Knowledge Bank

Spring Term 2026

Year 10

THINKING SCHOOLS ACADEMY TRUST

PAIGNTON ACADEMY

Name: _____ **Form:** _____

CONTENTS

How to use your Knowledge Organiser for Home Learning

- Knowledge Banks contain core knowledge that you must know
- It will help you retrieve what you learn in lessons so that you remember it in the long term
- You will use your Knowledge Bank to aid your home learning

For homework:

- You will need to create a home learning timetable so you can organise which subject you do on which days
- You will be asked to use a specific section of your Knowledge Bank to aid home learning
- Your home learning will involve retrieval (prior learning) and flipped learning (research-based task for topics not yet learnt)
- The length of home learning will be different depending on your subject, this information is in a different document
- You must write the subject and date in your homework book - if using
- You need to underline the subject and title as per lessons
- There will be rewards for excellent work and sanctions for work not complete
- your home learning will be set every Monday on ClassCharts
- Your homework will be set **every Monday** on Class Charts
- Completing your home learning is **YOUR** responsibility

English

The Knowledge: A Christmas Carol, by Charles Dickens

Scrooge

1. Scrooge begins the novel as 'hard and sharp as flint, 'as solitary as an Oyster, and ends 'as merry as a school-boy'.
2. Scrooge's reply to Merry Christmas is 'Bah! Humbug!' and when told about the poor, Scrooge asks 'are there no prisons?'
3. Scrooge is visited by the ghost of Jacob Marley covered in chains. Marley warns Scrooge that he also has a 'ponderous chain'
4. Marley warns Scrooge that 'You will be haunted'…'by Three Spirits.'
5. The first ghost, the Ghost of Christmas past, shows Scrooge as 'a lonely boy…reading near a feeble fire'
6. Scrooge sees his old boss Fezziwig, who spoke in a 'comfortable, oily, rich, fat, jovial voice' & Belle, displaced by a 'golden' idol.
7. The Ghost of Christmas Present shows Scrooge Bob Cratchit, who calls Scrooge the 'founder of the feast' and Fred, who says that Scrooge's 'offences carry their own punishment'.
8. The Ghost of Christmas Future shows people arguing about 'a wicked old screw' and the possessions stolen from his death-bed
9. After seeing his own grave Scrooge repents, saying he will 'honour Christmas in my heart, and try to keep it all the year.'
10. 'Scrooge was better than his word. He did it all, and infinitely more; and to Tiny Tim, who did not die, he was a second father.'

Cold	Ruthless	Callous	Remorseful	Joyful
Miserly	Isolated	Redeemable	Reformed	Generous

The Cratchits

1. Scrooge treats his clerk Bob Cratchit poorly; the office is a 'dismal little cell' with a fire that 'looked like one coal'
2. When Bob asks Scrooge for the day off for Christmas, Scrooge says it is 'picking a man's pocket every twenty-fifth of December!'
3. Mrs Cratchit, Cratchit's wife, is 'dressed out but poorly in a twice-turned gown, but brave in ribbons'
4. Tiny Tim, the youngest Cratchit, suffers with ill health but is still 'as good as gold' and says 'God bless us everyone!'
5. None of the Cratchits remark on the small size of their Christmas dinner or Pudding, 'It would have been flat heresy to do so.'
6. The Cratchits make a proud display of what little they have; 'Two tumblers, and a custard-cup without a handle'
7. Mrs. Cratchit does not share in Bob's praise of Scrooge, calling him a 'stingy, hard, unfeeling man'
8. The Ghost of Christmas Present warns of Tiny Tim that 'If these shadows remain unaltered by the Future, the child will die.'
9. The Ghost of Christmas Future shows the consequences of this, as 'the noisy little Cratchits were as still as statues'
10. Scrooge ends up saving the Cratchits as he tells Bob 'I'll raise your salary, and endeavour to assist your struggling family'

English

Working class	Dignified	Thoughtful	Humble	Determined
Loyal	Loving	Optimistic	Dedicated	United

The Ghosts

1. Marley's ghost explains 'I wear the chain I forged in life...The chain was made up of cash boxes...ledgers...heavy purses'
2. Scrooge looks out of his window & sees 'the air was filled with phantoms'
3. The Ghost of Christmas Past is 'like a child: yet not so like a child as like an old man' and from 'crown of its head there sprung a bright clear jet of light'
4. The Ghost of Christmas Past asks Scrooge to 'Bear but a touch of my hand'
5. The Ghost of Christmas Present is 'a jolly Giant, glorious to see:, who bore a glowing torch'
6. The Ghost of Christmas Present explains the 'yellow, meagre, ragged, scowling, wolfish' figures of Ignorance and Want.
7. The Ghost of Christmas Future is a 'Phantom' who 'slowly, gravely, silently approached'
8. The Ghost will is not troubled by Scrooge's outbursts; 'The Spirit was immovable as ever.'

Supernatural	Prophetic	Apparition	Powerful	Truthful
Superstition	Moral	Unsettling	Symbolic	Revelatory

English

A Christmas Carol Charles Dickens - 1843

We are introduce to the cold-hearted Scrooge who is uncharitable and cruel. He is in his counting house when Fred and charity workers appear he treats them appallingly. At home, the ghost of Jacob Marley appears to him to warn him he must change.

The Ghost of Christmas Past appears. We see that Scrooge was neglected as a child at boarding school. We see his kind-hearted boss, Fezziwig. We also see how his relationship with his fiancée, Belle ended.

The Ghost of Christmas Present appears and shows Scrooge how other people celebrate Christmas. We see the poverty-stricken Cratchit family and how happy they are.

We meet the Ghost of Christmas Yet to Come and see how Scrooge fears it. The ghost shows him reactions to his death. We see how the Cratchit's mourn the death of Tiny Tim. Scrooge is shown his own grave and begs for forgiveness.

Scrooge wakes in his bed on Christmas Day. He is elated and sends a boy to buy a prize turkey for the Cratchit family. He walks about London, donates a large amount to charity, goes to church and visits his nephew, Fred. He is changed redemption.


Scrooge


Bob Cratchit


Fred


Jacob Marley


Ghost of Christmas Past


Ghost of Christmas Present


Ghost of Christmas Yet to Come

You can access good marks with a really solid knowledge of the plot, the characters and how the characters are presented

English

Christianity had a strong influence on many areas of Victorian life. People followed a strict moral code. Dickens view of Christianity was different he believed that to be a good Christian, people should seek out opportunities to do good deeds for other people. At the start of the 19th century, Christmas was hardly celebrated at all; but the end of it, it was widely celebrated. Many traditions became important.

Dickens family was middle-class, but he knew what it was like to be poor. When he was twelve, his father was imprisoned for debt. The young Charles was forced to take work in a factory to help support his family. Dickens experience of poverty made him critical of the way Victorian society treated its poorest members

Living conditions were awful; many people had moved from the countryside to the cities in search of factory work. As a result, the population of cities grew rapidly. Most migrants ended up living in slums where there were not proper sewage systems. There was much hunger, disease, and crime. Dickens believed that education was the solution to poverty: he supported the Ragged Schools which provided education to the poorest in society.

Malthus believed that poverty was inevitable. He thought that human population would always exceed food supply. Dickens disagreed with Malthus, claiming that there would be plenty to go around if the rich were more generous. He thought it was wrong that the rich were too selfish to share their wealth.

The Exam Responding to the Question

This question is worth 30 marks you should spend around 45 minutes writing.
You will be given an extract from the novel and a question to answer ensure that you cover BOTH bullet points in your response.

Give an of the character or theme that the question is asking about. Explain why created this character/theme/novella by considering what we are meant to

Reiterate your points, using from the question. Briefly what we from the use of this character/theme/event.

- Know the text really well
- Know the themes and their significance
- Memorise key moments/quotations that link to themes
- Create mind-maps for each character with key information, key quotes and the themes they relate to
- Revise context and Dickens' intentions
- Practice answering exam style questions

English

Power and Conflict Poems: : Prelude, Storm on the Island, Ozymandias, My Last Duchess, London

Extract from the Prelude William Wordsworth 	The poem is autobiographical, it describes how Wordsworth went out in a boat on a lake. He was alone and a mountain peak loomed over him. Its presence had a great effect on him and for days afterwards, he was troubled by the experience. The poem shows his spiritual growth, how he comes to terms with who he is, his place in nature and the world. Wordsworth was a Romantic poet, he believed we could learn from the natural world and that nature is more powerful than man.	One Summer evening (led by her) small circles glittering idly… until they melted all into one track/of sparkling light' went heaving through the water like a swan a huge peak, black and huge' And growing still in stature the grim shape/Towered up between me and the stars' But huge and mighty forms, that do not live/Like living men, moved slowly through the mind'
Storm on the Island Seamus Heaney 	Heaney was born in Northern Ireland to a farming family- much of his poetry is centred on the countryside and farm life that he knew as a child. In the late 60s, right up until the 90s, there was conflict in Northern Ireland between the Unionists (a group who wanted to remain in UK) and the Nationalists (a group who wanted to keep Ireland separate). This poem considers the power of nature.	'The wizened earth had never troubled us' 'build our houses squat, Sink walls in rock and roof them' 'Exploding comfortably' 'salvo'/'strafe'/ 'bombarded' 'The very windows, spits like a tame cat Turned savage' 'Strange, it is a huge nothing that we fear'
Ozymandias Percy Bysshe Shelley 	The poem is based on the real life pharaoh Ramesses II, who ruled from his teens until his nineties. He was obsessed with building statues, monuments and cities to show his great power. The British Museum was acquiring parts of these when Shelley was inspired to write the poem. Shelley uses the poem to teach a moral message about how tyranny and human power is short lasting in comparison to art and nature. Shelley was a Romantic poet, because of this he was interested in emotion and the power of nature. He disliked the concept of a monarchy and the oppression of ordinary people.	Two vast and trunkless legs of stone/Stand in the desert' sneer of cold command' king of kings' Look on my works, ye Mighty and despair!' colossal wreck' The lone and level sands stretch far away'
My Last Duchess Robert Browning 	Browning was heavily influenced as a youngster by his father's extensive collection of books and art. This poem reflects Browning's love of history and European culture as the story is based on real historical figures. The narrator is Duke Alfonso II who ruled in Ferrara between 1559 and 1597. The Duchess of whom he speaks was his first wife, Lucrezia de' Medici, who died aged 17 in suspicious circumstances and might have been poisoned.	'Looking as if she were alive' 'The depth and passion of its earnest glance' 'spot of joy' 'A heart—how shall I say?— too soon made glad' 'My gift of a nine-hundred- years-old name' 'stooping'/'stoop' 'I gave commands; Then all smiles stopped together' 'Notice Neptune, though, Taming a sea-horse'
London William Blake 	Blake was a Romantic, his beliefs were in opposition to the changes happening in Britain. He opposed the Industrial Revolution and believed in the rights and freedom of individual people. The poems describes a walk through the city of London: all he sees is misery and despair. He was concerned with the treatment of the lower classes, especially children, he felt they were robbed of their childhood through child labour. People in power (the Church, the monarchy and the wealthy landowners) seem to be the cause of the problem but they do nothing to help.	chartered' Marks of weakness, marks of woe' mind-forged manacles' How the chimney-sweeper's cry' Every black'ning church appals' How the youthful harlot's curse' Blasts the new-born infant s tear'

Key themes and Ideas: Power of nature/place/ people/ humanity v nature Comparative Words & Phrases: similarly, likewise, also : On the other hand, however

Maths

Foundation

Spring

Number **Non-calculator methods**		Algebra **Straight line graphs**		Probability **Probability**		Number **Rounding and estimation**		Geometry and measures **Perimeter, area and volume**		Statistics **Interpret and represent data**		Algebra **Non-linear graphs**	
Using number lines	U922	Rounding integers	U480	Plotting graphs of quadratic functions	U989	Interpreting scatter graphs	U277						
Understanding and ordering integers	U600	Rounding decimals	U298	Interpreting graphs of quadratic functions	U667	Using lines of best fit	U128						
Understanding and ordering decimals	U435	Rounding integers using significant fig	U731	Sketching quadratic graphs	U310	Using probability phrases	U803						
Adding and subtracting integers	U417	Rounding decimals using significant fi	U965	Graphs of cubic functions	U980	Writing probabilities as fractions	U408						
Adding and subtracting decimals	U478	Estimating calculations	U225	Graphs of reciprocal functions	U593	Writing probabilities as FDP	U510						
Multiplying and dividing with place value	U735	Finding error intervals	U657	Finding the area of compound shapes	U970	Probabilities of mutually exclusive events	U683						
Using a written method to multiply integers	U127	Truncating decimals	U108	Finding the perimeter of compound shapes	U351	Expected results from repeated experime	U166						
Using a written method to multiply decimals	U293	Finding error intervals for truncated n	U301	Problem solving: Area and perimeter of compound	U226	Sample space diagrams	U104						
Using a written method to divide integers	U453	Reading and plotting coordinates	U789	Finding the area of triangles	U945	Venn diagrams	U476						
Using a written method to divide with decimal	U868	Calculating midpoints	U933	Finding the area of compound shapes containing tri	U575	Venn diagrams with set notation	U748						
Ordering negative numbers	U947	Solving shape problems involving coo	U889	Finding the area of parallelograms	U424	Using set notation	U296						
Adding and subtracting with negative numbers	U742	Plotting straight line graphs	U741	Finding the area of trapeziums	U265	Frequency trees	U280						
Multiplying and dividing with negative number	U548	Finding equations of straight line grap	U315	Problem solving: Area of triangles, parallelograms a	U343	Tree diagrams for independent events	U558						
Using the correct order of operations	U976	Interpreting equations of straight line	U669	Nets of 3D shapes	U761	Tree diagrams for dependent events	U729						
Using a calculator	U926	Finding the equation of a straight line	U477	Finding the surface area of cubes and cuboids	U929	Calculating experimental probabilities	U580						
Index rules with positive indices	U235	Finding the equation of a straight line	U848	Finding the surface area of prisms	U259	Identifying parts of circles	U767						
Index rules with negative indices	U694	Equations of parallel lines	U377	Finding the surface area of pyramids	U871	Finding the circumference of circles	U604						
Interpreting frequency tables and two-way tab	U981	Finding the volume of cubes and cubc	U786	Finding the surface area of cylinders	U464	Finding the area of circles	U950						
Interpreting frequency tables with grouped da	U312	Finding the volume of prisms	U174	Finding the surface area of cones	U523	Finding the arc length of sectors	U221						
Plotting scatter graphs	U199	Finding the volume of pyramids	U484	Finding the surface area of spheres	U893	Finding the area of sectors	U373						

