues in his work. To do this he used a range of theatrical devices or techniques so that the audience were reminded throughout that they were watching theatre; a presentation of life, **not** real life itself. His kind of theatre was called **Epic theatre**. He called the act of distancing the audience from emotional involvement the **verfremdungseffekt**.

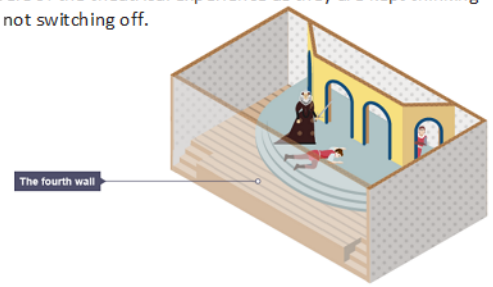
## The 'V' effect

Many people speak of alienating the audience (making them separate from the action) but **verfremdungseffekt** actually translates more closely to 'distancing.' However, it's still often called the **alienation** effect or is shortened to the 'v' effect and there are many ways of using it.

Brecht definitely wanted his audience to remain interested and engaged by the drama otherwise his message would be lost. It was **emotional investment** in the characters he aimed to avoid.

His approach to theatre suits work which has a political, social or moral message. Perhaps you want the audience to consider the meaning in a **parable** (a story with a wider moral message). You might want to explore a theme or issue and make your audience consider varying viewpoints or sides to an argument. If so you can learn a lot from the distancing devices used in Brechtian theatre.

Epic theatre (Brechtian theatre) breaks the **fourth wall**, the imaginary wall between the actors and audience which keeps them as observers. They are active members of the theatrical experience as they are kept thinking throughout, not switching off.




**Want to know more? Turn over to learn about how to create the 'v' effect using Brechtian Devices.**

## Brechtian devices to create the 'v' effect

A theatrical **device** is a method or technique used onstage which has an aim or purpose. The aim when using the 'v' effect is to ensure that the audience are constantly reminded that they're watching a piece of theatre. Brecht used the techniques below to alienate the audience causing the 'v' effect.

**Political Message**
Brechtian plays have a political message.

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

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

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

**Direct Address and Step Out**
Speaking directly to the audience breaks the fourth wall and destroys any illusion of reality. An example would be the moment where Grusha pleads to save baby Michael in *The Caucasian Chalk Circle* by Brecht: I brought him up, shall I also tear him to bits? I can't.

**Placards**
A placard is a sign presented onstage. Using placards might be as simple as holding up a card or banner. Multimedia or a PowerPoint slideshow can also be used for this effect. The musical, *Miss Saigon*, for example, used a slideshow to demonstrate the loss of lives in the Vietnam War which was highly effective. What's important is that the information doesn't just comment upon the action but deepens our understanding of it. For example, a married couple are arguing and the wife is very upset. If the actress held up a placard saying 'I'm miserable' that wouldn't tell us anything about the character that we didn't already know. However, if her placard said 'I'm having an affair' or 'I've never loved him' the audience would be forced to consider other aspects of their relationship and to think about deeper reasons behind her tears. Placards can also help the audience to consider wider contexts, for example, the wife could hold up a placard that says facts about divorce "50% of married couples apply for divorce" Placards can also be used to identify changes the movement from one episode to the next.

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

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

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

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

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

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

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

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

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

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

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

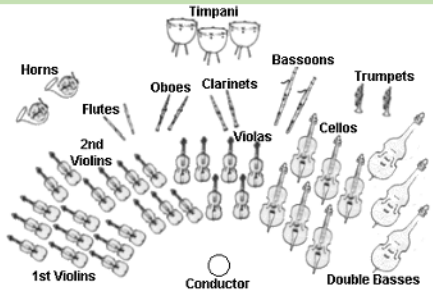
# The Classical Period (1750-1820)

The **CLASSICAL PERIOD** refers to music composed between 1750-1820 approximately. The Baroque Trio Sonata began to give way to the Classical Sonata and the Italian Overture, found in many Baroque Operas, grew into the Classical Symphony. The word **CLASSICAL** means having a **WELL-BALANCED STRUCTURE OR FORM**, a **CLEAR MELODIC LINE** and **NOTHING THAT IS OVERDONE OR 'SHOWY'.** Baroque Music was highly decorated and ornamented whereas Classical Music is much clearer, and you can hear each individual part. Early Classical style is called **STYLE GALANT** – a 'courtly style' which aimed chiefly to please the listener. Later, the style matured to emphasise more qualities associated with Classical Architecture: grace and beauty of line (**MELODY**) and shape (**FORM AND STRUCTURE**), proportion and balance; moderation and control. In particular, the Classical composer strikes a perfect balance in their music between expressiveness and formal structure.

## Instruments, Timbres and Sonorities

**EXPANSION OF THE ORCHESTRA** - In the Classical Period the orchestra expanded. The **STRINGS** were still the 'backbone of the orchestra' and played the **MELODY LINE** parts most of the time (1st and 2nd Violins often an octave apart – **OCTAVE DOUBLING**) with the number of strings increasing. The **WOODWIND** became more important and formed its own section. There would usually be **TWO FLUTES, TWO OBOES, TWO BASSOONS** and later, **TWO CLARINETS** – newly invented in the Classical Period – **DOUBLE WOODWIND**. The **BRASS** section would now contain **TRUMPETS** and **FRENCH HORNS** with **TROMBONES** (again invented during the Classical Period) being added later. Classical composers often used the **FRENCH HORNS** and **WOODWIND** section to 'bind the texture of their music together'. The **PERCUSSION** section, as in the Baroque Period, contained just the **TIMPANI**. The **CONTINUO** (Harpsichord) player was now no longer necessary, and the orchestra was, for the first time, directed by a non-instrumental player – the **CONDUCTOR**.

## The Classical Orchestra




## Melody and Texture

Both melody and texture had an emphasis on **ELEGANCE** and **BALANCE.**

Baroque Music was often Polyphonic with complex textures and lots of parts played simultaneously. Texture in the Classical Period tended to be **CLEARER**, **LIGTER** and **LESS COMPLICATED** with **CLEAR MELODIC LINES** where you can hear each individual part, **SHORT, WELL-BALANCED MELODIES** and **CLEAR-CUT QUESTION AND ANSWER PHRASES**.

**IMITATION** and **RISING AND FALLING SEQUENCES** were still used in Classical melodies. With its emphasis on melody, the predominant texture used in the Classical Period was mainly **HOMOPHONIC MELODY AND ACCOMPANIMENT TEXTURE**, but with some use of **COUNTERPOINT** where two or more ideas are combined and **HOMOPHONIC BLOCK CHORDAL** texture often being used at the end of a phrase or section of music.

## Harmony and Tonality

Classical Music used mainly simple, **DIATONIC HARMONIES** with more frequent **MODULATIONS TO RELATED KEYS**, although composers were starting to experiment with more **RAPID MODULATIONS** to **REMOTE KEYS** (particularly within Development Sections of Sonatas and Symphonies). **CHROMATIC HARMONY** was used at times to create tension with chords such as **AUGMENTED SIXTHS**. With the emphasis on balance of phrases, **CADENCES** became increasingly important as a way of making the end of a phrase or section. **DOMINANT SEVENTH** chords were often used along with **TONIC AND DOMINANT PEDALS** in the Bass Line parts to prepare for a modulation to the tonic or another key.

## The Pianoforte

The Baroque Harpsichord fell out of popularity and use with the newly invented **PIANOFORTE (PIANO)** in 1698 by Cristofori in Italy. Whereas the strings of a Harpsichord were plucked, in a piano they are hit by hammers – lightly, or more forcefully, depending on the pressure made by the player's fingers upon the keys. The piano had more powers of expression offering sudden contrasts between **LOUD (FORTE)** and **SOFT (PIANO)**, but sounds could **GRADUALLY GET LOUDER (CRESCENDO), GRADUALLY GET SOFTER (DECRESCENDO/DIMINUENDO)** and be made **LEGATO (SMOOTH)** or **STACCATO (DETACHED)**. A player could shape an expressive melody in **CATABILE** ('singing') style with the right hand against a quieter accompaniment with the left hand. A favourite kind of accompaniment patterns often used by Classical composers was the **ALBERTI BASS** – simple broken chords repeated in the left hand, keeping the music moving while outlining the harmonies to support the melody. **HAYDN** and **MOZART** wrote much music during the Classical Period for the piano in the form of **SOLO PIANO SONATAS**.

## Dynamics & Articulation

The Classical Period saw more **CONTRASTING MOODS** within movements or pieces of music (unlike the Baroque 'Terraced Dynamics') and **EXPRESSION MARKINGS** were used on scores – **CRESCENDOS** (*cresc.*) and **DIMINUENDOS/DECRESCENDOS** (*dim./decresc.*) appeared for the first time along with **ARTICULATON MARKINGS** - *accents (>), sforzandos (sf/sfz), legato slurs* and *staccato dots (.)*

## Classical Instrumental Music

### The Classical Symphony

A **SYMPHONY** (meaning 'sounding together') is a **"Sonata for Orchestra"** – a large-scale orchestral works sometimes lasting for over an hour! Early in the Classical Period, Symphonies had three movements but borrowing the **MINUET AND TRIO** (from the Baroque Dance Suite) as the third movement, the standard number of movements was **FOUR**. **HAYDN** and **MOZART** enriched and perfected the Symphony in the second half of the 18th century.

The movements of a Classical Symphony and Sonata, well contrasted in speed and character, are usually set out as follows:

| | | |
|---|---|---|
| **First Movement** | Sonata Form | Fairly Fast |
| **Second Movement** | Ternary Form or Variation Form (sometimes Sonata Form) | Slower and Songlike |
| **Third Movement** | Minuet & Trio (Haydn & Mozart); Scherzo & Trio (Beethoven) | Brisk and Vigorous |
| **Fourth Movement** | Rondo, Variation, Sonata or Sonata-Rondo Form | Fast and Light-Hearted/Cheerful |

### The Classical Sonata

**SONATA** (meaning 'sounded') was the name a Classical composer gave to a work in several movements for one or two instruments only – piano, or violin and piano.

### The Classical Concerto

The Classical Concerto, featuring a **SOLO INSTRUMENT** against the orchestra grew from the Baroque Solo Concerto and is structured in **THREE MOVEMENTS.**

| | | |
|---|---|---|
| **First Movement** | Sonata Form | Fairly Fast |
| **Second Movement** | Ternary or Variation Form | Slower and Songlike |
| **Third Movement** | Rondo, Variation or Sonata Form | Fast and Cheerful |

The first movement begins with a **DOUBLE EXPOSITION** – orchestra alone then entry of the soloist. A **CADENZA** occurs towards the end of the **RECAPITULATION** – a showy passage based on themes heard earlier, which displays the brilliance of the player's technique – originally the soloist was expected to improvise but later composers began writing out the soloist's cadenzas.