Due Date	16th Jan	23rd Jan	30th Jan	6th Feb	13th Feb	27th Feb	6th Mar	13th Mar	27th Mar	3rd Apr	24th Apr
Complete	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Maths

Higher

Spring							
Number Non-calculator methods	Algebra **Straight line graphs**	Probability **Probability**	Number Rounding and estimation	Geometry and measures **Perimeter, area and volume**	Statistics **Interpret and represent data**	Algebra **Non-linear graphs**	

Using the correct order of operations	U976	Using probability phrases	U803	Rounding integers using significant figures	U731	Finding the surface area of prisms	U259
Converting fractions to recurring decimals	U550	Writing probabilities as fractions	U408	Rounding decimals using significant figures	U965	Finding the surface area of cylinders	U464
Converting recurring decimals to fractions	U689	Writing probabilities as fractions, deci	U510	Estimating calculations	U225	Finding averages from frequency tables	U569
Plotting straight line graphs	U741	Probabilities of mutually exclusive ev	U683	Finding error intervals	U657	Finding averages from grouped data	U877
Finding equations of straight line graphs	U315	Expected results from repeated expe	U166	Finding bounds for calculations	U587	Interpreting frequency tables with groupe	U312
Interpreting equations of straight line graphs	U669	Sample space diagrams	U104	Finding error intervals for truncated numbers	U301	Sampling and bias	U162
Finding the equation of a straight line from its g	U477	Venn diagrams	U476	Finding the area of compound shapes	U970	Capture-recapture	U328
Finding the equation of a straight line from two	U848	Venn diagrams with set notation	U748	Finding the perimeter of compound shapes	U351	Types of data	U322
Equations of parallel lines	U377	Using set notation	U296	Problem solving: Area and perimeter of rectangles a	U934	Interpreting scatter graphs	U277
Equations of parallel and perpendicular lines	U898	Frequency trees	U280	Finding the circumference of circles	U604	Sketching quadratic graphs	U310
Plotting linear real-life graphs	U652	Tree diagrams for independent event	U558	Finding the area of circles	U950	Finding the turning point of a quadratic gra	U769
Using and finding equations of linear real-life g	U862	Tree diagrams for dependent events	U729	Finding the arc length of sectors	U221	Graphs of cubic functions	U980
Sketch graphs of water flows	U896	Calculating experimental probabilities	U580	Finding the area of sectors	U373	Estimating gradients of non-linear graphs	U800
Interpreting quadratic real-life graphs	U681	Conditional probabilities from tree dia	U806	Nets of 3D shapes	U761	Estimating areas under non-linear graphs	U882
Drawing histograms with equal class widths	U185	Drawing cumulative frequency graphs	U182	Comparing populations using box plots and cumulat	U507	Equations of circles and tangents	U567
Drawing histograms with unequal class widths	U814	Interpreting cumulative frequency gra	U642	Using the product rule for counting	U369	Using the conditional probability formula	U821
Interpreting histograms	U983	Drawing box plots	U879	Conditional probabilities from tables	U246	Conditional probabilities from tree diagram	U806
Calculating averages from histograms	U267	Interpreting box plots	U837	Conditional probabilities from Venn diagrams	U699		

Due Date	16th Jan	23rd Jan	30th Jan	6th Feb	13th Feb	27th Feb	6th Mar	13th Mar	27th Mar	3rd Apr	24th Apr
Complete	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Maths

Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium $= \frac{1}{2}(a + b)h$

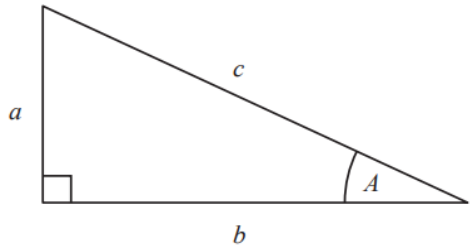
Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle $= 2\pi r = \pi d$

Area of a circle $= \pi r^2$

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

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

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued $= P\left(1 + \frac{r}{100}\right)^n$

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

P (A or B) = P (A) + P (B) – P (A and B)

Higher Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

Area of a trapezium $= \frac{1}{2}(a + b)h$

Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle $= 2\pi r = \pi d$

Area of a circle $= \pi r^2$

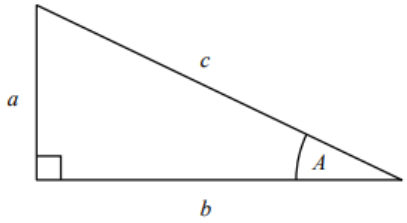
Quadratic formula

The solution of $ax^2 + bx + c = 0$

where $a \neq 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

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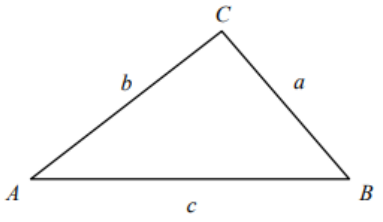


In any triangle ABC where a, b and c are the length of the sides:

sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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

Area of triangle $= \frac{1}{2} a b \sin C$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued $= P\left(1 + \frac{r}{100}\right)^n$

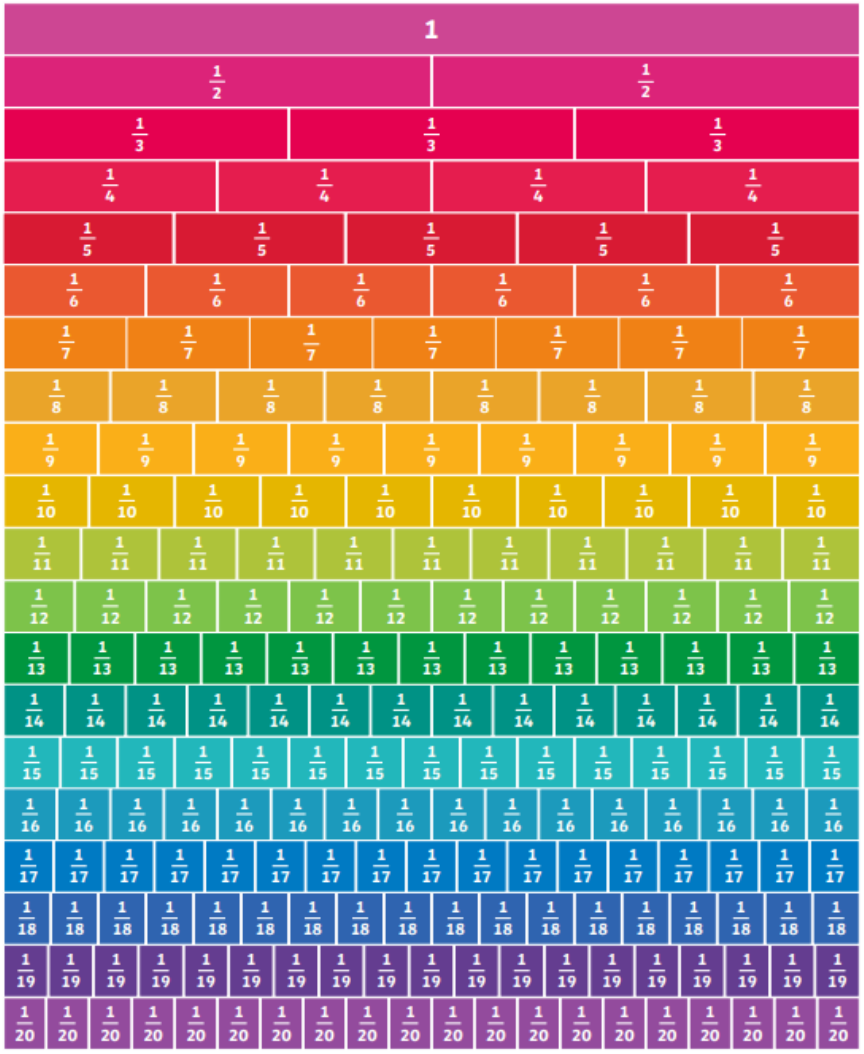
Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

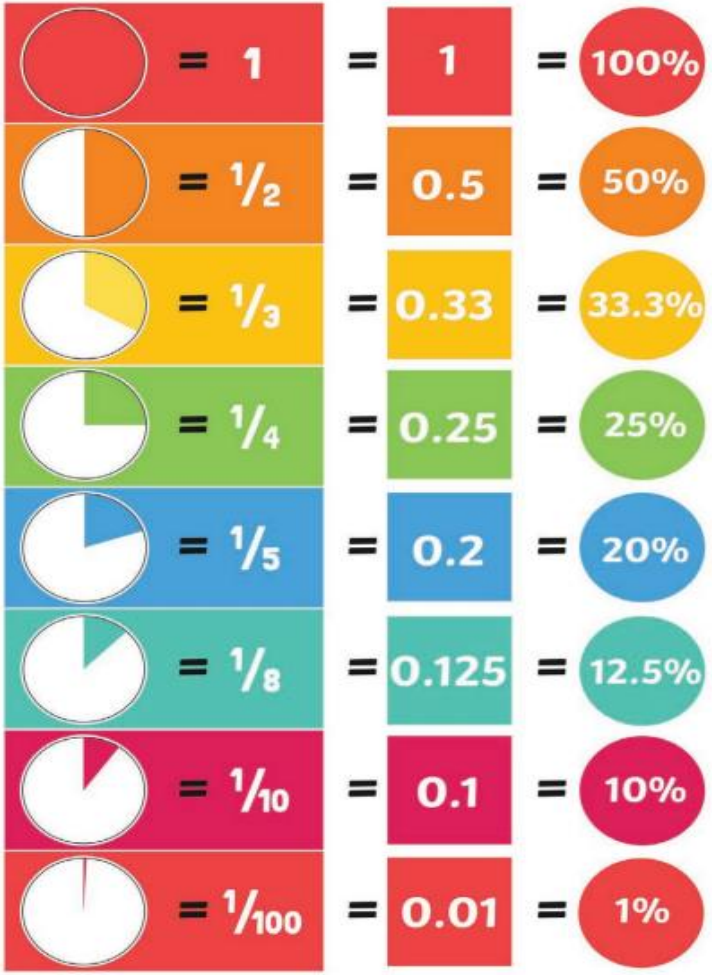
P (A or B) = P (A) + P (B) – P (A and B)

P (A and B) = P (A given B) P(B)

Fractions Wall



Fractions, Decimals and Percentages



Maths

Multiplication Tables

Table 1

1	x	0	= 0
1	x	1	= 1
1	x	2	= 2
1	x	3	= 3
1	x	4	= 4
1	x	5	= 5
1	x	6	= 6
1	x	7	= 7
1	x	8	= 8
1	x	9	= 9
1	x	10	= 10
1	x	11	= 11
1	x	12	= 12

Table 2

2	x	0	= 0
2	x	1	= 2
2	x	2	= 4
2	x	3	= 6
2	x	4	= 8
2	x	5	= 10
2	x	6	= 12
2	x	7	= 14
2	x	8	= 16
2	x	9	= 18
2	x	10	= 20
2	x	11	= 22
2	x	12	= 24

Table 3

3	x	0	= 0
3	x	1	= 3
3	x	2	= 6
3	x	3	= 9
3	x	4	= 12
3	x	5	= 15
3	x	6	= 18
3	x	7	= 21
3	x	8	= 24
3	x	9	= 27
3	x	10	= 30
3	x	11	= 33
3	x	12	= 36

Table 4

4	x	0	= 0
4	x	1	= 4
4	x	2	= 8
4	x	3	= 12
4	x	4	= 16
4	x	5	= 20
4	x	6	= 24
4	x	7	= 28
4	x	8	= 32
4	x	9	= 36
4	x	10	= 40
4	x	11	= 44
4	x	12	= 48

Table 5

5	x	0	= 0
5	x	1	= 5
5	x	2	= 10
5	x	3	= 15
5	x	4	= 20
5	x	5	= 25
5	x	6	= 30
5	x	7	= 35
5	x	8	= 40
5	x	9	= 45
5	x	10	= 50
5	x	11	= 55
5	x	12	= 60

Table 6

6	x	0	= 0
6	x	1	= 6
6	x	2	= 12
6	x	3	= 18
6	x	4	= 24
6	x	5	= 30
6	x	6	= 36
6	x	7	= 42
6	x	8	= 48
6	x	9	= 54
6	x	10	= 60
6	x	11	= 66
6	x	12	= 72

Table 7

7	x	0	= 0
7	x	1	= 7
7	x	2	= 14
7	x	3	= 21
7	x	4	= 28
7	x	5	= 35
7	x	6	= 42
7	x	7	= 49
7	x	8	= 56
7	x	9	= 63
7	x	10	= 70
7	x	11	= 77
7	x	12	= 84

Table 8

8	x	0	= 0
8	x	1	= 8
8	x	2	= 16
8	x	3	= 24
8	x	4	= 32
8	x	5	= 40
8	x	6	= 48
8	x	7	= 56
8	x	8	= 64
8	x	9	= 72
8	x	10	= 80
8	x	11	= 88
8	x	12	= 96

Table 9

9	x	0	= 0
9	x	1	= 9
9	x	2	= 18
9	x	3	= 27
9	x	4	= 36
9	x	5	= 45
9	x	6	= 54
9	x	7	= 63
9	x	8	= 72
9	x	9	= 81
9	x	10	= 90
9	x	11	= 99
9	x	12	= 108

Table 10

10	x	0	= 0
10	x	1	= 10
10	x	2	= 20
10	x	3	= 30
10	x	4	= 40
10	x	5	= 50
10	x	6	= 60
10	x	7	= 70
10	x	8	= 80
10	x	9	= 90
10	x	10	= 100
10	x	11	= 110
10	x	12	= 120

Table 11

11	x	0	= 0
11	x	1	= 11
11	x	2	= 22
11	x	3	= 33
11	x	4	= 44
11	x	5	= 55
11	x	6	= 66
11	x	7	= 77
11	x	8	= 88
11	x	9	= 99
11	x	10	= 110
11	x	11	= 121
11	x	12	= 132

Table 12

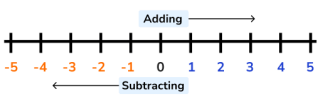
12	x	0	= 0
12	x	1	= 12
12	x	2	= 24
12	x	3	= 36
12	x	4	= 48
12	x	5	= 60
12	x	6	= 72
12	x	7	= 84
12	x	8	= 96
12	x	9	= 108
12	x	10	= 120
12	x	11	= 132
12	x	12	= 144

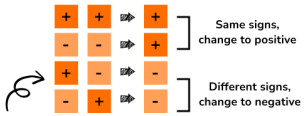
Adding and Subtracting Negative Numbers

Adding and subtracting negative numbers makes use of the number line:

If you are adding, move to the right of the number line.