### Classical Chamber Music

Music written for a small group of solo musicians and intended to be played in a room (chamber) rather than in a large hall. The **STRING QUARTET** (two violins, viola and cello) is a 'Sonata for String Instruments'. Other grouping include: **STRING TRIO, PIANO TRIO, STRING QUINTET, STRING QUINTET** and **WIND OCTET**. **CLASSICAL RECREATION MUSIC** was also popular, light in character and designed to be performed in the open air – **SERENADE, NOCTURNE, DIVERTIMENTO**.

## Sonata Form

**EXPOSITION**
**FIRST SUBJECT** – Tonic Key
**BRIDGE PASSAGE**
**SECOND SUBJECT** – In a new, but related, key (often the Dominant or Relative Major/Minor)
**CODETTA**. Repeat Marks.

**DEVELOPMENT**
Moving through new keys, discussing, developing, combining and opposing ideas from the Exposition often using rhythmic or melodic fragments of subjects with tension.

**RECAPITULATION**
**FIRST SUBJECT** – Tonic Key
**BRIDGE PASSAGE** (altered)
**SECOND SUBJECT** – Now in the Tonic Key
**CODA** ('rounding off').

## Classical Composers


Gluck (1714-1787)


C. P. E. Bach (1714-1788)


**Haydn (1732-1809)**


J. C. Bach (1735-1782)


Clementi (1752-1832)


**Mozart (1756-1791)**


**Beethoven (1770-1827)**

## Classical Vocal Music

The main types of vocal music composed during the Classical Period were the **MASS** and **OPERA**. **GLUCK** 'reformed opera' – focusing on driving the action forward and avoiding interruptions for vocal displays with careful choice of instruments to suit the situation and an **OVERTURE**. **MOZART** 'transformed opera' using musical genius and dramatic instinct (*The Marriage of Figaro, Don Giovanni, The Magic Flute*) adding a dramatic final scene using all the characters joining in an **ENSEMBLE**. Mozart's orchestration mirrors the mood and drama of the action but always enhancing the voices.

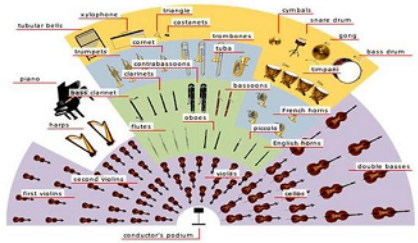
# The Romantic Period (1820-1900)

The word **ROMANTICISM** was first used to describe the stirrings of new ideas in painting and literature towards the end of the 18th century. This word was later taken up by musicians to describe changes in musical style which took place soon after the turn of the century. Classical composers aimed to strike a balance in their music between expressiveness and formal structure. Romantic composers shifted this balance. They looked for a greater freedom of form and design in their music and a **MORE POWERFUL AND INTENSE EXPRESSION OF EMOTION**, often revealing their innermost thoughts and feelings, even sufferings. Many Romantic composers read widely and took a keen interest in art. Often, the inspiration behind a composition by a Romantic composer was sparked off by a painting, a book, a poem or a play. **IMAGINATION, FANTASY** and a **QUEST FOR ADVENTURE** are important ingredients in Romantic style. Among the many ideas which hold a strong fascination for Romantic composers are: **FAR-OFF LANDS AND THE DISTANT PAST, DREAMS, NIGHT AND MOONLIGHT, RIVERS, LAKES AND FORESTS, NATURE AND THE SEASONS, THE JOY AND PAIN OF LOVE, LEGENDS, FAIRY-TALES, MYSTERY, MAGIC** and **THE SUPERNATURAL.** The Romantic period gave rise to the **VIRTUOSO** – a musician of extraordinary technical skill – including the virtuoso violinist Paganini and the composer/pianist Liszt.

## Instruments, Timbres and Sonorities

During the Romantic period, there was an **ENORMOUS INCREASE** in both the **SIZE** and **RANGE** of the orchestra. The **BRASS SECTION**, now with the addition of a **TUBA**, took on far greater importance and its range and flexibility were increased by the invention of the **VALVE SYSTEM**. The **WOODWIND SECTION** now contained a **PICCOLO, BASS CLARINET, COR ANGLAIS** and **DOUBLE BASSOON**. A huge and varied range of **TUNED AND UNTUNED PERCUSSION** was added to the **PERCUSSION SECTION** giving Romantic composers considerably more variety in **TIMBRE** and **SONORITY** to explore. As the other sections increased in size, it became necessary to increase the number of strings players in order to maintain a balance of sound between the sections, which now also contained **HARPS**. Romantic composers revelled in exploring this wider range of **PITCH AND DYNAMICS, RICHER HARMONIES** and the new possibilities of combining and contrasting **INSTRUMENTAL TIMBRES AND SONORITIES.**

## The Romantic Orchestra




## The Piano in the Romantic Period

During the 19th century, several improvements were made to the **PIANO** including increasing the number of notes giving it a **ROUNDER, RICHER SONORITY** and a **WIDER RANGE IN PITCH, VOLUME** and **TIMBRE**. Romantic composers explored the full range of the keyboard, building up rich and varied textures with a greater use of the **SUSTAINING PEDAL**. Almost all Romantic composers wrote music for piano including Schubert, Mendelssohn, Chopin, Schumann, Liszt and Brahms. Sonatas were still written, but more popular were **FAIRLY SHORT, INDIVIDUAL PIECES** including dances such as the **WALTZ, MAZURKA** and **POLONAISE** and **MOOD OR CHARACTER PIECES** such as the **IMPROMPTU, ROMANCE, SONG WITHOUT WORDS, PRELUDE, NOCTURNE, BALLADE, INTERMEZZO, ÉTUDE** ('study') and **RHAPSODY**. Many solo piano pieces presented two contrasting moods and were often in **TERNARY FORM (ABA)**.

## Melody and Texture and Harmony and Tonality

Melodies in the Romantic period, whether tender and passionate, become more **LYRICAL** and **SONG-LIKE.** Romantic composers explored **SWIFTER** and **MORE FREQUENT MODULATIONS**. Harmonies became **RICHER** and **INTENSELY EMOTIONAL** with a powerful use of **DISCORDS**, bringing in **CHROMATIC NOTES** from outside the key and frequent use of **DISSONANCE – DISCORDS** often merge into further **DISCORDS** instead of resolving onto expected **CONCORDS**. **DENSER, WEIGHTIER TEXTURES** with **BOLD DRAMATIC CONTRASTS** exploring pitch ranges.

## The Romantic Concerto

The **SOLOIST** now entered immediately in a **SINGLE EXPOSITION**. **CADENZAS** written out by the composers. Normally still in **THREE MOVEMENTS**. **LARGE ORCHESTRAS**. Brilliant technical ability of **VIRTUOSO PERFORMERS** with increasingly more difficult solo parts. **PIANO** popular as a solo instrument. **DRAMATIC AND EXCITING CONFLICT** between soloist and orchestra.

## Romantic Vocal Music

The German **LIED** – solo voice and piano in equal partnership – Schubert wrote many. **OPERA** – Wagner called them **MUSIC-DRAMAS** and employed huge orchestras using **LEITMOTIFS** ('leading-motives') – themes representing a character, emotion, place or object which are changed and transformed according to the situation or time. Verdi and Puccini also wrote many operas during the Romantic period. The **ORATORIO** and **REQUIEM** also continued to be popular vocal forms.

## Romantic Programme Music – *music which 'tells a story' or 'paints a picture' or is in some way descriptive in the mind of the listener.*

### The Programme Symphony

Some Romantic composers e.g. Brahms continued to write symphonies that were **ABSOLUTE MUSIC** (music which is not descriptive and intended to be enjoyed purely for its own sake) but composers such as **BERLIOZ** added detailed notes – 'programme' in his *Symphonie Fantastique* which is an example of a **PROGRAMME SYMPHONY** in 5 movements linked by an **IDÉE FIXE** – a recurring theme to give unity between movements.

### The Concert Overture

A **ONE-MOVEMENT PROGRAMME PIECE FOR ORCHESTRA** (usually in Sonata Form) simply intended for performance at a concert and with no relation to opera or oratorio overtures. Famous Concert Overtures include Mendelssohn's *Fingal's Cave/The Hebrides* and Tchaikovsky's *1812 Overture*.

### The Symphonic/Tone Poem

Invented by Liszt and a **ONE-MOVEMENT PROGRAMME PIECE FOR ORCHESTRA** (more lengthy and freer than the Concert Overture). The music should take its shape from the pattern of ideas or events in the programme itself. **THEMATIC TRANSFORMATION** is often used – a basic theme recurring and continually changed or transformed in mood and character to match each situation. Famous Symphonic poems include Smetana's *Vltava* and Richard Strauss's *Don Juan*.

### Incidental Music

**MUSIC SPECIALLY COMPOSED TO BE HEARD AT CERTAIN POINTS DURING THE PERFORMANCE OF A PLAY**. Often setting the mood at the start of an act or scene or entertaining the audience during scene changes. Collections of Incidental Music were published as **SUITES** and performed in concerts out of their original context. Famous Suites of Incidental Music include Mendelssohn's *A Midsummer Night's Dream* and Grieg's *Peer Gynt Suites*.

## Romantic Composers

**Beethoven** *(Germany)*
**(1770-1827)**

**Schubert** *(Austria)*
**(1797-1828)**

**Berlioz** *(France)*
**(1803-1869)**

**Mendelssohn** *(Germany)*
**(1809-1847)**

**Chopin** *(Poland)*
**(1810-1849)**

**Schumann** *(Germany)*
**(1810-1856)**

**Liszt** *(Hungary)*
**(1811-1886)**

**Wagner** *(Germany)*
**(1813-1883)**

**Verdi** *(Italy)*
**(1813-1901)**

**Smetana** *(Bohemia)*
**(1824-1884)**

**Brahms** *(Germany)*
**(1833-1897)**

**Tchaikovsky** *(Russia)*
**(1840-1893)**

**Dvořák** *(Bohemia)*
**(1841-1904)**

**Grieg** *(Norway)*
**(1843-1907)**

**Elgar** *(England)*
**(1857-1934)**

**Richard Strauss** *(Germany)*
**(1864-1949)**

## Romantic Nationalism

One key feature of the Romantic Period is **NATIONALISM** – reaction against German influences by composers of other countries, especially Russia, Bohemia and Norway. Nationalist composers deliberately aim to express strong feelings for their own country in their music often using **FOLKTUNES** or **FOLKDANCE RHYTHMS** of their country or taking scenes from their country's life, history or legends as a basis for works such as operas or symphonic poems.

| MR TIGHTS | Features | KEYWORDS |
|---|---|---|
| **M**elody | **Short (six note) motif** – basis of intro, sometimes 5 notes, & sometimes the 2nd last note rises instead of falls.<br>**Scalic** passages - **descending chromatic scale** at end of intro; **ascending scale:** 1st subject theme built on C minor scale, but with major third (E).<br>**Arpeggios** and **broken chords** (e.g. bars 29–30).<br>**Ornaments** – 2nd subject (**acciaccaturas**; **mordents** and **trills**. | **1- Motif** – a short musical phrase; a salient recurring figure.<br>**2- Scalic -** made up of notes that follow the order of a particular scale<br>**3- Sequence** - the repetition of a musical phrase at a higher or lower pitch than the original.<br>**4- Ornament** – notes that decorate a melody. |
| **R**hythm<br><br>(incl. tempo & metre) | ***Grave*** (very slow) – intro<br>The time signature is **common time**.<br>**Dotted rhythm** (e.g. bar 1).<br>very rapid notes, including **septuplets** and 1/128th notes in bar 10.<br>***allegro di molto e con brio*** (very fast with vigour) section is in …<br>**alla breve** time (or **cut time** a fast two in the bar).<br>**Continuous quavers** - accompaniment of 1st subject.<br>**Staccato crotchets** - RH of 1st subject. | **5- Trill** - a musical ornament that rapidly alternates between two adjacent notes.<br>**6- Acciaccatura (grace note)** – a very quick preceeding note.<br>**7- Mordent** (upper and lower) – Played quickly, Upper = note-note above-note; Lower= note, note below-note.<br>**8- Grave –** The slowest tempo in music; perform in a solemn, grave or slow manner.<br>**9- Septuplet** – seven notes played in the same amount of time normally taken to perform four or six.<br>**10- Alla Breve** – cut time. 2/2 time signature. |
| **T**exture | **Homophonic** (chordal) writing – slow intro & 2nd subject features **melody and accompaniment** style.<br>**Octaves** in RH of intro<br>**Monophonic** passage - RH leading into recapitulation.<br>**2-part** music with **broken chords** - 2nd idea of 2nd subject.<br>In **thirds –** brief passage, where the trills are. | **11- Staccato** – 'detached', shortened notes.<br>**12- Homophonic** - a texture comprising a melody part and an accompaniment.<br>**13- Octaves** – pitches 8-notes apart, with the same letter name.<br>**14- Monophonic** – a single line/part.<br>**15- Crescendo** – a gradual increase in volume. |
| **I**nstrument<br><br>(sonority) | **Piano** almost completely replaced the harpsichord as the keyboard instrument of choice.<br>**Fortepiano/pianoforte** - now possible to play using all kinds of **dynamic** levels just by altering the pressure of the fingers on the keys.<br>Beethoven was first to make extensive use of all kinds of dynamic possibilities - frequent **crescendos**, **diminuendos** etc.<br>**Sustaining pedal** was coming into use at the time and was sometimes worked by the knees instead of by the foot. | **16- Diminiuendo –** gradually decrease in volume.<br>**17- Sustain pedal –** the most commonly used pedal which lifts the string dampeners allowing the strings to vibrate freely.<br>**18- Virtuosic/Virtuoso -** characterized by exceptional technical skill. 'Virtuoso' means displaying considerable skill and agility in difficult 'showy' music.<br>**19- Sonata** - a piece for solo instrument containing 3 or 4 **movements**, each with a different **tempo.** |
| **G**enre | **Ludwig van Beethoven** - born in 1770 in the western German city of Bonn. As a young man he moved to Vienna in Austria, where he became known as a **virtuoso** pianist.<br>8th published sonata written between 1796 and 1799, dedicated to Prince Karl von Lichnowsky.<br>The French term *pathétique* means 'moving' or 'emotional'.<br>Beethoven is regarded as one of the great composers of the **Classical** period together with Mozart and Haydn. This piece shows early signs of the **Romantic** style too. | **20- Classical** -The classical style or period (1750-1820)<br>**21- Chromatic chords –** a chord that includes at least one note not belonging in the diatonic scale.<br>**22- Diminished seventh chord –** a diminished (flattened by a semitone each) triad with an added diminished seventh (four notes stacked in intervals of a minor third). |
| **H**armony<br><br>**T**onality | **Chromatic chords**, especially **diminished sevenths.**<br>**Perfect cadences** - end of the movement.<br>**Interrupted cadence** - introduction at b.9.<br>**Circle of fifths** – b.244 - 249<br>**Augmented 6th chords** – b.30 & 34.<br>**C minor**.<br>**Related keys** - E♭ major (the **relative major** key) and the **subdominant** (F minor).<br>**Unrelated keys** - E minor at the beginning of the development section. | **22- Perfect cadence** - a cadence comprising two chords. A perfect cadence is chord V followed by chord I.<br>**23- Interrupted cadence –** an unfinished sounding cadence. Chord V followed by chord VI.<br>**22- Circle of fifths** - a series of chords in which the root note of each chord is a fifth lower or a fourth higher than that of the previous one. |
| **S**tructure | **Sonata form**, a complex structure used in the first and sometimes last movements of sonatas, symphonies and other works of the **Classical period**.<br>**Exposition** - 2 main **subjects**, 1st in **tonic** (main home key), 2nd in **dominant** or other **related key**.<br>**Development** - earlier tunes are altered, especially by **modulating** to different keys.<br>**Recapitulation -** restates exposition but both subjects now mainly in the tonic key.<br>**Coda** - end with a rounding-off section. | **24- Augmented 6th chord** –a chord which contains the interval of an augmented (stretched by a semitone) 6th. |

| KEYWORDS |
|---|
| **1- Synthesiser**: An electronic **musical** instrument that generates audio signals that may be converted to sound. |
| **2- Filters**: An electrical circuit that emphasizes or eliminates some frequencies from a signal. **Filters** are used in electronic **music** to alter the harmonic content of a signal, which changes its timbre. |
| **3-ADSR:** An acronym that stands for Attack, Decay, Sustain, Release and is a **means** to replicate those respective elements of a sound. It is especially used in sound designing with electronic **music** instruments. |
| **4-Oscillator:** A repeating waveform with a fundamental frequency and peak amplitude and it forms the basis of most popular synthesis techniques today. Aside from the frequency or pitch of the **oscillator** and its amplitude, one of the most important features is the shape of its waveform. |
| **5-Sampler:** allows **music** to be made out of any sound recorded by the user, rather than relying on tones generated by oscillators, computer chips, white noise or other synthesiser **technology**. |
| **6-Routing**: There are times when you may want to **route** (send) groups of channels to another channel. An auxiliary is simply a channel that is configured to allow the outputs of other channels to be **routed** to its inputs. |
| **7-Effects**: Processes applied to a signal to alter its **sound** quality in some way, or the devices used to do so. Common **effects** include reverb, delay, chorus, distortion, flange and phasing.<br>**8-Inserts** an **insert** is an access point built into the mixing console, allowing the audio engineer to add external line level devices into the signal flow between the microphone preamplifier and the mix bus. |
| **9-Automation**: a DAW (Logic Pro X, Pro Tools, Ableton, etc.) automatically perform tasks over time, particularly moving knobs, faders, and switches for you. |
| **10- Mixing:** The process of blending all the individual tracks in a recording to create a version of the song that sounds as good as possible – the "mix" |
| **13-Plug-in**: An audio **plug**-in, in computer software, is a **plug**-in that can **add** or enhance audio-related functionality in a computer program. Such functionality may include digital signal processing or sound synthesis. |
| **14-Velocity**: A measure of how rapidly and forcefully a key on a keyboard is pressed when the player initially presses the key. |
| **16- Fader**: a device for gradually increasing or decreasing the level of an audio signal.<br>**17- Master fader**: The fader, which controls the main output(s) of the console during mixdown. |

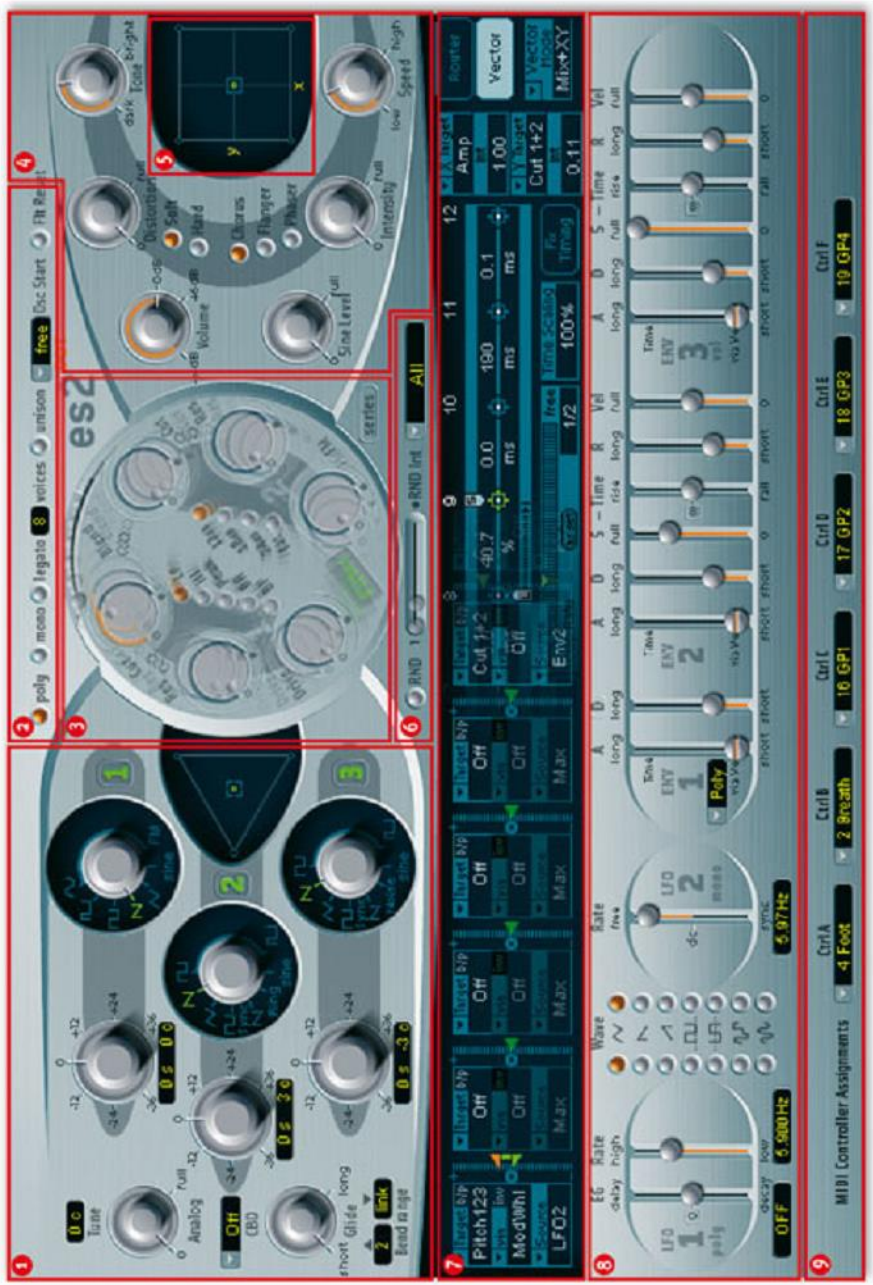
## Basic Synthesizer Patch

This is a basic 1-Oscillator (VCO) synth patch with a filter (VCF) and an envelope generator (EG) for the filter and amplifer (VCA).