If you are subtracting, move to the left of the number line





When you have two signs next to each other:

If the signs are the same, replace them with a positive sign.

If the signs are different, replace them with a negative sign.

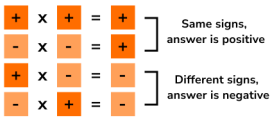
Multiplying and Dividing Negative Numbers

Multiplying and dividing negative numbers requires us to remember:

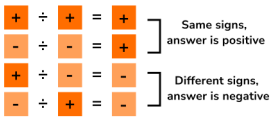
If the signs are the same, the answer is positive.

If the signs are different, the answer is negative.

When multiplying negative numbers:



When dividing negative numbers:



Decimal Place Value Chart

Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones •	tenths	hundredths	thousandths	ten thousandths	hundred thousandths	millionths
M	HTh	TTh	Th	H	T	O •	t	h	th	tth	hth	m
						•						
						•						

Square Numbers

$1^2 = 1 \times 1 = 1$

$2^2 = 2 \times 2 = 4$

$3^2 = 3 \times 3 = 9$

$4^2 = 4 \times 4 = 16$

$5^2 = 5 \times 5 = 25$

$6^2 = 6 \times 6 = 36$

$7^2 = 7 \times 7 = 49$

$8^2 = 8 \times 8 = 64$

$9^2 = 9 \times 9 = 81$

$10^2 = 10 \times 10 = 100$

$11^2 = 11 \times 11 = 121$

$12^2 = 12 \times 12 = 144$

$13^2 = 13 \times 13 = 169$

$14^2 = 14 \times 14 = 196$

$15^2 = 15 \times 15 = 225$

Cube Numbers

$1^3 = 1 \times 1 \times 1 = 1$

$2^3 = 2 \times 2 \times 2 = 8$

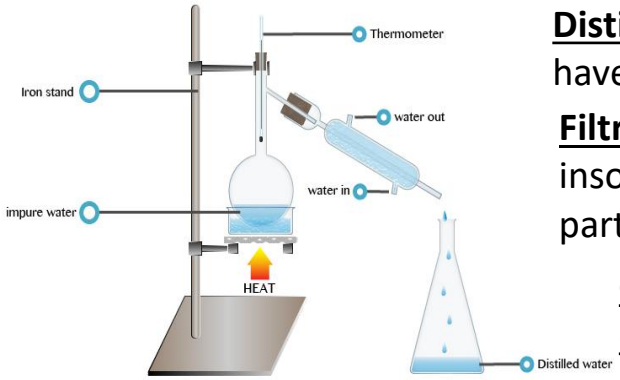
$3^3 = 3 \times 3 \times 3 = 27$

$4^3 = 4 \times 4 \times 4 = 64$

$5^3 = 5 \times 5 \times 5 = 125$

$10^3 = 10 \times 10 \times 10 = 1{,}000$

Year 10 - Science Knowledge Bank - Spring Term (Chemistry)

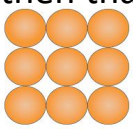


Distillation – Used to separate liquids that have different boiling points.

Filtration - used to separate particles of insoluble solids from a solvent (liquid). The particles get stuck in the filter paper.

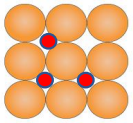
Crystalisation – Used to produce solid crystals from a solution. When the solution is warmed, the solvent evaporates leaving behind a more **concentrated solution**

Pure and Impure Substances – Something 'pure' as a chemical that is natural. This is a substance that is made up on one type of atom. If there is more than one type of atom, then that substance is called 'impure'.

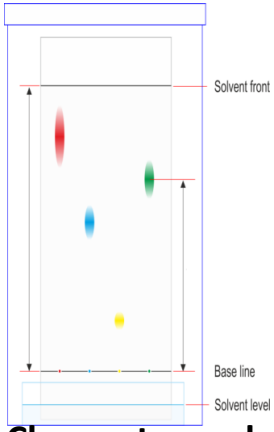


This particle diagrams shows a pure substance.

This particle diagram shows an impure substance.



Substances can be tested to find out if they are pure. You can test melting points, boiling points or density. The more impurities that are added to the substance, the more the above will change.



Chromatography – A separation technique used to separate mixtures of soluble substances.
Relies on two phases
Mobile phase – solvent in the liquid phase
Stationary phase – the chromatography paper which is absorbent

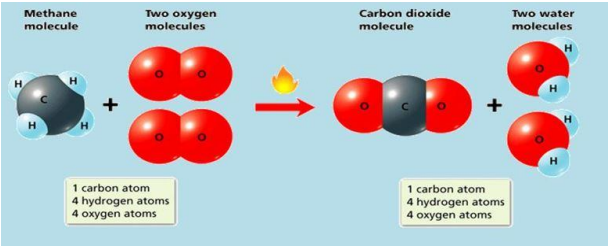
Chromatography – Rf Values

Rf = Distance Travelled by Substance
Distance Travelled by Solvent

Remember there is no units for Rf, and the figure you calculate should not be over 1.

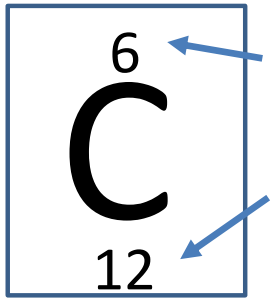
Conservation of mass

Law of conservation of mass - No atoms are lost or made in a chemical reaction. Instead , the atoms join together in different ways for form products, this is why, in a balanced symbol equation , the number of atoms of each element is the same on both sides.



Year 10 - Science Knowledge Bank - Spring Term (Chemistry)

Relative formula mass (RFM)

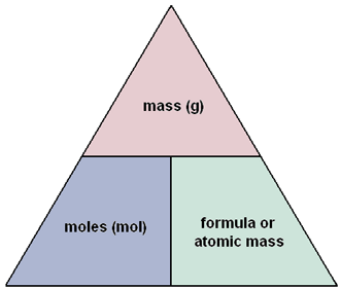


This is the atomic number (number of protons)

This is the atomic mass (number of protons and neutrons)

The relative formula mass is the **total mass of the all the atoms in a molecule**.

Avagadros constant and the mole - The number of units ir one mole of any substance is called Avogadro's number or Avogadro's constant. It is equal to **6.02×10^{23}**



Mole Calculations

There is a relationship between the **relative formula mass** (M_r), and the **mass** of one **mole** of a substance:

The mass of 1 mol of a substance is its *RFM* in grams (g).

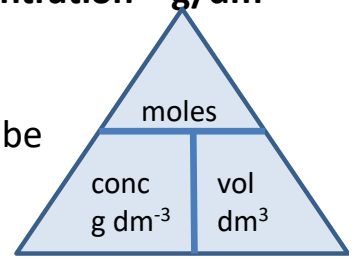
Moles and Concentration

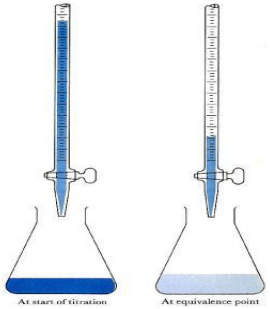
Concentration

"The relative amount of a particular substance contained within a solution or mixture or in a particular volume of space."

Concentration = $\frac{\text{Mass of solute}}{\text{Mass of solvent}}$ **Concentration = g/dm³**

Concentration in moles/dm³ (molarity, M) can be calculated using the following triangle:





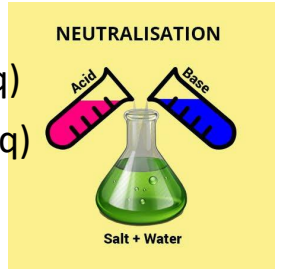
Titration

A titration is a laboratory technique used to determine the concentration of a solution by gradually adding a known concentration of another solution until a reaction is complete. You calculate concentration using the equations above.

Neutralisation

H+ ions formed when acids dissolved in water (aq)

OH- ions formed when alkali dissolved in water (aq)



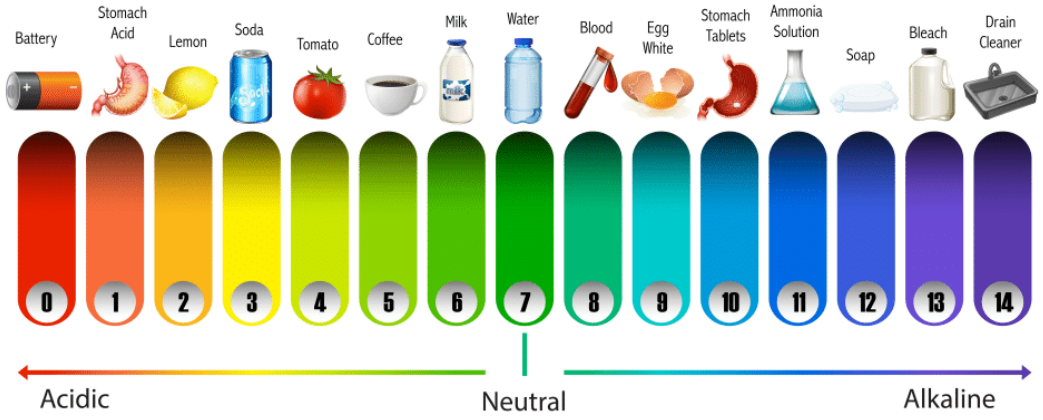
$$H^+ (aq) + OH^- (aq) \rightarrow H_2O(l)$$

Acid + Alkali Salt + Water

Year 10 - Science Knowledge Bank - Spring Term (Chemistry)

pH Scale

A scale which shows you how acidic or alkaline something is. You can test this with a pH meter, Universal indicator or Litmus. This is a logarithmic scale and each value below pH7 is 10 times more concentrated.



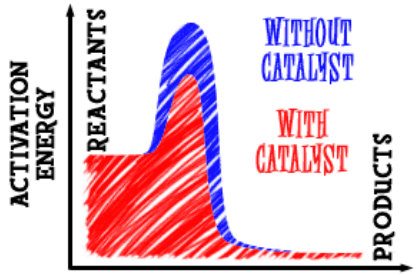
Acid strength and concentration

Strong acids **dissociate completely** in water producing **higher** concentrations of **H+** ions **Weak** acids **do not dissociate completely** producing lower concentrations **of H+** ions.

Factors affecting Rates of Reaction

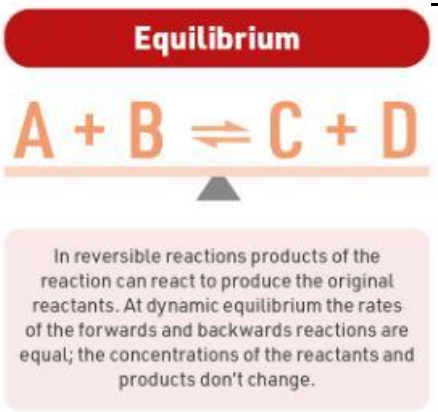
The rate of reaction tells you how fast reactants turn into products.

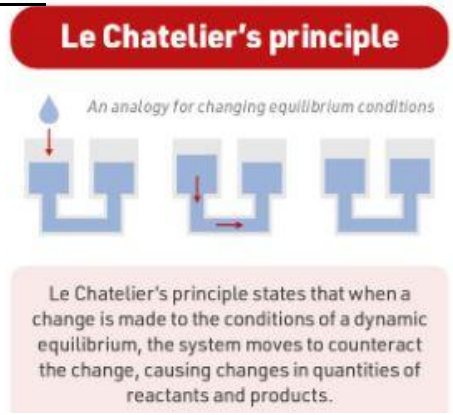
Four main factors affecting rates of reaction, **Temperature, Pressure, Surface area and Concentration**



Catalysts also affect rate of reaction by providing an alternative reaction pathway lowering activation energy, they speed up rates of reaction without being used up. Catalysts can be chemical (Potassium Iodide) or biological (enzymes).