What are the similarities and differences between HARDWARE synthesisers (old-fashioned machines) and SOFTWARE synthesisers (computerized – part of the DAW)?

How does an understanding of the old system help you to better understand the computerized version?

| Sequencers |
|---|
| **1 - Oscillator section** – An **oscillator** is a repeating waveform with a fundamental frequency and peak amplitude and it forms the basis of most popular synthesis techniques today. Aside from the frequency or pitch of the **oscillator** and its amplitude, one of the most important features is the shape of its waveform.<br>* *ES2* has three oscillators and each oscillator has a slightly different role with all three having a familiar line-up of waveforms.<br>* The Oscillator Mix Field (the triangular pad) is used to crossfade between the three oscillators; when the locator is central, an equal mix of all three is sent to the filters. |
| **2 - Keyboard mode** - Here, as with most software and hardware synths, you can control how the keyboard input will affect the synth's output:<br>* There are the usual poly, mono and legato modes.<br>* Unison mode can be engaged to add those classic warm chorus effects.<br>* The Osc Start menu enables you to restart the oscillator cycles every time you press a key.<br>* Filter Reset can be used to instantly engage filter self-oscillation when a key is pressed. |
| **3 – Filters** – An electrical circuit that emphasizes or eliminates some frequencies from a signal. **Filters** are used in electronic **music** to alter the harmonic content of a signal, which changes its timbre.<br>* *ES2* has two filters that can be used in parallel or series. They behave differently, depending on which mode is in operation:<br>* Filter one can be selected to work in five different modes.<br>* Filter two is permanently low-pass, but has variable slopes. |
| **4 - Output section** - This section controls the master output:<br>* The Sine Level knob introduces a pure sine signal at the output stage.<br>* Tube- and transistor-derived distortion can be added.<br>* One of three effects can be blended with the master signal. |
| **5 - The X-Y Square** - *ES2* 's modulation parameters can be assigned to the X and Y axes, then modulated in real-time using this area:<br>* X and Y 'targets' can be specified in the Router.<br>* The Vector mode can be used to create complex 'moving' sounds, by setting up points along a timeline with different X and Y values.<br>**Modulation** means changing the property of sound over time. The **modulation** of sound requires a source signal called a **modulator** that controls another signal called a carrier. **Modulating** sounds adds a sense of motion, dimension, and depth. There are several ways to process audio with **modulation**. |
| **6 – Randomiser** - A simple yet effective way to create your own sounds is to choose an *ES2* preset, then use this random parameter generator to warp the sound. |
| **7 - Router/Vector section** - This panel is extremely flexible. When the Router is displayed, 10 independent modulation routings can be made. When the Vector button is pressed, an envelope is displayed, which allows you to create evolving sounds using the X-Y Pad and Oscillator Mix Field. |
| **8 - LFOs & Envelopes** – Low-frequency oscillation (**LFO**) is an electronic frequency which is usually below 20 Hz and creates a rhythmic pulse or sweep. **Envelopes** are the attack, sustain, and decay of a sound.<br>* This section is fairly basic in concept, and comprises two low-frequency oscillators and three envelopes, all of which have slightly different feature sets: |
| **9 - MIDI Controller Assignments** - A total of six external controllers (Ctrl A to Ctrl F) can be assigned here, and used to modulate *ES2* 's parameters. |

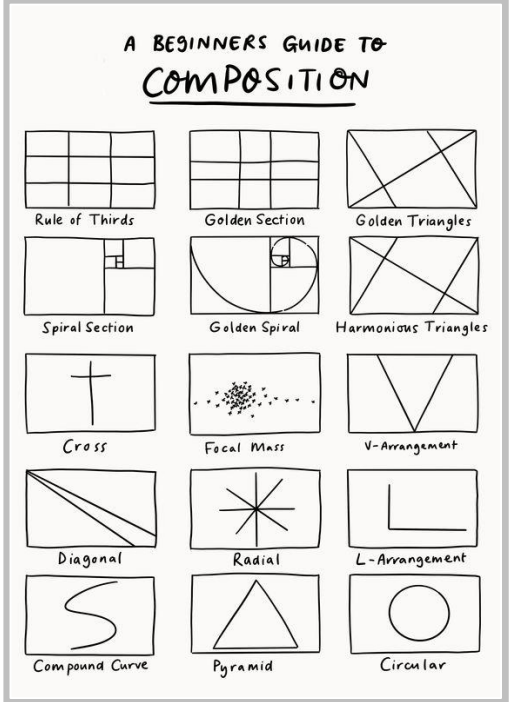


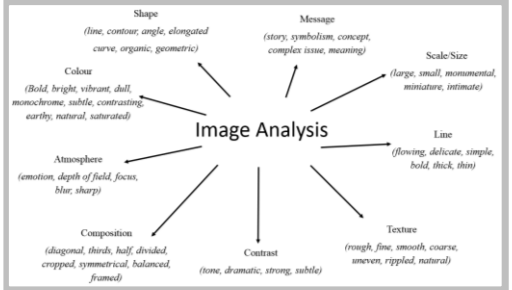
## A. Key Terms

| Keyword | Description |
|---|---|
| 1. **Silhouette** | Silhouette: the dark shape outline of someone or visible in restricted |
| 2. **Texture** | Texture is the way to the touch, or looks to |
| 3. **Landscape** | A landscape painting or refers to an artwork primary focus is natural |
| 4. | An image using only other colour (usually |
| 5. | Contemporary art is the for art of the present day. |
| 6. **Negative** | The space around the the subject. |

**Command Words**
Identify, Organise, Record, Select.

## B. Key concepts




## C. Key Artists

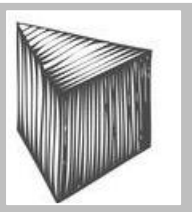
Minty Sainsbury – St. Paul's Cathedral No.4 London.
A large scale drawing created using pencil. The drawing is of a famous London landmark and highlights periodical architectural details. The artist takes first hand photographs of the site and then carefully chooses the area she wishes to focus on. Negative space is used cleverly to draw your focus in to the main subject.

Ian Murphy – Cornerstone (roughly 1990)
A large scale painting richly textured through the use of newspaper, dry brushing and charcoal. Ian murphy uses a combination of drawing and painting to create his artwork. He takes first hand photographs and focuses in on details from the pictures. The chosen colour palette and mediums help create an atmospheric mood.

John Piper – The pebble alcove 1986
John pipers work often focusses on British churches and monuments. Piper was an official war time artist known for his depictions of bomb damaged churches and landmarks. John Piper paints and uses print making to make his atmospheric architectural works.

## D. Key Techniques


Pointillism


Hatchin


Cross hatching

| Temperature control | |
|---|---|
| **Keyword** | **Definition** |
| **1. Food spoilage** | When food deteriorates so that its quality is reduced or it can no longer be eaten. |
| **2. Food poisoning** | An illness caused by eating contaminated food |
| **3. high-risk foods** | Food that contains a lot of moisture and nutrient (e.g. milk, cream eggs meat, fish), and easily support the growth of pathogenic microorganisms particularly bacteria. |
| **4. bacteria** | Microscopic living organisms, which are single-celled and can be found everywhere |
| **5. reproduce** | When animals and plants make more of their own kind |
| **6. Binary fission** | How each bacterium reproduces by splitting in two |
| **7. Temperature danger zone** | Temperatures between 5°C and 63°C where most bacteria can multiply |
| **8. dormant** | When bacteria are inactive and cannot grow at all |
| **9. Temperature probe** | A device with a metal spike that takes the temperature of food |

**Key Points**

1. Bacteria are found everywhere and need the right temperature, warmth, time, nutrients, pH level and oxygen to grow and multiply.
2. Microorganisms (bacteria) are used to make a wide range of food products.
3. Bacteria are used to make cheese, yogurt and bread.
4. The most important bacteria in food manufacturing are Lactobacillus species.
5. Bacterial contamination is the presence of harmful bacteria in our food, which can lead to food poisoning and illness.
6. As a food handler you must do everything possible to prevent this contamination.
7. What are the main symptoms of food poisoning?
8. Name three bacteria responsible for food poisoning?
9. Which groups of people are more at risk of food poisoning?
10. When handling food at any stage care must be taken to prevent contamination.
11. Everything possible must be done to control the conditions that allow bacteria to multiply causing food poisoning.

| Where do bacteria come from? | |
|---|---|
| **Keyword** | **Definition** |
| **1. Micro organisms** | Tiny forms of life, both plant and animal. They can only be seen under a microscope. Bacteria are just one type of microorganism. |
| **2. pathogenic** | Something that is capable of causing illness |
| **3. contaminate** | To make a food unsafe to eat by allowing it to come into contact with microorganisms that will grow and multiply in it. |
| **4. mould** | A micro-organism related to mushrooms. Some types of mould contaminate food by growing in it and spoiling the appearance, taste, smell and texture of the food. |
| **5. Enzymes** | Natural substances (mostly proteins) that speed up chemical reactions. They cause fruit and vegetables that have been harvested to ripen and the flesh of animals to break down once they have been killed |
| **6. moisture** | Needed for bacterial growth. Micro-organisms need water for all their biological processes. |
| **7. time** | It takes micro organisms time to grow and multiply. Most micro organisms multiply every 10-20 minutes |
| **8. nutrients** | Micro-organisms need nutrients and energy from food to enable them to grow and multiply |
| **9. pH level** | If foods re too acidic or too alkaline, this will affect whether microorganisms can grow and multiply |
| **10. oxidation** | When substances combine with oxygen |

| Food poisoning (pathogenic) bacteria | |
|---|---|
| **Salmonella** | Found in raw and undercooked poultry, eggs and meat, raw milk. Incubation 12-36 hours |
| **Staphylococcus aureus** | Found in People! Especially hands, nose, mouth and on the skin, in cuts and skin infections, cold cooked meats, raw milk, dairy products. Incubation 1-6 hours |
| **Bacillus Cereus** | Found in soil and plants that grow in the soil such as rice. Incubation 6-15 hours |
| **Campylobacter** | Found in raw meat and poultry, milk and untreated dirty water. Incubations 48-60 hours |
| **Listeria** | Found in chilled ready-to-eat foods that do not require further cooking or reheating, such as: cooked sliced meats, cured meats, smoked fish, pre-prepared sandwiches and salads. Incubation 5-14 days |
| **E. coli** | Found in beef (especially minced beef) and other meat, raw milk, untreated dirty water. Incubation 12-24 hours |

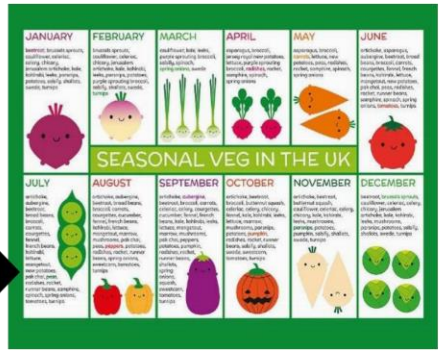
| Food sources and sustainability | |
|---|---|
| **Keyword** | **Definition** |
| **1. Food provenance** | Where food and ingredients originally come from |
| **2. Pesticides** | Chemical sprayed onto plants to prevent insect and mould attack and growth so that strong plants are produced. |
| **3. Grown ingredients** | Plants grown for food. E.g. herbs, fruit, vegetables, cereals. |
| **4. Reared ingredients** | Animals, birds and fish bred in captivity for food |
| **5. Gathered ingredients** | Plant food gathered from the wild for eating . E.g. herbs , edible fungi, berries and seaweed. |
| **6. Caught ingredients** | Animals, birds, fish and shellfish hunted and caught from the wild for eating. |
| **7. Intensive farming** | Growing or rearing large numbers of the same type of plants or animals in one place. |
| **8. Organic farming** | producing food using manure, compost and natural methods of weed, pest and disease control rather than chemicals |
| **9. Genetic modification** | A scientific technique that enables a particular characteristic from one plant or animal to be inserted into the genes of another |
| **10. Food security** | The ability of people to buy sufficient nutritious and affordable food |
| **11. sustainability** | Producing food in a way that can be maintained over a long period of time and protects the environment |
| **12. Fairtrade** | A foundation set up to ensure that food producers in developing countries get paid fair prices for their crops and have decent working and living conditions |

**Quick Test**

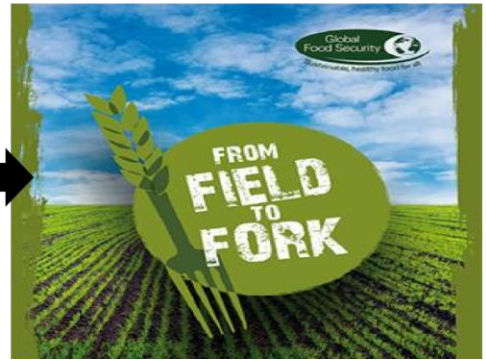
1. What are microorganisms?
2. What is the ideal temperature for bacterial growth?
3. What is the most important bacteria used in food manufacturing?
4. What are the two date marks you need to check when buying food?
5. What is the recommended temperature for chilled food?
6. What is the temperature range of the danger zone?
7. Explain the term cross contamination.
8. List four occasions during food preparation when you must wash your hands.

**Key Points**

- Food and packaging waste contributes to greenhouse gases (GHG's)
- Seasonal and sustainable foods address many environmental issues.
- MSC – Marine Stewardship Council = Seafood can be traced back to a certified sustainable fishery.
- Food miles are the distance food travels from its point of origin to your table. Recycling and producing waste can help reduce carbon emissions.
- Nearly a third of all food produced ends up in landfill sites where it gives off methane gas as it decomposes.
- Cheaper foods are ones that are GM/intensively farmed
- Best quality protein foods are ones where the welfare of the animals has been considered.
- Hydroponic farming is the production of food using specially developed nutrient rich liquids rather than soil.
- Free range farming allows animals to access outdoor areas as part of their life. Increased demand for fish stocks has seen stocks diminishing in the wild due to over fishing.
- Barn reared animals live in an environment similar to intensive farming
- Under EU law, all foods need to be traceable from field to fork.
- Carbon emissions and global climate change affect food and water supplies. Sustainable food production ensures less negative impact on the environment and the farmers.






| | |
|---|---|
| Transportation | Sustainability |
| Food Miles | Free Range |
| Food Origin | Genetically modified |
| Climate Change | Organic |
| Carbon Footprint | Traceability |
| Recycling | Sustainable food |
| Packaging | Composting |
| Landfill | Food waste |

**Food Choice**

| | |
|---|---|
| Cultural | Different to other people.<br>Behaviour patterns<br>Habits/ inherited<br>Different beliefs/morals/way of life. |
| Economical | Cheaper cuts of meat<br>Collect vouchers<br>Supermarket own brand<br>Make your own food<br>Seasonal produce |
| Social | Reward<br>Gifts<br>Demonstrating wealth<br>A way of socialising<br>Celebrations |
| Religion | Jews not eating pork<br>Halal- Muslim<br>Jews- no shellfish/dairy<br>Islam – fasting etc.<br>Hindus – no beef |

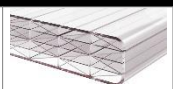
## Materials – Ferrous metals - containing IRON

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

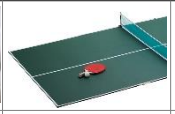
## Materials – NON Ferrous metals / alloys – containing NO iron

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

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

|  |  |  |  |
|---|---|---|---|
| ABS | Acrylic | Polycarbonate | Polystyrene |
| Strong and ridged, hard and tough, expensive. | Good optical properties, transparent, good colour, hard wearing, shatter proof. | High strength and toughness, heat resistant, good colour stability. | Good toughness and impact strength, good for vacuum forming and injection moulding. |

## Materials – Polymers – Thermosetting plastic – can be moulded – non recycleable

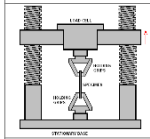
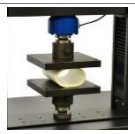
|  |  |  |  |
|---|---|---|---|
| Polyester resin | Melamine resin | Polyurethane | Vulcanised rubber |
| Good strength but brittle | Stiff hard and strong | Hard with high strength, flexible and tough | Highest tensile strength, elastic, resistant to abrasion |

## Properties and characteristics of materials

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

## Testing materials

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

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

## SI Base Units

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

## Engineering Disciplines

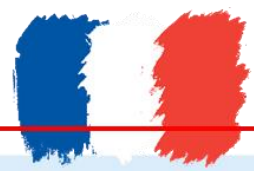
| | |
|---|---|
| Mechanical | Hydraulics, gears, pulleys. |
| Electrical | Power station, household appliances, integrated circuits |
| Aerospace | Aircraft, space vehicles, missiles |
| Communications | Telephone, radio, fibre optic |
| Chemical | Pharmaceuticals, fossil fuels, food and drink |
| Civil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

## Understand the making Process

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

## Health & Safety Legislation

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



## 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* |

## 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* |

## La vie quotidienne — Daily life

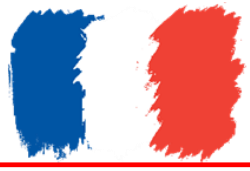
| | |
|---|---|
| J'ai cours … | *I have lessons …* |
| tous les jours sauf … | *every day except …* |
| (cinq) jours par semaine | *(five) days a week* |
| Je vais au lycée … | *I go to school …* |
| en bus/en scooter/en voiture/à pied | *by bus/by moped/by car/on foot* |
| Les jours d'école, … | *On 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* |

## 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 …* |

# Vocabulaire du français au GCSE

Année 9 Higher



| | | | |
|---|---|---|---|
| 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.* |

| **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* |

| **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* | | |

## REGULAR **PRESENT TENSE**

| | -ER | -IR | -RE |
|---|---|---|---|
| Je | e | is | s |
| Tu | es | is | s |
| Il/Elle/On | e | it | |
| Nous | ons | issons | ons |
| Vous | ez | issez | ez |
| Ils/Elles | ent | issent | ent |

**TABLE 1 Forming the Imperfect (Examples: *jouer, finir, rendre*)**

| | je | tu | il, elle | nous | vous | ils, elles |
|---|---|---|---|---|---|---|
| *Nous* ending of the present tense | | | | *jou ~~ons~~ finiss ~~ons~~ rend ~~ons~~* | | |
| Infinitive ending | *-ais* | *-ais* | *-ait* | *-ions* | *-iez* | *-aient* |
| | *jouais* | *jouais* | *jouait* | *jouions* | *jouiez* | *jouaient* |
| | *finissais* | *finissais* | *finissait* | *finissions* | *finissiez* | *finissaient* |
| | *rendais* | *rendais* | *rendait* | *rendions* | *rendiez* | *rendaient* |

**TABLE 1 The Future of Regular Verbs**

| *Subject* | *Ending* | *-er Verbs* | *-ir Verbs* | *-re Verbs* |
|---|---|---|---|---|
| *je* | *-ai* | *jouerai* | *finirai* | *rendrai* |
| *tu* | *-as* | *joueras* | *finiras* | *rendras* |
| *il/elle/on* | *-a* | *jouera* | *finira* | *rendra* |
| *nous* | *-ons* | *jouerons* | *finirons* | *rendrons* |
| *vous* | *-ez* | *jouerez* | *finirez* | *rendrez* |
| *ils/elles/on* | *-ont* | *joueront* | *finiront* | *rendront* |

**How to form the perfect tense with avoir**

Once you have formed your past participle, you need to select the correct part of **avoir** you want to use.