Equilibrium





Computer Science Knowledge Organiser 1 : Systems Architecture

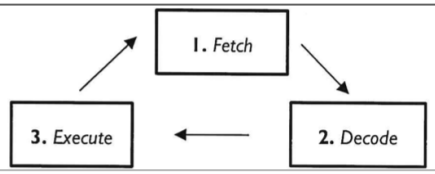
1. The purpose of the CPU

The purpose of the CPU	To manage basic operations of the computer. To be the 'brains' of the computer
The main components of the CPU	Control Unit. Arithmetic Logic Unit. Registers. Cache
Von Neumann Architecture	The architecture that allows for the storage of instructions and data in the same location
The FDE Cycle	The cycle the CPU continuously carries out to process instructions
Binary	The number system used to store instructions and data in the computer
The role of a register in the CPU	It is a place to temporarily hold data and instructions as they are being processed by the CPU.
The PC	The Program Counter keeps the address of the next instruction to be processed
The MAR	The Memory Address Register is used to tell the CPU where to locate data in Main Memory
The MDR	The Memory Data Register is used to store data that is fetched from Main Memory
The ACC	The Accumulator stores results of logic operations and calculations used during processing

2. Common CPU Components and their Function

The Control Unit has two functions	(1) Sending signals to control the flow of data and instructions, and (2) decoding instructions
Cache memory	A small section of extremely fast memory used to store commonly used instructions and data. It is useful as the CPU can access the (fast) cache directly. L1 cache is closest to the CPU, L3 cache furthest
The ALU has the following functions	It carries out mathematical operations / logical operations / shifting operations on data; for example multiplication, division, logical comparisons
An Address	This is a location in he Main Memory (RAM) that stores data or instructions in the Von Neumann Architecture
Buses	Transfer information between the CPU and Main Memory (and other places). For example the Address bus carries memory addresses between the CPU and the RAM

3. The F-D-E (Fetch Decode Execute) Cycle

The F-D-E Cycle repeatedly cycles	
The Fetch Stage	The address is generated by the Program Counter (PC) and is carried to the Memory Address Register (MAR) using the Address Bus. The PC then updates and stores the next memory address, ready for the next round of the cycle. The data or instruction that is in that memory location is placed on the data bus and carried to the processor and is stored in the Memory Data Register (MDR)
The Decode Stage	The data or instruction is then the Memory Data Register (MDR). decoded to find out if it is a piece of data or if it is an instruction to do something such as ADD, STORE, SWITCH, REPEAT etc.
The Execute Stage	The CPU performs the actions required by the instruction. If it is an instruction to control input or output devices the Control Unit will execute the instruction. If it is a calculation then the Arithmetic and Logic Unit (ALU) will execute the instruction. The results of any calculations are recorded in the Accumulator.

4. Performance of the CPU

Cores	CPUs with multiple cores have more power to run multiple programs at the same time.
Clock Speed	The clock speed describes how fast the CPU can run. This is measured in megahertz (MHz) or gigahertz (GHz) and shows how many fetch-execute cycles the CPU can deal with in a second.
Cache Size	The more data that can be held in the cache, the shorter the trips the electric pulses need to make so this speeds up the processing time of each of those billions of electrical signals, making the computer noticeable faster overall.

5. Embedded Systems

Definition	A computer system which forms part of an electronic device	Reasons	They are cheaper to make and smaller than a General Purpose Computer
Re-programmable	Not for different purposes but firmware can sometimes be upgraded	Examples	Washing machine, Smart Oven, Car Engine, Pacemaker

Computer Science Knowledge Organiser 2 : Primary and Secondary Storage

1. The purpose of RAM and ROM in a Computer System	
The purpose of RAM	RAM is the main memory (also called primary storage) for storing data and programs while they are in use
The purpose of ROM	ROM stores the boot sequence, which is a set of instructions that the computer executes every time it is switched on. ROM is essential since if loads the operating system
We use RAM rather than Secondary Storage	The RAM can be accessed at a much higher speed than the secondary storage. If the CPU was having to communicate directly with secondary storage for the F-D-E cycle the computer would be incredibly slow
Volatility	ROM is non-volatile (it keeps its contents when the power is turned off). RAM is volatile (it loses its contents when the power is turned off)
Primary Storage Devices	Primary storage devices are internal to the system and are the fastest of the memory/storage device category. Typically, primary storage devices have an instance of all the data and applications currently in use or being processed. The computer fetches and keeps the data and files it in the primary storage device until the process is completed or data is no longer required. RAM, ROM, Graphics Card RAM, cache and registers are common examples of primary storage devices
Increasing RAM	This can speed the computer up since there is less need for virtual memory

2. The Need for Virtual Memory	
Definition of virtual memory	A temporary storage space taken up on a secondary storage device (e.g. hard disk) to allow more space for running programs and data than can fit in primary storage (RAM)
Use of virtual memory	Open applications / data that are not in current use are 'paged' out to the secondary storage. When they are need they are 'paged' back into primary memory
Advantage of virtual memory	Having virtual memory available allows a computer to run more programs at the same time, or to run larger programs; or to work with much larger amounts of data than could fit in the primary storage (main memory / RAM)
Disadvantage of virtual memory	It is relatively slow compared with RAM. The need to page data in and out of the secondary storage device slows down the computer. It can also lead to 'disk thrashing'

3. Secondary Storage	
Difference from primary storage	Primary storage (e.g. RAM, cache) is volatile. Secondary storage is non-volatile. It retains its data when the power is switched off
Cache memory	A small section of extremely fast memory used to store commonly used instructions and data. It is useful as the CPU can access the (fast) cache directly. L1 cache is closest to the CPU, L3 cache furthest
ROM as secondary storage	Not really. ROM is read only. Secondary storage generally needs to be written to as well as read from

4. Common types of storage	
Optical	The surface of a CD is covered in microscopic dots. A laser would skim across the surface reading these. As the laser passes over, the pattern on the surface is picked up. If the laser hits a dot it is reflected differently to if there were no dot present. Examples : CD/CDR/CDRW/DVD/BluRay
Magnetic	Magnetic hard drives use silver coloured disks which are covered on both sides with a magnetic film divided into billions of tiny areas. Each one of those areas can be independently magnetised (to store a 1) or demagnetised (to store a 0). The read/write heads would flicker quickly over the surface as it reads and writes the data. Several platters would be installed in one hard drive to give greater storage capacity. Examples : Hard Disk Drive / DAT / Tape Drive / Cassette
Solid State	Solid-state secondary storage does not have any moving parts. Solid state secondary storage stores data using circuit chips. They are sometimes called flash drives. Examples : USB drives / SD Cards / SSD Drives

5. Considerations for the Most Suitable Storage Device	
Capacity	How much data needs to be stored
Speed	How quickly can the data be stored. How quickly does it need to be read
Portability	Does the device need to be transported? Are weight and size important
Reliability	Is it mission critical? Will it be used over and over again?
Cost	How expensive is the media per byte of storage

6. Typical Uses	
Optical	Read only distribution on a large scale (CD/DVD). Relatively small capacity
Magnetic	High data capacity. Reasonably fast. Low cost. Cloud storage on server farms
Solid State	Low power. Small. Rugged. Silent. Very fast. Medium data capacity

Computer Science — Knowledge Organiser 3 : Data Storage

1. Data units

Bit (b)	The smallest unit of data. 0 or 1
Nibble (N)	4 bits
Byte (B)	8 bits (note the difference between b and B)
Kilobyte (KB)	1000 bytes. Note KB is different from Kb
Megabyte (MB)	1000 KB
Gigabyte (GB)	1000 MB
Terabyte (TB)	1000 GB
Petabyte (PB)	1000 TB

2. Conversions

Binary to Denary
Denary to Binary
Hexadecimal to Denary
Denary to Hexadecimal
Binary to Hexadecimal
Hexadecimal to Binary
Left Binary Shift
Right Binary Shift

3. Operations

Binary addition	You should arrange the two binary numbers above each other so that the columns line up. Start on the rightmost digit and add them. If there are any carries, write them down next to the next left column.
Overflow	If the answer to the left column results in a carry, this is known as an overflow and it causes an overflow error. This can cause problems if a computer program hasn't been written to handle overflows.
Left Binary Shift	Make the number longer, and therefore bigger. Each place it shifts will double the value. A binary left shift of one place (<<1) will double the value, a binary left shift of two places (<<2) with quadruple.
Right Binary Shift	Make the number shorter, and smaller. The right most digit is "lost", so we forget about it. A binary right shift of one place (written as >>1) halves the number, and a binary right shift of two places (>>2) will quarter it.

4. Characters

Individual Characters	Each character is assigned an individual binary code to represent it. The number of bits depends on the 'encoding' used
Character Set	The name given to a collection of characters matching to binary codes. There are many examples.
Choice of Character Set	A character set encoded with more bits allows more characters. This is useful for accents, symbols, emojis, other languages (e.g. Chinese)

5. Examples of Character Sets

ASCII	7-bits to represent characters allowing 127 characters to be represented
Unicode	16 / 24 / 32 bits. Covers many modern and historic languages, as well as lots of symbols which are used in maths and other specialist areas

6. Images

Pixel	The smallest element of a bitmap image. Pixels desk
Vector vs Bitmap	A vector image describes the lines and shapes. A bitmap image consists of rows of coloured dots.
Colour Depth	The number of bits used to represent each pixel in a bitmap image. An 8 bit image can show 2^8 or 256 colours.
Resolution	In a bitmap image resolution is measured in DPI (dots per inch). The higher the resolution the better the picture quality
Metadata	Data that is saved before and after the image to tell the computer how to decode the image. It includes the size in pixels (width x height), the colour depth, the resolution, the GPS location of where the image was taken, etc.
Image size	The size of an image is width x height x colour depth (+10% for metadata)
Factors	Greater colour depth and/or greater resolution will make the file size bigger, and improve the quality of the image; and vice versa

7. Sound

Analogue / Digital	Analogue sound waves must be converted into digital sound waves by taking a sample of the sound at set intervals. This is because computers can only work with digital 'numbers', and not analogue 'sound'
Sample rate	Number of times analogue signal is sampled per second. Measured in Hertz
Bit depth	Number of bits used per sample. Sometimes known as sample resolution
File size	Sample rate x sample resolution x seconds
Factors	Larger sample rate and/or bit depth will make the file size bigger and improve the playback quality; and vice versa. Also, making the duration of the recording longer will make the file size bigger, and vice versa

8. Compression

Compression	Compression is when a file is encoded so it uses fewer bits than the original file format
Lossless compression	Gets rid of unnecessary data to re-present data without losing any information. This process is reversible
Lossy compression	Gets rid of the least essential data. This is an irreversible process: once data is lost it can't be recovered

Computer Science Knowledge Organiser 4 : Networks and Network Topologies

1. Types of Networks

Network	A set of connected computers and other devices (e.g. printers, phones, HomeKit devices) for the purpose of sharing resources
LAN	Local Area Network. Covers a small geographical area (a home, a school, etc.) The infrastructure is often owned by the individual / organisation
WAN	Wide Area Network. Covers a large geographical area. WANs are made up of LANs joined together. The infrastructure is often owned by a Telecoms or other company rater than the individual
Advantages to using a LAN	• Resources (files, etc.) and devices (printers, etc.) can be easily shared across the network • Computers can be configured with the same 'image' so you have the same programs and access to your data from any computer (like in school) • You can control devices (e.g. HomeKit)
Disadvantages to using a LAN	• Security. Malware can spread across a network • Complexity of setting up and maintaining

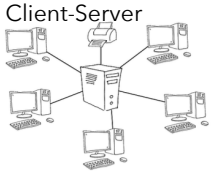
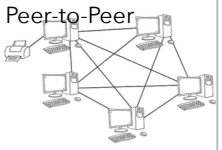
2. Factors affecting performance of a network

Latency	You can get bottlenecks in parts of your network, either because of a faulty switch, or due to the design of your network. Latency is the term used describe the time it takes data to travel from one designated point to another on the network
Bandwidth	The maximum amount of data transmitted over an internet or LAN connection in a given amount of time.
Transmission Media	WiFi generally has less bandwidth than wired connections. Wired connections (ethernet) can be different speeds (10Mbps, 100Mbps, Gigabit). Switches and routers also have maximum speeds
Concurrent Users	The more users there are on a network the more data is likely being transmitted. This means it can take longer as you have to wait your turn for your packets to travel across the network

6. Star and Mesh Topologies

Star Network	Cheaper than mesh network. Less cabling. Easy to add devices BUT total reliance on central node. If it fails whole network fails		Mesh Network	Full or partial. More cabling than star. Costs more to install. Harder to add a device. Harder to maintain BUT no Single Point of Failure	

3. Network Types

Client-Server 	The network relies on a central server and all the clients (devices) request services from the server such as print services, file services etc. Additional hardware is needed in this type of network: a server. All files can be stored and backed-up centrally on a server which means workers can access files from any computer on the network and the computers can also be updated centrally.
Peer-to-Peer 	All computers have equal status and any computer can act as a client and a server—even at the same time. All computers can request and provide network services. For example, any computer can use a resource physically connected to a different computer. There is no need to buy a dedicated server

4. Required Hardware

NIC	The Network Interface Card is in each computer/devices and allows connection to other devices on the network. It can allow wired connections, wireless connections, or both
Transmission Media	What connects the computer/devices to each other. Copper cables, fibre optic cables, wireless signals
Switch	A device on the network that receives signals from a computer/device and transmits the signal to its intended recipient
Router	A device used to connect different networks together. For example a home LAN to the internet, or a fibre optic cable to a home WiFi network
WAP	A Wireless Access Point is a device that receives and transmits wireless signals on the network. Often connected to rest of the network by cables