. You must choose a part of **avoir** in the **present** tense, eg:

| English | Subject pronoun | Avoir – to have |
|---|---|---|
| I | j' | **ai** |
| you (informal) | tu | **as** |
| he/she/it (we) | il/elle/on | **a** |
| we | nous | **avons** |
| you (formal, plural) | vous | **avez** |
| they | ils/elles | **ont** |

. Now **add** your chosen **past participle**:

| -er verb: parler | -ir verb: choisir | -re verb: vendre |
|---|---|---|
| parl**é** | chois**i** | vend**u** |

- **j'ai** + **parlé** = I spoke/I have spoken
- **nous avons** + **choisi** = we chose/we have chosen
- **il a** + **vendu** = he sold/he has sold

Semana 1

# Vocabulario Vale Higher

| ¿Qué aplicaciones usas? | What apps do you use? |
|---|---|
| Uso … para… | *I use … (in order) to…* |
| ver mis series favoritas | *watch my favourite series* |
| organizar las salidas con mis amigos | *organise to go out with my friends* |
| controlar mi actividad física / las calorías | *monitor my physical activity / my calorie intake* |
| contactar con mi familia | *get in touch with my family* |
| chatear con mis amigos | *chat with my friends* |
| La tengo desde hace … meses. | *I've had it for … months* |
| Es una aplicación buena para… | *It's a good app for…* |
| buscar y descargar música | *looking for and downloading music* |
| pasar el tiempo / el rato | *passing the time* |
| sacar / editar / personalizar fotos | *taking / editing / personalising photos* |
| compartir / subir fotos | *sharing / uploading photos* |
| estar en contacto | *keeping in touch* |
| conocer a nueva gente | *meeting new people* |
| subir y ver vídeos | *uploading and watching videos* |
| chatear y mandar mensajes | *chatting and sending messages* |
| Es / No es… | *It is / It isn't…* |

| | |
|---|---|
| una red social | *a social network* |
| amplio/a | *extensive* |
| cómodo/a | *convenient* |
| divertido/a | *fun* |
| necesario/a | *necessary* |
| peligroso/a | *dangerous* |
| práctico/a | *practical* |
| rápido/a | *quick* |
| fácil de usar | *easy to use* |
| popular | *popular* |
| útil | *useful* |
| gratis | *free* |
| un canal de comunicación | *a channel / means of communication* |
| una pérdida de tiempo | *a waste of time* |
| Soy / Es adicto/a a… | *I am / He/She is addicted to…* |
| Estoy / Está enganchado/a a… | *I am / He/She is hooked on…* |
| Lo único malo es que… | *The only bad thing is that …* |
| te engancha | *it gets you hooked* |

Semana 2

| ¿Qué estás haciendo? | What are you doing? |
|---|---|
| Estoy… | *I am…* |
| actualizando mi página de Facebook | *updating my Facebook page* |
| editando mis fotos | *editing my photos* |
| Estás / Está / Están… | *You are / He/She is / They are…* |
| escuchando música | *listening to music* |
| esperando a (David) | *waiting for (David)* |
| descansando | *relaxing* |
| pensando en salir | *thinking about going out* |
| preparando algo para merendar | *preparing something for tea* |
| repasando para un examen | *revising for an exam* |
| tomando el sol | *sunbathing* |
| haciendo footing | *jogging* |
| haciendo el vago | *lazing about* |
| leyendo | *reading* |
| viendo una peli | *watching a film* |
| escribiendo | *writing* |
| ¿Quieres salir conmigo? | *Do you want to go out with me?* |
| No puedo porque… | *I can't because…* |

| | |
|---|---|
| está lloviendo | *it's raining* |
| tengo que… | *I have to…* |
| salir | *go out* |
| visitar a (mi abuela) | *visit (my grandmother)* |
| cuidar a (mi hermano) | *look after (my brother)* |
| hacer los deberes | *do homework* |
| quiero… | *I want to…* |
| subir mis fotos a… | *upload my photos to…* |
| quedarme en casa | *stay at home* |
| ¡Qué rollo! | *What a pain!* |
| ¿A qué hora quedamos? | *What time shall we meet?* |
| ¿Dónde quedamos? | *Where shall we meet?* |
| en la Plaza Mayor | *in the main square* |
| debajo de | *underneath* |
| detrás de | *behind* |
| delante de | *in front of* |
| enfrente de | *opposite* |
| al lado de | *next to* |

Semana 3

| ¿Qué te gusta leer? | What do you like reading? |
|---|---|
| los blogs | *blogs* |
| los tebeos / los cómics | *comics* |
| los periódicos | *newspapers* |
| las revistas | *magazines* |
| las poesías | *poems* |

| | |
|---|---|
| las novelas de ciencia ficción | *science fiction novels* |
| las novelas de amor | *romantic novels* |
| las historias de vampiros | *vampire stories* |
| las biografías | *biographies* |

| ¿Con qué frecuencia lees? | How often do you read? |
|---|---|
| cada día / todos los días | *every day* |
| a menudo | *often* |
| generalmente | *generally* |
| de vez en cuando | *from time to time* |

| | |
|---|---|
| una vez a la semana | *once a week* |
| dos veces al mes | *twice a month* |
| una vez al año | *once a year* |
| 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…* |
| protege el planeta | *protects the planet* |
| no malgasta papel | *doesn't waste paper* |
| cansa la vista | *tires your eyes* |
| depende de la energía eléctrica | *relies on electricity* |
| te permite llevar contigo miles de libros | *allows you to take thousands of books with you* |

| | |
|---|---|
| no ocupan espacio | *don't take up space* |
| Una desventaja es… | *One disadvantage is…* |
| el uso de batería | *the battery use* |
| Me gusta / prefiero… | *I like / I prefer…* |
| tocar las páginas | *to touch the pages* |
| 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* |
| fastidia porque no hay numeración de páginas | *is annoying because there is no page numbering* |
| Los libros electrónicos / Los e-books… | *Electronic books / E-books…* |
| son fáciles de transportar | *are easy to transport* |
| son más ecológicos / baratos | *are more environmentally-friendly / cheaper* |

| | |
|---|---|
| leer horas y horas | *to read for hours and hours* |
| un ratón de biblioteca | *a bookworm* |
| un fan del manga | *a manga fan* |
| un libro tradicional | *a traditional book* |
| un libro de verdad | *a real book* |

## 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

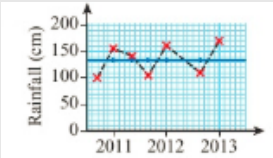
| ¿Cómo es un buen amigo / una buena amiga? | What is a good friend like? | | |
|---|---|---|---|
| Un buen amigo es alguien que… | *A good friend is someone who…* | Conocí a mi mejor amigo/a… | *I met my best friend…* |
| te apoya | *supports you* | Nos conocimos | *We met / got to know each other* |
| 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)* |

## Important Ideas

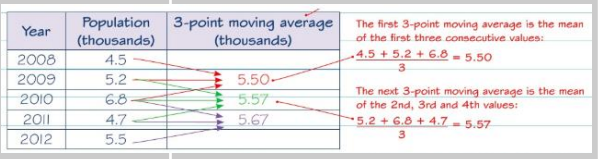
| |
|---|
| Time series graphs are useful for studying the trend and seasonal variation |
| Trend lines can be used to predict future values. |
| You can find estimates of a probability by repeating an experiment many times |
| You can use a variety of diagrams to represent all the different outcomes possible of events |

## Vocabulary

| | |
|---|---|
| Time series | Graphs which show variation over time |
| Trend | The overall behaviour over time |
| Trend line | Shows the tend of data over time ignoring any seasonal variation |
| Moving average | A sequence of averages that smooths out variations in data. Used to show trends. |
| Expected (relative) frequency | How often we expect something to happen based on trials. |
| Risk | The probability of loss |
| Two-way table | A way of presenting data with two variables |
| Sample space diagram | A table showing all possible outcomes of two combined events |
| Tree diagram | A diagram with branches used to work out probabilities of combined events |
| Venn diagram | A diagram using circles to represent sets. The position and overlap of the circles indicates the relationships between the sets. |

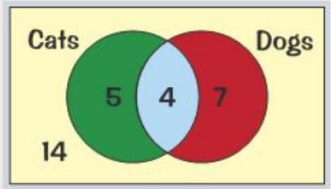
| Question | Answer |
|---|---|
| **Time series** | |
| <table><tr><td></td><td colspan="3">2011</td></tr><tr><td>Rainfall (cm)</td><td>102</td><td>156</td><td>142</td></tr><tr><td>3-point moving average</td><td></td><td>133</td><td>135</td></tr><tr><td></td><td colspan="3">2012</td></tr><tr><td>Rainfall (cm)</td><td>106</td><td>157</td><td>135</td></tr><tr><td>3-point moving average</td><td>135</td><td>133</td><td>134</td></tr><tr><td></td><td colspan="3">2013</td></tr><tr><td>Rainfall (cm)</td><td>110</td><td>169</td><td></td></tr><tr><td>3-point moving average</td><td>138</td><td></td><td></td></tr></table> |  |
| Plot the time series<br>Plot the moving averages<br>Draw the trend line<br>Describe the trend | The trend is flat |
| **Experimental probability** | |
| Sami spins a coin 250 times.<br>He gets 110 heads<br>(a) Work out the experimental probability of getting a head<br>(b) Write down the experimental probability of getting a tail | (a) 110/250<br>(b) 140/250 |
| **Risk** | |
| <table><tr><th></th><th>Football</th><th>Hockey</th><th>Rugby</th></tr><tr><td>Injuries</td><td>8</td><td>5</td><td>13</td></tr><tr><td>Games</td><td>50</td><td>60</td><td>40</td></tr></table><br>Work out the risk of a knee injury in each sport<br>Estimate the number of knee injuries next season, which has 35 games | Football 0.16<br>Hockey 0.083<br>Rugby 0.325<br><br>3 (rounded from 2.9) |