5. The Internet

The Internet	The Internet is a global collection of interconnected networks
DNS	The Domain Name Server is a large directory allowing the Internet Service Provider (ISP) to look up the correct IP address for the desired website
Hosting	If you don't own your own servers and host your website yourself you can use a company to do it for you. They will monitor and maintain their servers they are renting you space on
The Cloud	Data can be stored 'in the cloud'. This means on servers (in server farms) run by big companies. The data can be accessed from anywhere
Web Servers and Clients	Servers provide services (e.g. Web server -> Web pages, File server -> file storage/retrieval). Clients request / use services from a server

Computer Science Knowledge Organiser 5 : Protocols and Layers

1. Modes of Connection

Wired	Ethernet is a set of standards (protocols) for how data is transmitted over a wired local area network. It is the most common set of protocols. Data is transmitted in frames
Inside an Ethernet 'frame'	• Preamble of bits used to synchronise transmission • Start frame delimiter to signify start of data part of the frame • Source and destination MAC address • The actual data • Error checking information (cyclic redundancy check - CRC)
Wi-Fi	Wi-Fi is a means of allowing computers, smartphones, or other devices to connect to the Internet or communicate with one another wirelessly within a particular area. It has a range of about 100m, takes quite a lot of power (relatively), and has a high bandwidth (but less than a wired connection)
Wi-Fi advantages and disadvantages	• Users can move around freely • Easier to set up, and less expensive than wired • Speeds are slower than wired networks • Relies on signal strength to the wireless access point (WAP) • Signal can be obstructed • Less secure than wired networks
Bluetooth	Bluetooth is a standard for the short-range wireless interconnection of mobile phones, computers, and other electronic devices. It has a range of about 10m, takes very little power, and has a relatively low bandwidth

2. Wireless Encryption

SSID	Wireless networks are identified by a unique "Service Set Identifier" (SSID). Can be invisible/visible and have a password. The SSID has to be used by all devices which want to connect to that network.
Encryption	Data is encrypted by scrambling the data into cipher text using a "master key" created from the SSID of the network and the password. Data is decrypted by the receiver using the same master key, so this key is not transmitted. Protocols used for wireless encryption include WEP, WPA, WPA2.

3. IP and MAC Addresses

MAC address	Every device on a network has a Network Interface Card (NIC). Every NIC (in the world) has a unique Media Access Control (MAC) address. It is used to route frames on a LAN
IP address	IP Addressing is used to route frames on a WAN (called packets). Every device on the internet has a unique IP (Internet Protocol) address which is assigned to the device by a server. Two main standards (IPv4 and IPv6)
Internal and External IP Addresses	A router will have a unique WAN facing IP address and a LAN facing IP address. Often all devices on a LAN (with unique internal IP addresses) will share a single external IP address

4. Standards

Definition	A set of specifications for hardware/software. Enables products to be compatible with each other and interact with each other
ASCII/Unicode	Character set standards
IEEE	Computer cables standards
HTML	Standard for creating websites
PNG, GIF, MP3	Standards for documents, images, sounds, videos, etc.

5. Common Protocols

TCP/IP	Transmission Control Protocol/Internet Protocol. Used to communicate over LANs and WANs
HTTP / HTTPS	Hypertext Transfer Protocol (secure). Used for webpage requests
FTP / FTPS	File Transfer Protocol (secure). Used for file transfers
POP	Post Office Protocol. Used for receiving e-mail. Downloads e-mail from the server to your device and deletes it from the server
IMAP	Internet Message Access Protocol. Used for receiving e-mail. Keeps e-mails on the server. This allows your device to stay in sync with the server
POP vs IMAP	POP you have your mail on one device since it is deleted from the server. IMAP each device syncs to server so your mail can be on multiple devices
SMTP	Simple Mail Transfer Protocol. Transfers outgoing emails from one server to another / from a email client to a sever

6. Layers

Concept	The concept of layering is to divide the complex task of networking into smaller, simpler tasks that work with each other.
Responsibility	The hardware and/or software for each layer has a defined responsibility. Each layer provides a service to the layer above it
Advantages	Reduces the complexity of the problem into manageable sub-problems. Devices can be manufactured to operates at a particular layer. Products from different vendors will work together.

Computer Science Knowledge Organiser 6 : Network Security

1. Forms of Attack

Malware	Software written in order to infect computers and commit crimes e.g. fraud or identify theft. Malware exploits vulnerabilities in software
Types of Malware	Malware is term that covers (among other things) viruses, trojans, worms, ransomware, spyware and adware
Phishing	Online fraud technique used by criminals. It is designed to get you to give away personal information such as usernames, passwords, bank details, credit card details… Achieved by disguising as a trustworthy source in an electronic communication, e.g. an email or fake website.
Brute Force Attack	A trial and error method used to decode encrypted data (such as passwords). Uses every combination until it hits upon the correct one.
DOS Attack	Denial of Service attack. Floods a server with useless traffic causing the server to become overloaded and unavailable
DDOS Attack	Distributed Denial of Service Attack. Using multiple computers (zombies) in a Botnet to undertake a DOS attack
Data Interception and Theft	Stealing information from an unknowing victim's computer in order to get confidential information, or to compromise their privacy. E.g. to sniff usernames and passwords
SQL Injection	A technique used to view or change data in a database by inserting additional code into a text input box, creating a different SQL command
Zero Day Attack	An attack using an unknown and undocumented vulnerability in software code (unknown to the code owner)

2. Threats posed to Networks

Malware	• Files are deleted, become corrupt or are encrypted. • Computers crash, reboot spontaneously and slow down. • Internet connections become slow. • Keyboard inputs are logged and sent to hackers.
Phishing	• Accessing a victim's account to withdraw money, or purchase merchandise and services. • Open bank accounts, credit cards, cashing illegitimate cheques. • Gain access to high value corporate data. • Financial services can blacklist the company
Brute Force Attack	• Theft of data. • Access to corporate systems.
(D)DOS Attack	• Loss of access to a service for customers • Lost revenue • Lower productivity • Damage to reputation
Data Interception and Theft	• Usernames and passwords compromised • Disclosure / theft of corporate data
SQL Injection	• Contents of databases can be output, revealing private data. • Data in the database can be amended or deleted. • New rogue records can be added to the database.
People	Many system vulnerabilities are caused by people being careless: • Not installing operating system updates. • Not keeping anti-malware up to date. • Not locking doors to computer rooms. • Not logging off or locking their computer. • Leaving printouts on desks. • Writing passwords down on sticky notes attached to computers. • Sharing passwords. • Losing memory sticks / laptops. • Not applying security to wireless networks. • Not encrypting data.

3. Identifying and Preventing Vulnerabilities

Malware	• Security software (Spam filter, Anti-virus, Anti-spyware, Anti-spam) • Enabling OS and security software updates. • Staff training • Backup files regularly onto removable media.
Phishing	• Strong security software. • Staff training: awareness of spotting fake emails and websites. • Staff training: not disclosing personal or corporate information. • Staff training: disabling browser pop-ups.
Brute Force Attack	• Network lockout policy, Using progressive delays. • Staff training
(D)DOS Attack	• Strong firewall and packet filtering • Properly configuring servers and auditing and monitoring systems
Data Interception and Theft	• Encryption and using virtual networks • Staff training and computer use policies
SQL Injection	• Validation on text boxes • Database permissions

Computer Science Knowledge Organiser 7 : Systems Software

1. Definitions

Systems Software	Systems Software is the software used to control the hardware of the computer. It is contrasted to application software which is used to enable the user to perform tasks and create content and products
Operating System	An operating system is a piece of system software that communicates with the hardware of the computer and allows other programs to run. It is comprised of system software, or the fundamental files your computer needs to boot up and function
Peripherals	Peripherals are controlled by software called device drivers. Standard drivers (mouse and keyboard) are included in the operating system, however more specialist peripherals may need drivers programmed by the manufacturer which convert signals into machine code and are installed separately
Utility Software	Utilities are programs that are installed to perform a specific function, usually to improve the efficiency or security of a computer system

2. The Function of Operating Systems

What does an Operating system do?	An operating system manages all of the software and hardware on the computer. Most of the time, there are several different computer programs running at the same time, and they all need to access your computer's central processing unit (CPU), memory, and storage. The OS co-ordinates this activity
Interaction	A user interacts with the computer by means of an interface provided by the operating system

3. Types of Interface

GUI	A Graphical User Interface provides windows, icons, menus, (mouse or other) pointer… Sometimes calls WIMP. It is visual, interactive, and intuitive. Optimised for mouse/touch input
CLI	A Command Line Interface is text based. It uses less resources than a GUI. It is more efficient but harder to learn. Often repetitive processes can be automated with scripts
Menu	A Menu Interface presents successive menus to the user with options to choose at each stage. Often used with buttons on a keypad. (Think calculator when you press the 'MENU' button)
Natural Language	A Natural Language Interface responds to questions in a spoken language. They are not always reliable but are improving all the time. (Think Siri or Alexa)

4. Features Often Provided by an Operating System

Multitasking	Running multiple applications at the same time by giving each application a small time-slice of processor time. This allows more than one program to be held in memory at a time, and data shared between them such as copy and paste. It also enables you to listen to music on your PC at the same time as word processing for example
Memory Management	When programs are loaded, the operating system decides where they are held in memory. Over time the memory becomes fragmented as programs are loaded and closed because they use different amounts of memory. The operating system must keep track of different program fragments. When the memory is full, the operating system uses virtual memory
Device Drivers	Translates operating system instructions into commands that the hardware will understand. Each peripheral will need a device driver and many common ones are built into the Operating System
User Management	Providing for different users to log into a computer. The operating system will retain settings for each user, such as icons, desktop backgrounds etc. Each user may have difference access rights to files and programs. A client server network may impose a fixed or roaming profile for a user, and manage login requests to the network.
File Management	Data is stored in files. An extension to the filename tells the operating system which application to load the file into. Files can also be placed in folders for ease of organising

5. Examples of Utility Software

Encryption	Encryption utilities use an algorithm to scramble plain text into cipher text. It can be decrypted and read again with a Key
Defragmentation	Defragmentation utilities reorganise files on a hard disk, putting fragments of files back together, and it collects together free space. This reduces the movement of a read/write head across the surface of the disk, which speeds up file access. Solid state drives should not be defragmented (it is unnecessary as they have no moving parts. It also reduces their lifespan)
Compression	Compression utilities reduce the size of a file so that it takes up less space, and is quicker to download/upload.Compressed files must be extracted before they can be read. Compression is lossy or lossless
Backup	Backup utilities take a copy of the data and place it elsewhere (disks, tapes, cloud, etc.). Backups can be either full (backup everything) or incremental (back up changes since the last backup).

Computer Science Knowledge Organiser 8 : Ethical, Legal, Cultural and Environmental Concerns

1. Privacy Issues

Implications	• Implications for personal privacy have arisen due to the vast array of cameras and surveillance systems around. • The amount of data that we share and that is recorded about us is growing hugely • Free speech / freedom of expression / right to personal privacy vs. Law and Order / Public security / government's role

2. Cultural Issues

Implications	• The impact of technology in our daily lives (Technology is changing how people live their lives today. We have an ever increasing dependency on technology in the 21st Century) • The digital divide (Access to technology and the Internet is not the same across the world) • Globalisaion (As people around the world become more exposed to technology this impacts on the values and expectations of the people in each country)
Positive Effects	• In the developing world, the rapid spread of technology, fuelled by the Internet has led to positive cultural changes in developing countries. • Easier, faster communication has contributed to the rise of democracy, as well as working towards the alleviation of poverty. • Globalisation can also increase cultural awareness and promote diversity
Negative Effects	• Diffusion of technology must be carefully controlled to prevent negative cultural consequences. • Developing countries risk losing their cultural identities and assimilating themselves into an increasingly westernised world. • Challenges of inequality from the uneven distribution of technology within a country also still remain • Traditionally, most computer applications are designed by developers in North America. These designers unintentionally apply their cultural values and systems of thought whilst developing computer applications

6. Open Source vs Proprietary Source

Open Source	Users can modify and distribute the software. Can be installed on any number of computers. Support provided by the community. May not be fully tested. Users have access to the source code
Proprietary Source	Users cannot modify the software. Protected by CD&P Act. Usually paid for and licensed per user or per computer. Supported by developers. Users do not have access to the source code. Tested by developers prior to release. Although they may run beta programmes.

3. Environmental Impact

Fossil Fuels	Fossil fuels are consumed in the manufacturing of computer devices
Energy	2% of global energy consumption is used by data centres
Disposal	Old computing equipment is often shipped to countries with lower standards for disposal. People trawl through waste looking for metals to be recycled and sold, exposing themselves to danger.