## Key Facts & Formula

| | |
|---|---|
| Moving averages |  |
| Expected (relative) frequency | Uses trials to estimate the probability of something happening next. |
| Equation of a trend line | **$Y = ax + b$**<br><br>where ***b*** is the intercept on the y-axis and ***a*** is the gradient of the line. |
| Experimental probability | **Number of times the event happens ÷ total number of trials** |
| Estimate | **Total number of trials x probability**<br><br>The more times an experiment is repeated the more accurate the estimate will be.<br><br>Increasing sample size leads to better estimates |
| Risk | **Risk of a fault x number of items sold** |

| Important Ideas |
|---|
| Index numbers are often used to compare price changes over time. |
| The probability of one event may affect the probability of another. |

| Vocabulary | |
|---|---|
| Independent events | Events are independent if the outcome of one does not affects the probability of another occurring. |
| Conditional probability | When the probability of a second event depends on the first. |
| Index numbers | A way of tracking changes in value through time. |
| Weighted index numbers | A measure of how a set of items changes in value. |
| Retail price index (RPI) | Shows changes in the cost of living. Used to set interest rates for student loans. |
| Consumer price index (CPI) | Shows changes in the cost of living (not including mortgage payments). Used to index benefits, tax credits and pensions in the UK |
| Gross domestic product (GDP) | The main measure of economic output based on the value of goods and services produced by a country or region. |
| Crude rates | A simple way to compare population statistics such as births, deaths and employment levels |
| Standardised rates | Enables valid comparisons between distributions |

| Question | Answer |
|---|---|
| **Conditional probability** | |
|  <br>Using the Venn diagram above, find the probability that a randomly chosen household does not own a dog, given the household owns a cat. | $P(\text{no dog} \mid \text{cat})$<br>$= \frac{\text{Number of households with cats but no dog}}{\text{Number of households with cats}}$<br>$= \frac{5}{9}$ |
| **Index numbers** | |
| Year \| 2013 \| 2014 \| 2015<br>Index Number \| 100 \| 85 \| 109<br>The index numbers in the table show the average monthly rent for a flat, using 2013 as the base year.<br>a) In which year did the average monthly rent decrease?<br>b) The average monthly ret in 2013 was £530 Calculate the average monthly rent for the years 2014 and 2015. | (a) Average monthly rate decreased in 2014 (85 < 100)<br>(b) 2014:<br>$85 = \frac{\text{price in 2014}}{£530} \times 100$<br>$\Rightarrow$ price in 2014 = £450.50<br>2015:<br>$109 = \frac{\text{price in 2015}}{£530} \times 100$<br>$\Rightarrow$ price in 2015 = £577.70 |

| Key Facts & Formula | |
|---|---|
| Independent events | $P(A \text{ and } B) = P(A) \times P(B)$ |
| Conditional probability | $P(A \text{ and } B) = P(A) \times P(B \mid A)$ |
| Index number | $\frac{\text{value}}{\text{value in base year}} \times 100$ |
| Weighted index numbers | $\frac{\sum(\text{index number} \times \text{weight})}{\sum \text{weights}}$ |
| Chain base index number | $\frac{\text{value this year}}{\text{value last year}} \times 100$ |

| Key word | Definition |
|---|---|
| 1. Allegation | A claim made against someone, often without proof. Or a claim that someone has engaged in an unlawful act. |
| 2. Arbitration | A way of seeking to resolve a dispute without going to court: a third party (the arbitrator) looks at both sides of the dispute and makes a decision as to how it should be resolved. |
| 3. Assets | Things owned by a person or organisation which usually have some value. |
| 4. Associate | A person, usually employed by a law firm, who may be in charge of handling your case: often a lawyer, they are considered by the firm employing them to be a 'senior assistant'. |
| 5. Bankrupt | Bankrupt - the legal status of a person or organisation that is unable to repay debts owned to its creditors. |
| 6. Barrister | Barrister - a lawyer regulated by the Bar Standards Board, often specialising in court room representation, drafting pleadings and expert legal opinions. |
| 7. Beneficiary | Beneficiary - someone who is entitled to a benefit (eg under a will or trust). |
| 8. Bequest | A gift of money or personal property made in someone's will. |
| 9. Chambers | A collection of independent, self-employed barristers who share employed clerks to administer work, and who share the expense of such clerks, office buildings and brand name. |
| 10. Chattels | Personal belongings that can be moved from one place to another. |
| 11. Civil law | The area of law covering disputes you may have with a person or an organisation. |
| 12. Claimant | A person making a claim. |
| 14. Client | Someone who uses services provided by a lawyer or another legal professional. |
| 15. Cohabitation contracts | These set out, in advance, what each member of the relationship expects of the other, both during the relationship and if they separate or one of them dies. They are 'honourable agreements', which means that not all clauses may be enforced by the courts, but they do limit disagreements and certainly provide some peace of mind. |

| Key word | Definition |
|---|---|
| 16. Compensation | recompense for loss, injury, or suffering. |
| 17. Compromise agreements | In a workplace dispute, if you can reach an agreement with your employer without going to a tribunal, this can be recorded in a 'compromise agreement'. This is a legal document which confirms the terms of the settlement you have agreed, in exchange for which you give up your legal claim against your employer. You may be able to get your employer to make a contribution to your legal costs as part of the agreement. |
| 18. Counsel | A term used to describe a barrister. |
| 19. Creditor | A person or organisation to whom money is owed. |
| 20. Crown Prosecution Service (CPS) | The CPS is the organisation that prosecutes criminal cases investigated by the police in England and Wales. |
| 21. Crown prosecutor | A lawyer (generally a solicitor or a barrister) working for the Crown Prosecution Service. |
| 22. Crown courts | Crown courts deal with more serious cases. If you plead not guilty, your case will be heard in front of a judge and jury of 12 people, who will decide whether you are guilty or innocent, after they have heard all the evidence. |
| 23. Court of protection | when someone is mentally incapable of making a particular decision at a particular time, and they haven't made a lasting power of attorney, and the decision isn't one that can be made on an informal basis, the matter can be referred to the Court of Protection. The court may either choose to make the decision itself on the person's behalf, or choose someone else, known as a 'deputy', to make the decision for them. |
| 24. Culpable | At fault or guilty of something. |
| 25. Damages | An award, typically of money, paid to a person or organisation for loss or injury. |
| 26. Fraud | Intentional misrepresentation or concealment of an important fact upon which the victim is meant to rely, and in fact does rely, to the harm of the victim. |
| 27. Hearing (legal) | A legal proceeding where the facts of a particular issue are looked at, and evidence is presented to help decide what the outcome should be. |
| 28. Power of attorney | A legal way of giving someone else the power to manage your financial affairs when it is difficult for you to manage them yourself |

# Who's who in the courtroom

### Solicitor
The solicitor sits facing the barrister and instructs the barrister during the case. The solicitor works with the barrister and the client preparing the case and collecting the evidence. Like barristers, solicitors can argue the client's case in court, state the relevant law and examine witnesses.

### Registrar / Court Clerk
The registrar/court clerk sits in front of the judge and records any orders made by him/her. He/she assists the judge with administrative matters and is in charge of the court documents and exhibits. The registrar/court clerk also records the names of the witnesses, swears in the jury, administers the oath to witnesses and records the decision in the case.

### Judge
The judge is in charge of court proceedings and decides any legal issues arising in the case. If the case does not involve a jury, the judge also decides questions of fact, such as the guilt or innocence of the accused, or which party wins in a civil case.The judge wears a gown and sits at a bench above the other people in the court.

### Digital Audio Recording (DAR) box
Everything that is said in court during the case, including any evidence given by the witnesses, is recorded digitally.

### Jury
The jury sits together on one side of the courtroom where jurors have a clear view of the judge and any witnesses. A jury consists of twelve men and women randomly selected from the electoral register. Most people between 18 and 70 who are registered to vote are eligible for jury duty. The jury hears the evidence and decides on the guilt or innocence of the accused in a criminal case and which party wins in a civil case.

### Witness
The witness sits to one side of the judge and gives testimony in open court. Witnesses are called by either party to prove their side of the story and may be cross-examined by the opposing party as to the accuracy of their evidence.

### Judicial Assistant
The judicial assistant works with the judge. Among his/her duties is to undertake legal research for the judge and to announce the arrival and departure of the judge from the courtroom (usually by saying 'all rise').


### Barrister / Counsel
The barristers in the case are known as 'counsel'. They face the judge and any witnesses. The barrister's role is to argue his/her case, to state the relevant law and to examine any witness on the evidence which they give to the court. The solicitor hires the barrister, who traditionally has few direct dealings with the client before the case begins.
The barrister wears a gown.

### Members of Public
Anyone can watch any court case, except where there is a sign reading 'in camera' on the door of the courtroom. This means that the case will be heard in private and that members of the public who are not involved in the case are not allowed into the courtroom.
The 'in camera' rule is used to protect the privacy of the people in court mainly in family law matters and in some criminal cases (e.g. rape cases or cases before the juvenile courts).

An tSeirbhís Chúirteanna
Courts Service



**Note**
The above illustration represents a court hearing in a civil case. It is for explanatory purposes only and does not purport to represent every, or any particular, courtroom.

**Box 1.** **Business Research**

**Area of research: -** What is business research?

Businesses need to carry out research to find out information that will help them have a successful business.

They need to understand their **customers** and **competitors**. This will help you to decide about **current and potential demand**.

This would help them to increase sales by:

- understanding their customers
- producing a product or service the customer wants
- making sure there is a market to sell to
- knowing how much products or services to supply
- target their advertising
- identify new markets to sell

**Legal requirements:**

If you are setting up a new business, you must be sure that you are operating within the law.

- **Legal entity: -** New businesses must be registered according to UK law and the business structure you have chosen.
- **Tax and VAT: -** Businesses must pay tax and if applicable VAT. They must register with HMRC.
- **Health & Safety: -** There are many legal requirements in place to ensure that customers and employees are safe and are protected.
- **Business insurance: -** All businesses must have insurance to protect themselves and their customers.
- **Customer protection: -** Customers are protected by legislation to ensure the quality of goods and services they receive. Customers are also protected against purchasing fake items which may not meet UK safety standards.
- **Data protection: -** There is strict legislation in place to protect customers from misuse of their personal data. Businesses must ensure they have all the necessary protections in place or face a heavy fine.
- **Planning consents: -** Businesses that have premises and want to make alterations must make sure they meet all the planning and local authority regulations.

**Box 2.** **Resource Planning**

**Physical resources:**

1. **Premises -** When you start a new business the location of the business premises will be one of the first questions to answer.

**You will need to decide:**

- what is your budget for your premises
- an address to register your business
- where you wish to work
- whether to rent or buy a business premises
- how big the premises would be
- will you need staff/ customer parking
- does it need to be near public transport
- does it need to be near the customer base

**2. Fixtures and fittings -** Once you have decided upon your location, you need to think about the inside of the building.

**You will need to decide:**

- what is your budget on fixtures and fittings
- necessities to carry to business e.g. display cabinets, tables, chairs
- the image you want to present to customers
- legal requirements e.g. toilets
- colour schemes and branding

3. **Equipment -** What do you need to run your business? This will depend on if you are manufacturing a product, selling a product or providing a service.

**It could include:**

- Stock- products to sell
- Tills
- IT equipment including phones, computers, printers, laptops
- Production equipment e.g. machinery
- Sector specific equipment

**Box 3.**

**Physical resources: - How do we transport goods?**

**Road: -** cars, lorries, bikes, by foot
**Rail: -** trains, trams
**Air: -** planes, helicopters, drones
**Sea/water: -** boats (could include sea, river, canals)

**Raw Materials: - a raw material is the basic material used to make a good or product.**

If you are making a product you will need to consider the raw material you need, where they will come from and where you will source them from.
This may impact on the location of your business as you need to consider transport costs of the raw materials to the location where you will manufacture your goods/products.