4. Impacts of Digital Technology on Wider Society

Customers	Customers can do more from home with less travelling involved. They can do things 24/7. They can access their data on many devices. Computers can make instant decisions without human involvement. Potentially open to hacking. Less personal
Staff	Job losses as things become more automated. New types of jobs created that didn't previously exist. Up-skilling required
Companies	Less overheads (salary, rent, utility bills) if fewer staff and buildings required. More ways to target potential customers. Increased importance of data protection and security
Local Communities	Local shops may suffer is town centres are more empty. Elderly and vulnerable customers may have nowhere local to go as local services are scaled back

5. Legislation

Data Protection Act (2018) [implementing GDPR]	• Data must be processed lawfully, fairly and in a transparent manner. • Data must only be collected for specified, explicit and legitimate. • Data must be adequate, relevant and limited to what is necessary. • Data you collect must be accurate and kept up to date. • Data you hold must be kept for no longer than is necessary. • Data you hold must be processed in a manner that ensures appropriate security of the personal data. • Data controllers must be able to prove that their data protection measures are sufficient
Computer Misuse Act (1990)	It is illegal to make any unauthorised access to data… …with the intent to commit further offences …with the intent to modify data, e.g. viruses
Copyright Designs and Patents Act (1998)	It is illegal to copy, modify or distribute software, music, videos or other intellectual property without permission from the author

Computer Science — Knowledge Organiser 9 : Algorithms

1. Computational Thinking

Abstraction	The process of removing unnecessary details and including only the relevant details.It is a method of computational thinking that focusses on what is important in problem solving
Decomposition	The process of breaking a complex problem down into smaller more manageable parts. Dealing with many different stages of a problem at once is much more difficult than breaking a problem down into a number of smaller problems and solving each, one at time.
Advantages of Program Decomposition	• Makes problems easier to solve. Different people can work on different parts of a problem at the same time… • …reducing development time. • Program components developed in one program can easily be used in other programs
Algorithmic Thinking	A way of getting to a solution by identifying the individual steps needed. By creating a set of rules, an algorithm that is followed precisely, leads to an answer. Algorithmic thinking allows solutions to be automated.

2. Input Processes and Output

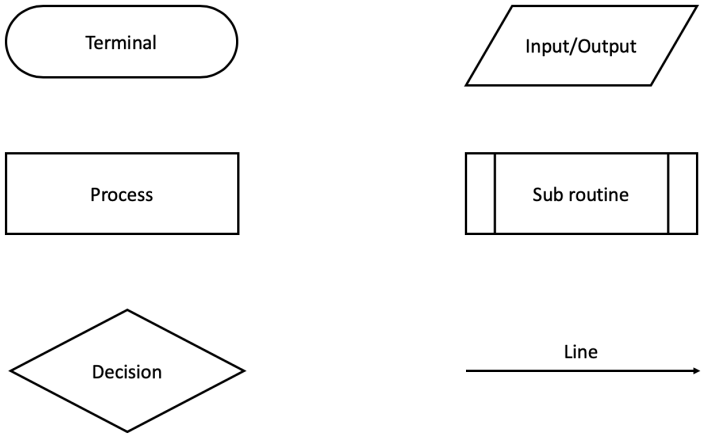
Inputs	• Anything which needs to be supplied to the program so it can meet its goals. • Often input by the user. • Consider an appropriate variable name and data type for the input.
Processes	• Consider what calculations need to be performed while the program is running. • Does data need to change formats or data types
Outputs	• Consider what your program need to output. • Consider what form this output need to take. • Consider an appropriate variable name and data type for any output

3. Structure Diagrams

- Structure diagrams illustrate problem decomposition.
- They can be used for developers to understand a problem to code and to share with users during systems analysis.
- They are produced using a method known as step-wise refinement.
- Break problem down using decomposition into ever smaller components.
- Some areas of the program will needed breaking down more than others.
- The lowest level nodes should achieve a single task.
- These can then be coded as a single module or sub-program.

3. Flowcharts, Pseudocode and OCR Reference Language

Flowchart	A method of representing the sequences of steps in an algorithm in the form of a diagram. Sometimes called a Flow diagram
Structure Diagram	A diagram showing a top-down breakdown of a complex problem
Pseudocode	A text based alternative of representing the sequences of steps in an algorithm. Pseudo-code can be thought of as a simplified form of programming code.
OCR Reference Language	You must be able to read this but you can always use Python in your exams—but be precise



4. Types of Errors

Syntax Error	Syntax errors are errors which break the grammatical rules of the programming language. They stop it from being run/translated
Logic Errors	Logic errors are errors which produce unexpected output. On their own they won't stop the program running

5. Trace Tables

- A vital skill for understanding program flow and testing the accuracy of an algorithm for logic is called "Tracing Execution".
- Examine a printed extract of program code and running thorough the program.
- Take each line at a time and write out in a trace table the current state of each variable. Noting down any output the program produces.
- Each variable present in the program should have its own column in the trace table.
- A new row should be added under any column if the state of a variable changes.
- Trace tables are an excellent way to track down logic errors in a problem.

Computer Science Knowledge Organiser 10 : Searching and Sorting Algorithms

1. Binary Search

The Algorithm	• Calculate a mid-point in the data set.
	• Check if that is the item to be found.
	• If not…
	  • If the item to be found is lower than the mid-point, repeat on the left half of the data set.
	  • If the item to be found is greater than the mid-point, repeat on the right half of the data set.
	• Repeat until the item is found or there are no items left to check.

Requirements / Efficiency	• Requires the data set to be in order of a key field. • Can be done with letters as well as numbers—use alphabetical order • More efficient than a linear search on average

2. Linear Search

The Algorithm	• Starting from the beginning of a data set, each item is checked in turn to see if it is the one being searched for
Requirements / Efficiency	• Doesn't require the data set to be in order. • Will work on any type of storage device. • Can be efficient for smaller data sets. • Is very inefficient for large data sets

3. Bubble Sort

The Algorithm	• Sorts an unordered list of items. • It compares each item with the next one and swaps them if they are out of order. • The algorithm finishes when no more swaps need to be made. • In effect it "bubbles" up the largest (or smallest) item to the end of the list in successive passes.
Efficiency	• This is the most inefficient of the sorting algorithms but is very easy to implement. • This makes it a popular choice for very small data sets

6. For the exam

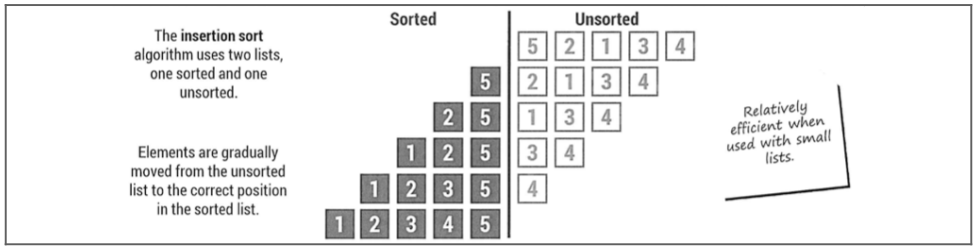
✓ Understand the main steps of each algorithm
✓ Understand any pre-requisites of an algorithm
✓ Apply the algorithm to a data set
✓ Identify an algorithm if given the code for it
✓ Show all your steps in detail
x To remember the code for these algorithms

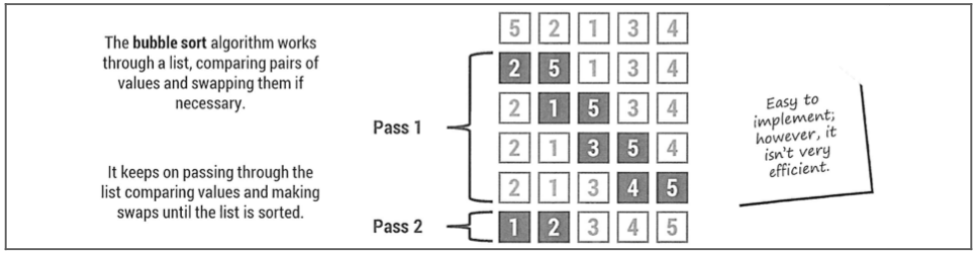
4. Insertion Sort

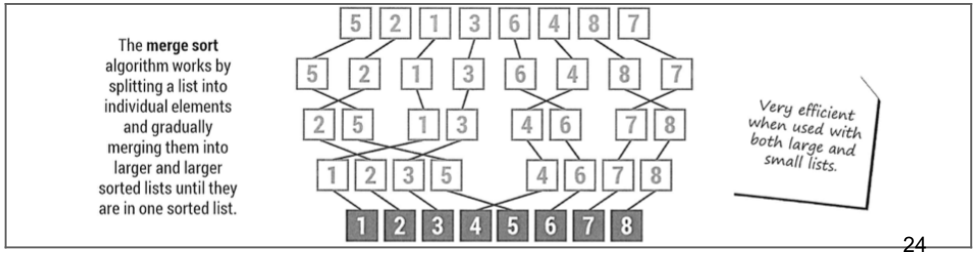
The Algorithm	• The insertion sort inserts each item into its correct position in a data set one at a time.
Efficiency	• It is a useful algorithm for small data sets. • It is particularly useful for inserting items into an already sorted list. • It is usually replaced by more efficient sorting algorithms for large data sets.

5. Merge Sort

The Algorithm	• A very efficient method of performing a sort. • Uses a divide and conquer method. • Creates two or more identical sub-problems from the largest problem, solving them individually. • Combines their solutions to solve the bigger program. • Data set is repeatedly split in half until each item is in its own list. • Adjacent lists are then merged back together.
Efficiency	• Works very well for large data sets.







Computer Science Knowledge Organiser 11 : Programming Fundamentals 1

1. Key Terms

Variable	A value stored in memory that can change while the program is running
Constant	A value that does not change while the program is running, and is assigned when the program is designed
Operator	A character that represents an action, e.g. "+" is a mathematical Operator
Assignment	Giving a variable or constant a value
Casting	Converting a variable from one data type to another
Input	A value that is entered into the program after the program has started running
Output	A value that produced by the program and either saved or displayed to the user

2. Correct Use of Data Types

Integer	A positive or negative whole number used when arithmetic will be required
Real / Float	A positive or negative decimal number
Character	A single alphanumeric
String	Multiple characters joined together [n.b. use this for credit card numbers]
Others	Some languages have others, e.g. date, picture…

3. The Three Basic Programming Constructs

Sequence	Executing one instruction after another
Selection	Program branching depending on a condition
Interation	sometimes called looping, is repeating sections of code. Condition controlled or count controlled

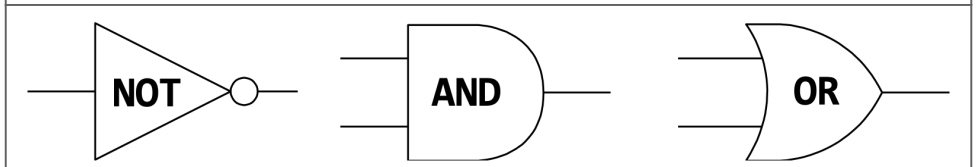
4. Common Arithmetic Operators

+	Addition
-	Subtraction
*	Multiplication
/	Division
^	Exponentiation
MOD	Modulus

5. Common Comparison Operators

==	Is equal to
!=	Is not equal to
<	Is lesser than
>	Is greater than
<=	Is lesser than or equal to
>=	Is greater than or equal to

5. The Common Boolean Operators



6. Basic String Manipulation (general)

string.length	Obtains the length of the string in characters
string.upper	Converts the string to uppercase
string.lower	Converts the string to lowercase
string.left(n)	Gets the left-most n characters of the string
string.right(n)	Gets the right-most n characters of the string
string.substring(a,b)	Gets b characters of the string starting at position a
ASC(char)	Returns the numerical ASCII value of char

Note : this is NOT the way things are done in any particular programming language. In particular Python does things differently

7. Basic File Handling Operations (OCR Reference Language)

myFile=open("…")	Open a file
myFile.close()	Close a file
myFile.readLine()	Read a line from a file
myFile.writeLine()	Write a line to a file
myFile=("…")	Create a new file
string.substring(a,b)	Gets b characters of the string starting at position a
A Workflow	myFile = open ("sample.txt") while NOT myFile.endOfFile() print (myFile.readLine()) endwhile myFile.write("Hello") myFile.close()

Note : this is NOT the way things are done in any particular programming language. In particular Python does things differently

Computer Science Knowledge Organiser 12 : Programming Fundamentals 2

1. Storing Data in Records	
In Text Files	• Stored on the secondary storage (hard disk/SSD/flash). • Used to store data when the application is closed. • Useful for small volumes of data. E.g. configuration files. • Each entry is stored on a new line or separated with an identifier such as a comma or tab. • Can require a linear search to find/read data which is slow (if there is no order to the data or record structure). • Structured text files E.g. CSV, XML & JSON are popular for storing and exchanging data between applications
In Arrays and Lists	• Stored in RAM. • Used to store data when a program is running. • Useful for small volumes of data an algorithm is using. • Can be single or multi-dimensional allowing for tables of data to be stored. • Uses indexes to refer to data items. • Efficient algorithms or linear searches can be used to find data
In Databases	• Often stored on remote servers. • Often used to store data shared by many users, e.g. ticket booking system. • Data is stored in records and fields. • Uses advanced data structures to store data efficiently. • Uses very efficient algorithms to search and sort data executed on the servers. • More secure than text files. • The order of the fields in the database in independent of the code
Record Structure	• A collection of related fields. • A field is a variable. • Each field in a record can have a different data type. • Note the dot syntax when using records: record<dot>Field e.g. car1.Make

2. SQL	
SELECT	which fields to be returned. * can be used to indicate all fields
FROM	which table. Databases can have more than one table, each with their own unique name
WHERE	records meet a condition. LIKE and % can be used as a wildcard
Example	SELECT name, age, iq FROM person WHERE name LIKE 'FIS%'

3. Arrays	
Definition	An array is a series of memory locations – or 'boxes' – each of which holds a single item of data, but with each box sharing the same name. All data in an array must be of the same data type
Use	• Indexes usually start at 0 for the first data item (known zero indexed). • Arrays may be single or multiple dimensions. • Visualise dimensions as a column (single dimension) or table (two dimension) • In Memory two dimensional arrays are still stored in a linear fashion

4. Sub programs	
Why Use them	• Larger programs are developed as a set of sub-programs called subroutines. • Structuring code into sub-programs makes the code easier to read and debug. • Each sub-program can easily be tested. • Sub-programs can be saved into libraries and reused in other programs
Functions	Functions return values and create reusable program components.
Procedures	Procedures create a modular structure to a program making it easier to read. They do not return values

5. Random Numbers	
Deterministic	Programs that run on computer systems are deterministic – with exactly the same inputs they should produce exactly the same outputs.
Real World	Randomness is easy to produce in the real world – spinning a wheel, rolling a dice and so on are millennia-old techniques but producing the same randomness in a computer program is actually rather tricky
Computer	• Computers do not produce random numbers at all • They use complex mathematical techniques to produce a series of numbers that may appear random but are really only an approximation to randomness (called pseudo-random numbers) • We refer to them as random numbers anyway
OCR Reference Language	myVariable = random (1,6) will produce a random number between 1 and 6

Computer Science Knowledge Organiser 13 : Producing Robust Programs

1. Input Validation

Validation	Does not ensure that the data entered is correct, just that it is possible and sensible
Type Check	The input is in the correct data type. E.g. Integer, Real, String
Range Check	The input is within a correct range. E.g. Between 1 and 2
Presence Check	Some data has been entered. E.g. Reject blank inputs
Format Check	The input is in the correct format. E.g. dd/mm/yyyy
Length Check	The input has the correct number of characters. E.g. 8 or more chars
Why use input validation?	• The program is more robust • The program is more user friendly • To prevent further errors occurring later in the algorithm

2. Anticipating Misuse

Division by Zero	In mathematics, there is no number which when multiplied by zero returns a non-zero number. Therefore the arithmetic logic unit cannot compute a division by zero.
Communication Error	Online systems require connections to host servers. If this connection is dropped, unable to be established or the server is overloaded, it could potentially cause a program to crash or hang when loading/saving data.
Peripheral Error	Any peripheral may be in an error mode (e.g. paper jam)
Disk Error	Programs that read and write to files must handle exceptions, including: • The file/folder not being found. • The disk being out of space. • The data in the file being corrupt. • The end of the file being reached
Authentication	• Username and password to access systems. • Password recovery by e-mailing to an authenticated e-mail address. • Encryption of data files. • Check for human and not bot attempting access (e.g. reCAPTCHA)

6. Refining Algorithms

What do we mean by refining?	• Code should anticipate all inputs and it should deal with 'bad' data, or missing data, and not crash. • It should ensure prompts to the user are helpful and that the input can only be of the correct type
How to refine	Many languages have exception handling commands

3. Maintainability

Comments	These explain the purpose of the program, or a section of code. They may also explain any unusual approaches or temporary 'fixes'
White Space	Make each section of the code stand out. Use spaces so code is not cramped up and hard to read
Indentation	Mandatory in Python but use indentation to show the flow of the program
Variable Names	Use sensible variable names that have some meaning as to what they are being used for
Sub Programs	Use Procedures and functions to structure the code and eliminate duplicating portions of it
Constants	Declare constants at the top of the program

4. Testing

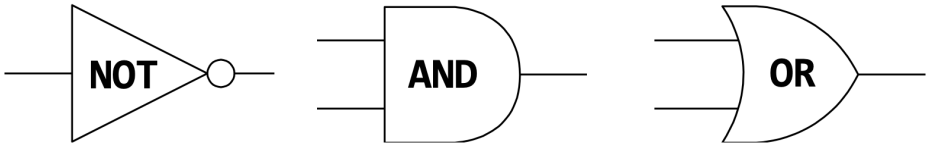
Reasons for Testing	• To ensure there are no errors (bugs) in the code. • To check that the program has an acceptable performance and usability. • To ensure that unauthorised access is prevented. • To check the program meets the requirements
Iterative Testing	• Each new module is tested as it is written. • Program branches are checked for functionality. • Checking new modules do not introduce new errors I not existing code. • Tests to ensure the program handles erroneous data and exceptional situations.
Final / Terminal Testing	• Testing that all modules work together (integration testing) • Testing the program produces the require results with normal, boundary, invalid and erroneous data. • Checking the program meetings the requirements with real data.

5. Suitable Test Data

Normal Inputs	Data which should be accepted by a program without causing errors
Boundary Inputs	Data of correct type on the edge of accepted validation boundaries
Invalid Inputs	Data of the correct type but outside accepted validation checks
Erroneous Inputs	Data of the incorrect type which should be rejected by a computer system. This includes no input being given when one is expected

Computer Science Knowledge Organiser 14 : Boolean logic, Programming Languages and IDEs

1. Logic Gate Symbols



~A A ^ B A & B A v B A | B

2. Truth Tables

A	NOT A
0	1
1	0

A	B	A AND B
0	0	0
0	1	0
1	0	0
1	1	1

A	B	A OR B
0	0	0
0	1	1
1	0	1
1	1	1

3. Levels of Programming Languages

Machine Code 1st Generation	• Binary representation of instructions in a format that the CPU can decode and execute. • Have an operation code (opcode) instruction and address or data to use (operand).
Low-Level Languages 2nd Generation	• Written in Assembly language. • Translated by an assembler into machine code. • Used for embedded systems and device drivers where instructing the hardware directly is necessary. • One instruction translated into one machine code instruction. • The code works on one type of processor only. • The programmer works with memory directly. • Code is harder to write and understand. • Memory efficient. • Code is fast to execute.
High-Level Languages 3rd Generation	• Source code is written in languages as Python, C++. • Translated by a compiler or interpreter into machine code. • Makes the writing of computer programs easier by using commands that are like English. • One source code instruction translates to many machine code instructions. • Code will run on different types of processors. • The programmer has lots of data structures to use. • Code is quicker and easier to understand and write. • Less memory efficient. • Code can be slower to execute if it is not optimised.

4. Translators

Assembler	Assembles' assembly language into machine code. Translates the whole code before execution
Compiler	Translates source code from high-level languages into object code and then into machine code ready to be processed by the CPU. The whole program is translated into machine code before it is run.
Compiler Advantages	• No need for translation software at run-time, and no need to share original source code • Speed of execution is faster because code is usually optimised.
Complier Disadvantages	• You cannot compile the program if there are syntax errors anywhere in it which can make it tricky to debug. • If you change anything you need to recompile the code
Interpreter	Translates source code from high level languages into machine code ready to be processed by the CPU. The program is translated line by line as the program is running.
Interpreter Advantages	• Easy to write source code because the program will always run, stopping when it finds a syntax error. • Code does not need to be recompiled when code is changed, and it is easy to try out commands when the program has paused after finding an error.
Interpreter Disadvantages	• Translation software is needed at run-time, so you beed to share the original source code. • Speed of execution is slower because the code is not optimised

5. Integrated Development Environments

Debugging Tools	• Breakpoints – stopping at a line of code during execution. • Stepping through lines of code one at a time. • Tracing through a program to output the values of variables.
Run Time Environment	• Output window. • Simulating different devices the program can run on.
Usability Functions	• Navigation, showing/hiding sections of code. • Formatting source code often in different colours. • Text-editor functions • Illustrating keyword syntax and auto-completing command entry.
Translator	Some IDEs have an inbuilt translator to test the program and make small alterations before compiling the final program into an executable file for distribution

Year 10 Ethics: Religion, Peace and Conflict: Knowledge Organiser

Important Key words to remember		Key beliefs	Key beliefs
War	Fighting between nations to resolve issues between them	1. War as conflict is a way of resolving differences. The intention to fight is often to create peace once the war is over as war is expensive and not sustainable. Islam is Arabic means 'salam' or peace. 'As-salamu alaikum' means 'peace be with you'.	11. Holy Wars are fought in defence or in promotion of a religion. Muslims have rules as to how a Holy War should be fought. In the Old Testament wars were fought to gain the Promised Land where the Jews would eventually live. The teachings of Jesus, however, make it quite clear that the use of violence is not justified.
Justice	Bringing about what is right and fair, according to the law, or making up for a wrong that has been committed.		
Peace	An absence of conflict, which leads to happiness and harmony	2. Justice, forgiveness and reconciliation strongly link to one another. All are needed for peace to occur. 'Just' is one of 99 names of Allah. The Bible speaks of God showing justice and forgiveness, thus Christians should show the same.	12. Pacifism is considered an alternative to conflict. Organisations such as the Muslim Peace Fellowship and the Anglican Pacifist Fellowship all promote pacifism. Islam is a religion of peace, although the duty of jihad makes it difficult for Muslims to identify with it.
Forgiveness	Showing mercy and grace and pardoning someone for what they have done wrong		
Reconciliation	The restoring of harmony after relationships have broken down	3. The UK law considers protest to be a right and part of citizen's democratic freedom. The rules: police must know 6 days in advance, police can alter the route or apply for a ban if possible violence.	13. Both Islam and Christianity work to help the victims of war. Islamic Relief, Muslim Aid, Caritas and Christian Aid are examples of present day organisations. They provide financial help to widows and orphans as well as rehabilitation.
Protest	An expression of disapproval, often in a public group		
Violence	Using actions that threaten or harm someone	4. No religion promotes violence and generally all agree that violence should be avoided. Peaceful protests are often preferred to violence. The work of Dr Martin Luther King Jnr. during the civil rights movement is an example of this.	**Key quotes to remember**
Terrorism	The unlawful use of violence, usually against innocent civilians, to achieve a political goal		"The servants of the Lord of Mercy are those who **walk humbly** on the earth, and who, when aggressive people address them, reply, with **words of peace**". Qur'an 25:63
Greed	Selfish desire for something	5. Terrorism is condemned by main-stream religious groups. This is because the actions often result in the death of innocent people. However, although most religions have extreme groups in their faith.	"Do not take life, which God has made **sacred**" Qur'an 17:33
Self-defence	Acting to prevent harm to yourself or others		"Know the **evil of war is swift**, and its **taste bitter**" Hadith
Retaliation	Deliberately harming someone as a response to them harming you	6. Greed for land, wealth or power can lead a country to challenge a weaker country, invade and take the resources they were after.	"Those who have been attacked are **permitted to take up arms** because they have been wronged" Qur'an 22:39
Just War	A war that meets internationally accepted criteria for fairness; follows traditional Christian rules for a just war, and is now accepted by all other religions.	7. Self-defence is usually considered to be a morally acceptable reason to go to war e.g. Great Britain defended itself in WWII against Nazi Germany.	"Whoever saved a life, it would be as if they **saved the life of all mankind**" Qur'an 5: 32
Holy War	Fighting for a religious cause or God, probably controlled by a religious leader	8. Sometimes wars are fought in retaliation against a country which is seen to have done something wrong e.g. the invasion of Afghanistan in response to the attack on the World Trade Centre in NYC.	"But I tell you, **do not resist an evil person**. If anyone slaps you on the right cheek, turn to them the other cheek also" Matthew 5:39
Lesser jihad	The outward struggle to defend one's faith, family and country from threat		
Weapons of mass destruction/ chemical/ biological weapons	Weapons that kill large numbers of people/ weapons that use chemical to poison, burn or paralyse humans and destroy the natural environment/ weapons that contain living organisms or infective material leading to disease or death.	9. There are differing types of weapons. Often weapons of mass destruction are held by countries so that they are feared by other countries. In 2015, nine nations possessed around 15,700 nuclear weapons between them.	"You have heard that it was said to the people long ago. 'You shall not murder, and anyone who murders will be subject to judgment.' But I tell you that anyone who is angry with a brother or sister will be subject to judgement." Matthew 5: 21-22
Greater jihad	The personal inward struggle of all Muslims to live in line with the teachings of their faith	10. Religions use rules to determine whether they should go to war or not. Muslims call it a just war as part of lesser jihad. Christians have the 4th Century theory on Just War – 9 ways and reasons to go to war.	"For the **love** of money is a root of all kinds of evil" 1 Timothy 6:10
Pacifism	The belief of people who refuse to take part in war and any other form of violence		

Year 10 Ethics: Christian Practices: Knowledge organiser

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

<table>
<tr><th colspan="3">Key Ideas</th></tr>
<tr><td rowspan="2">Worship + Prayer
  </td><td><u>Liturgical Worship</u>
- This form of worship takes place in a church and is led by a priest
- Formal, set prayers are read out
- A more traditional, and formal form of worship</td><td rowspan="2"><u>Prayer</u>
- Prayer means communicating with God, either silently or out loud, sometimes through song
- It is one of the most important parts of the spiritual life of a Christian and enables them to have a personal relationship with God
- Intercessions are prayers made on behalf of others
- Thanksgiving is when people pray to say thank you to God
- Set prayers are written down and used in liturgical worship
- Informal prayer is off-the-cuff and often used in non-liturgical worship</td></tr>
<tr><td><u>Non-liturgical Worship</u>
- Also takes place in a church but less formal
- No set prayers, instead people take turns to preach and read from the Bible
- Can be modern and appealing to young people</td></tr>
<tr><td rowspan="2">Eucharist + Baptism
  </td><td rowspan="2"><u>Eucharist</u>
- Eucharist and baptism are both sacraments meaning special occasions in a Christian's life
- In Eucharist a priest consecrates (blesses) bread and wine and the congregation then receives these
- Catholics believe the Holy Spirit transforms the bread and wine into Jesus' body and blood
- Anglicans believe the bread and wine are symbolic
- Christians take part in this ritual in order to remember the sacrifice Jesus Christ made for them by being crucified on the cross
"For whenever you eat this bread and drink this cup, you proclaim the Lord's death until he comes" – 1 Corinthians 11:26</td><td><u>Infant Baptism</u>
- This is a formal service welcoming a new child into the Christian church
- Holy water is sprinkled over the baby's head
- All Catholics baptise their children close to birth in order to ensure they go to heaven</td></tr>
<tr><td><u>Believer's Baptism</u>
- A believer's baptism welcomes someone into the church who is old enough to decide themselves
- They are submerged in a pool of holy water
- They make promises to stay away from evil
- Baptists only practice this type of baptism</td></tr>
<tr><td rowspan="2">Pilgrimage + Festivals
  </td><td rowspan="2"><u>Pilgrimage</u>
- A pilgrimage is a journey made by a Christian to a holy site
- Catholics go on pilgrimage to Lourdes where a vision of Mary was once seen, they believe the water there has healing effects</td><td><u>Christmas</u>
- Christmas celebrates the incarnation (birth) of Jesus Christ
- Christians give gifts to commemorate the gift of God sending his own son to the world</td></tr>
<tr><td><u>Easter</u>
- Easter celebrates the resurrection of Jesus Christ
- Christians celebrate by saying "he is risen" and by eating chocolate eggs that represent new life</td></tr>
<tr><td>Evangelism + Church in the Community</td><td>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.</td><td>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.</td></tr>
<tr><td>Reconciliation
  </td><td colspan="2">- Christians across the world play an important role in reconciliation (seeking to restore friendly relations after a conflict or falling out)
- An example is Coventry Cathedral which was bombed during World War II but now seeks to create peace and reconciliation elsewhere in the world. The World Council of Churches also works to help after conflict.
- In some places Christians face persecution where they are treated badly for their faith. Churches around the world work together to try and overcome this.</td></tr>
</table>