**Technological resources**

**Choosing how to take payments: -** The UK is the third in the world of the countries embracing a 'cashless society'. **(https://www.telegraph.co.uk/money/future-of-money/10-cashless-countries-world-does-uk-rank/)**

Therefore, the ability to take card payments is crucial for any new business.

**The business needs to consider many issues:**

- How will it take payments - face to face or over the internet or telephone?
- How many people will take payments?
- How many sites will need to take payments?
- Where will sales take place, could payments be taken in customers homes?

1. **Card and NFC readers: -** NFC stands for **N**ear **F**ield **C**ommunication which is a set of communication devices, one which is usually portable. They are used to take card payments. NFC is used for contactless payments.

You may use this with your Smart phone to make contactless card payments or load your boarding pass for a air travel.

**2. Till: -** A physical device to record and store payments including cash.

**3. EPOS: -** Electronic Point Of Sale and is an electronic way customers can pay for goods or services .

**Box 4.** **Technological resources**

**Definitions:**

- **Digital manufacturing** is a method of production in which computer technology manufacturers produce with little or no involvement from people.
- **Digital communications systems** are, for example, the internet or smart phones
- **IT infrastructure** refers to the business entire collection of IT equipment including, for example, computers, hardware , software, phones and tills.

**IT infrastructure: -** This could be one of the most expensive investments in equipment some businesses will make. If a business gets it wrong then it could be very difficult to change or put right.

**It can include:**

- Hardware
- Software
- Telephone systems
- Electronic tills
- Cyber security
- Network
- Wi Fi
- Email communications
- Website

**Internal Growth:**

Definitions:

- **Diversification: -** Business enlarging or varying its range of products or services. For example, a restaurant adding take away service for its customers.
- **Geographical expansion: -** The process of a business enlarging or varying field of operation. For example, a restaurant opening a new restaurant in a different town.
- **Horizontal Growth: -** Horizontal growth means expanding in the same area you already provide services or products. This can include buying a similar business to reduce competition and gain/increase their customers.

It is a strategy used by many businesses to expand their size, market share and achieve economies of scale. An example of horizontal growth **is the purchase of Instagram by Facebook.**

**Box 5.** **Internal Growth continue ….**

➢ **Vertical Growth: -** Vertical growth means expanding in the production process. For example, Apple is an excellent example of vertical growth. They designed the products and them grew vertically to:

- Manufacture the goods
- Distribute the goods
- Sell the goods
- After sales services including insurance and
- repairs

**Why did they do this?**

It gave them control of the market minimize the competition and reduce costs as they control the cost of manufacturing and distributing themselves.

**External Growth: - Mergers and takeovers**

**A merger** is when two companies decide to join together, like for example when Halifax and Bank of Scotland combined to form HBOS.

Mergers are usually agreed by two businesses to their mutual advantage. The two businesses join to together make one new legal entity.

**Why do businesses do this?**

- To **reach new markets**. For example, a clothes firm who offer mid-range clothes may merge with a high end clothes business. They both benefit as they now have access to each other's customers.
- **Better services for customers**. For example, a bank may merge with an insurance company to offer the different range of services in one place which is more convenient to the customer and will make it more likely they will purchase the services.

**A takeover** is more hostile. This is when a company (usually a larger one) buys out a rival. Kraft Foods bought out Cadbury's in early 2010 for £12 billion. In the UK, the term refers to the acquisition of a public company whose shares are listed on a stock exchange, in contrast to the acquisition or merger of a private company.

Sometimes a business may not want to merge with another. However, another larger Public Limited Company (PLC) may then force a takeover situation.

This is usually done by acquiring shares in the smaller business until the larger company has control over the Board of Directors and can force the takeover.

**Box 6.** **External Growth continue….**

**Joint Ventures: - A joint venture** is when two or more businesses join together for a specific project or business activity.

Sometimes joint ventures create a new business (Ltd company or partnership) and in other cases they retain their individual status but create a joint venture agreement (or contract).

Joint ventures are often created for single purpose like production or research.

**Benefits** of a joint venture:

- Access to new markets or distribution networks
- Combined resources and expertise
- Increased capacity
- Sharing of risks and costs
- Access to greater resources like staff technology or finance

Joint ventures are very popular within businesses operating in different countries like travel or transport industries.

**Methods of recruitment:**

| Internal vacancies | External vacancies |
|---|---|
| • transfers | • headhunting |
| • notice board | • newspapers |
| • newsletter | • trade journals |
| • website | • careers fairs |
| • intranet | • shop windows |
| | • recruitment agencies |
| | • web based |

Internal Recruitment Methods

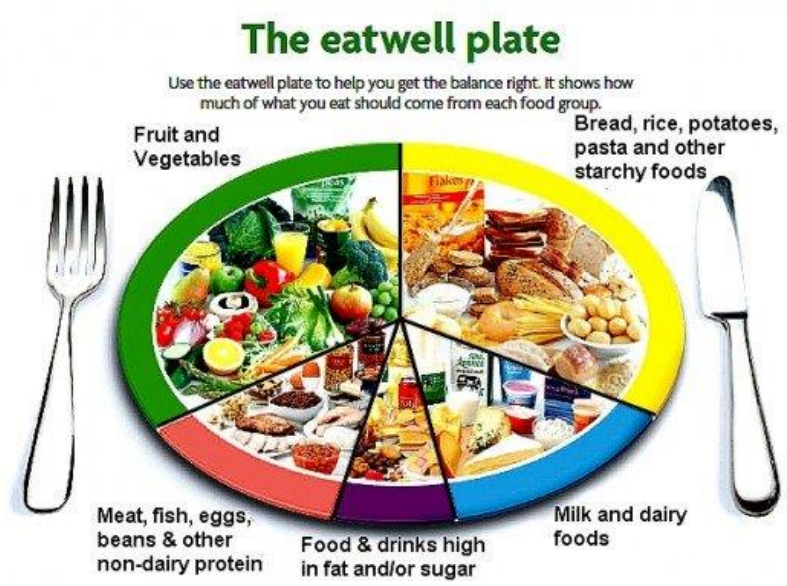
**Internal vacancies**

- **Transfers** – a member of existing staff could be 'transferred' to another office, department or location where there is a vacancy
- **Notice board** – this can be displayed within the building so staff can see what jobs are available in the company
- **Newsletter** - this can be circulated to all staff. It can be used to keep up to date with current vacancies within the company.
- **Website** – jobs can be advertised on the company website so staff can see internal vacancies
- **Intranet** – this is a restricted website which only staff can access. It could be used to display internal staff vacancies.

| Key term | Definition |
|---|---|
| **1. body mass index (or BMI)** | a weight-to-height ratio that shows if you're overweight, underweight or at a healthy weight |
| **2. calorie** | a unit for measuring the amount of energy we get from food |
| **3. carbohydrate** | a substance in foods such as bread and potatoes that is a major source of energy or calories |
| **4. cholesterol** | a substance in body cells that can cause heart disease if levels in the blood are too high |
| **5. diabetes** | a serious illness in which your body cannot regulate the amount of sugar in the blood |
| **6. malnutrition** | a condition of weakness or illness caused by eating too much food, not enough food or unhealthy food |
| **7. nutrient** | a substance in food that is necessary for good health |
| **8. obesity** | the state of being very overweight, or the medical condition related to this |
| **9. pescetarian** | (of a diet) including vegetarian food and fish, but no other meat |
| **10. vegan** | (of a diet) with plant foods only; without animal products, including meat, fish, seafood, eggs, milk, cheese, etc |
| **11. vegetarian** | (of a diet) with plant foods and sometimes dairy products, but without meat, fish, or seafood |
| **12. preservative** | a chemical substance used for preventing food from spoiling or wood from decaying |
| **13. process** | to add chemicals or other substances to food to make it last longer or look or taste better |
| **14. saturated fat** | a type of fat that's found in butter, cheese, red meat, etc. |

8 Tips For Healthy Eating

1. **Base your meals on higher fibre starchy carbohydrates**
2. **Eat lots of fruit and veg**
3. **Eat more fish, including a portion of oily fish**
4. **Cut down on saturated fat and sugar**
5. **Eat less salt: no more than 6g a day for children 11+**
6. **Get active and be a healthy weight**
7. **Do not get thirsty**
8. **Do not skip breakfast**




| | |
|---|---|
| **15. trans fat (or trans fatty acid)** | an artificial fat that makes food last longer and taste better but is very bad for health |

| Fitness<br>Key term | Definition |
|---|---|
| **1. Aerobic fitness** | A measure of how well your blood transports oxygen around the body, and how well your muscles utilize the oxygen. |
| **2. Aerobic** | Meaning with oxygen. Aerobic training is at a lower intensity, with the purpose of stimulating aerobic metabolism to improve. |
| **3. Anaerobic** | Anaerobic processes occur in the cells of the body without the presence of oxygen. Anaerobic training is of high intensity and short duration, with the aim of the efficiency of the body's anaerobic energy-producing systems. |
| **4. Body composition** | Body composition refers to the components of the body. It is usually divided into two components: the amount of fat mass (weight) and the amount of fat-free mass (muscle, bone, skin and organs) in the body. |
| **5. Cardiovascular** | Concerning the heart and blood vessels. |
| **6. Endurance** | The body's ability to exercise with minimal fatigue. Often used with other terms such as; endurance training, muscular endurance and cardiorespiratory endurance. |
| **7. Glycogen** | The form in which carbohydrates are stored in the body. Primary sites for storage are the muscles and the liver. |
| **8. obesity** | the state of being very overweight, or the medical condition related to this |
| **9. Interval training** | A training session that involves repeated bouts of exercise, separated by rest intervals. Depending of the length of exercise and rest periods, it may be anaerobic or aerobic training. |
| **10. Lactic acid** | Anaerobic exercise produces lactic acid, which quickly forms lactate in the muscles. because of this, the terms "lactate" and "lactic acid" are often used interchangeably. |
| **11. Resistance training** | Training designed to increase the body's strength, power, and muscular endurance through resistance exercise. The most common form of which is weight training. |

**How much physical activity should children and young people aged 5 to 18 do to keep healthy?**

Children and young people need to do **2 types of physical activity** each week:

- aerobic exercise
- exercises to strengthen their muscles and bones

Children and young people aged 5 to 18 should:

1. aim for an average of at least 60 minutes of moderate intensity physical activity a day across the week

2. take part in a variety of types and intensities of physical activity across the week to develop movement skills, muscles and bones

3. reduce the time spent sitting or lying down and break up long periods of not moving with some activity. Aim to spread activity throughout the day. All activities should make you breathe faster and feel warmer