Knowledge Bank for Year 10 – Healthy Living

Week 1 – Healthy Habits – due 12/01

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
Pour garder la forme	To keep in shape
je mange	I eat
je bois	I drink
je dors	I sleep
je marche	I walk
je cours	I run
(bon pour) la santé	(good for your) health
(bon pour) le corps	(Good for the) body
le fruit	fruit
le légume	vegetable
le fast-food	fast food
sain	healthy
malsain	unhealthy
bon	good
mauvais	bad
équilibré	balanced

Translate the following sentences into French:

1. To keep in shape, eat fruit because it's healthy.
2. I drink water because it's good for your health.
3. I sleep when I am tired because it's important.
4. I walk because it's good for the body.
5. I keep in shape I eat balanced and healthily.

French

Week 2 – Food and Drink – due 19/01

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
je prends	I take
je prépare	I prepare
je choisis	I choose
je cuisine	I cook
je mange	I eat
Afin que je puisse	So that I can
le repas	Meal
le petit-déjeuner	breakfast
le déjeuner	lunch
le dîner	dinner
le fromage	cheese
le gâteau	Cake
l'eau	water
le jus	Juice
délicieux	delicious
sucré	sweet

Translate the following sentences into French (use previous week if stuck on any!)

1. I choose juice because it's sweet.
2. I cook dinner and it's delicious.
3. I eat breakfast and lunch so that I can do sport
4. I prepare a healthy lunch because it's good for my health.
5. I drink water and eat fruit.

French

Week 3 – Exercise and Fitness – due 26/01

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
je fais du sport	I do sport
je joue au foot	I play football
je nage	I swim
je fais du vélo	I cycle
je cours	I run
le sport	sport
le gymnase	gym
le terrain	field
le ballon	ball
le match	match
actif	active
sportif	sporty
fatigué	tired
fort	strong
rapide	fast

Translate the following sentences into French (use previous week to help if stuck!)

1. I do sport so that I can keep in shape.
2. I play football and I run so that I can keep in shape
3. I swim because it's good for my health.
4. I cycle and I play a match because it's good for the body
5. I go to the gym because I am sporty and so that I can stay in shape

Week 4 – Rest and Wellbeing – due 02/02

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
reposer	To relax
je me repose	I rest
je me relaxe	I relax
je dors	I sleep
je lis	I read
je regarde la télé	I watch TV
le lit	Bed
le canapé	Sofa
le livre	Book
la télé	TV
le repos	Rest
calme	Calm
tranquille	Peaceful
ennuyeux	Boring
intéressant	Interesting
relaxant	Relaxing

Translate the following sentences into French:

1. I rest in the evening and it's peaceful
2. I relax and read a book.
3. I sleep because it's relaxing.
4. I watch TV so that I can relax
5. I rest on the sofa and I read so that I can relax

French

Week 5 – Risks and Choices – due 09/02

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
Si je fume	If I smoke
Si je vapote	If I vape
j'évite	I avoid
je choisis	I choose
je decide	I decide
Je prends	I take/ make
la cigarette	cigarette
la vape	vape
le choix	choice
la decision	decision
le risque	risk
Dangereux	dangerous
Mauvais	bad
Sain	healthy
Utile	useful
Néfaste	harmful

Translate the following sentences into French:

- I avoid smoking because it's dangerous.

- If I choose healthy food it's good for the body.

- I decide to eat vegetables so that I can stay in shape.

- If I vape it's harmful.

- I make a healthy decision.

Week 6 – Conditional Tense Verbs (half term homework due 23/02)

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
je mangerais	I would eat
je boirais	I would drink
je dormirais	I would sleep
je marcherais	I would walk
je courrais	I would run
je prendrais	I would take
je choisirais	I would choose
je cuisinerais	I would cook

Translate the following sentences into French:

- I would eat fruit every day.

- I would drink water because it's healthy.

- I would sleep more.

- I would walk to school.

- I would cook dinner for my family.

Week 7 – Past Tense Practice – due 02/03

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
j'ai mangé	I ate
j'ai bu	I drank
j'ai dormi	I slept
j'ai marché	I walked
j'ai couru	I ran
j'ai pris	I took
j'ai choisi	I chose
j'ai cuisiné	I cooked
j'ai joué	I played
j'ai lu	I read
j'ai regardé	I watched
j'ai évité	I avoided
j'ai décidé	I decided
Je n'ai pas fumé	I did not smoke
Je n'ai pas vapoté	I did not vape

Translate the following sentences into French:

1. I ate fruit yesterday.
2. I drank juice this morning because it's healthy.
3. I slept well last night so that I can play football with my friends.
4. I walked to school.
5. I played football and read a book so that I can relax.

Week 8 – Future Tense Practice (due 09/03)

Learn the following vocabulary. Create flashcards and use look, cover, write and check to practise.

French	English
je mangerai	I will eat
je boirai	I will drink
je dormirai tôt	I will sleep early
je marcherai	I will walk
je courrai	I will run
je prendrai	I will take
je choisirai	I will choose
je cuisinerai	I will cook
je jouerai	I will play
je lirai	I will read
je regarderai	I will watch
j'éviterai	I will avoid
je déciderai	I will decide
je ne fumerai jamais	I will never smoke
je ne vapoterai jamais	I will never vape

Translate the following sentences into French:

1. I will eat vegetables tomorrow.
2. I will drink water after sport.
3. I will sleep early because it's healthy.
4. I will never smoke because it's unhealthy.
5. I will cook a healthy meal so that I can stay in shape.

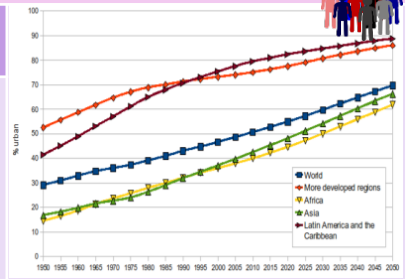
GEOGRAPHY

What is Urbanisation?

This is an increase in the amount of people living in urban areas such as towns or cities. In 2007, the UN announced that for the first time, more than 50 % of the world's population live in urban areas.

Where is Urbanisation happening?

Urbanisation is happening all over the word but in LICs and NEEs rates are much faster than HICs. This is mostly because of the rapid economic growth they are experiencing.



Causes of Urbanisation

Rural - urban migration (1) — **The movement of people from rural to urban areas.**

Push

- Natural disasters
- War and Conflict
- Mechanisation
- Drought
- Lack of employment

Pull

- More Jobs
- Better education & healthcare
- Increased quality of life.
- Following family members.

Natural Increase (2) — **When the birth rate exceeds the death rate.**

Increase in birth rate (BR)

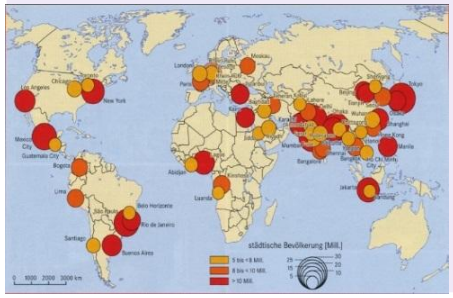
- High percentage of population are child-bearing age which leads to high fertility rate.
- Lack of contraception or education about family planning.

Lower death rate (DR)

- Higher life expectancy due to better living conditions and diet.
- Improved medical facilities helps lower infant mortality rate.

Types of Cities

Megacity — An urban area with over **10 million people** living there.



More than two thirds of current megacities are located in either NEEs (Brazil) and LICs (Nigeria). The amount of megacities are predicted to increase from 28 to 41 by 2030.

Sustainable Urban Living

Sustainable urban living means being able to live in cities in ways that do not pollute the environment and using resources in ways that ensure future generations also can use then.

Water Conservation

This is about reducing the amount of water used.

- Collecting rainwater for gardens and flushing toilets.
- Installing water meters and toilets that flush less water.
- Educating people on using less water.

Energy Conservation

Using less fossil fuels can reduce the rate of climate change.

- Promoting renewable energy sources.
- Making homes more energy efficient.
- Encouraging people to use energy.

Creating Green Space

Creating green spaces in urban areas can improve places for people who want to live there.

- Provide natural cooler areas for people to relax in.
- Encourages people to exercise.
- Reduces the risk of flooding from surface runoff.

Waste Recycling

More recycling means fewer resources are used. Less waste reduces the amount that eventually goes to landfill.

- Collection of household waste.
- More local recycling facilities.
- Greater awareness of the benefits in recycling.

Unit 2a

AQA

Urban Issues & Challenges

Sustainable Urban Living Example: Malmo, Sweden

Background & Location	Sustainable Strategies
Located in south west **Sweden**. Since 2000, has been linked by the **Øresund Bridge** across the Øresund to **Copenhagen**, **Denmark**.	Malmo is known as one of the most sustainable cities in the world. - Malmo has over 500km of cycle tracks. 1 in every 4 journeys in Malmo is by bike. People in the city collect their organic waste to make biogas to power the city's busses. By 2030, Malmo wants to be powered entirely by renewable energy sources. At the moment, wind turbines around the city power 60,000 homes. All new houses in Malmo are low energy.

Integrated Transport System

This is the linking of different forms of public and private transport within a city and the surrounding area.

Brownfield Site

Brownfield sites is an area of land or premises that has been previously used, but has subsequently become vacant, derelict or contaminated.

Traffic Management

Urban areas are busy places with many people travelling by different modes of transport. This has caused urban areas to experience different traffic congestion that can lead to various problems.

Environmental problems

- Traffic increases air pollution which releases greenhouse gases that is leading to climate change.

Economic problems

- Congestion can make people late for work and business deliveries take longer. This can cause companies to lose money.

Social Problems

- There is a greater risk of accidents and congestion is a cause of frustration. Traffic can also lead to health issues for pedestrians.

Congestion Solutions

- Widen roads to allow more traffic to flow easily.
- Build ring roads and bypasses to keep through traffic out of city centres.
- Introduce park and ride schemes to reduce car use.
- Encourage car-sharing schemes in work places.
- Have public transport, cycle lanes & cycle hire schemes.
- Having congestion charges discourages drivers from entering the busy city centres.

Traffic Management Example: Plymouth

Electrification of the public buses, including the double decker buses. Beryl Bike scheme- people can hire a bike for journeys across Plymouth.
Further investment in cycle path network.

Greenbelt Area

This is a zone of land surrounding a city where new building is strictly controlled to try to prevent cities growing too much and too fast.

Urban Regeneration

The investment in the revival of old, urban areas by either improving what is there or clearing it away and rebuilding.

GEOGRAPHY

Urban Change in a Major UK City: Plymouth Case Study

Location and Background

London can be found in the Southwest of England, in Devon.
It is the largest city in Devon, with almost 266,000 people.
Plymouth was rebuilt after WWII due to the amount of damage caused in the Plymouth Blitz.

City's Importance

- South West's largest city.
- Known as the UK's Ocean City.
- Contains UK largest aquarium – Marine Aquarium Plymouth (also home to Ocean Conservation).
- Centre of global marine research partnered with Plymouth University.
- One of the world's largest naval ports.

Plymouth population

Population of Plymouth has increased since second world war.

Plymouth has a current population of **264,700**

Life expectancy at birth is **78.8 for males and 82.5 for females**

93% of the Plymouth population are White British

City's Opportunities

Social: Theatre Royal is southwest's largest theatre with shows from Westend and nationally recognised actors/actresses.
Life Centre – one of UK's leading dive centres (Tom Daly & Tonia Couch = Olympians).

Economic: Plymouth Gin, Burt Crisps and Princess Yachts all famous industries.
University has over 22,000 students with links in maritime industries.
Maritime and defence jobs account for 18% of all jobs in Plymouth.

Environmental: 34% of Plymouth is green space.
Bordered by 3 areas of outstanding natural beauty.
Electrification of buses – 55 double decker buses, part of ZEBRA project.

City Challenges

Social: House price increase along with greater house shortages. Inequalities in healthcare. Child poverty is greater in Plymouth than national average.

Economic: INEQUALITIES exist in London between the rich and the poor – income, education, housing. Devonport is statistically the most deprived area in Plymouth.

Environmental: Traffic congestion is experienced daily – health implications and environmental pollution.

Plymouth Regeneration:Drake Circus & Mill Bay

Two focuses:
Drake Circus and Drake Leisure
Drake Circus was an old shopping centre and Drake Lesiure was the old Coach station
Drake Circus and Drake Leisure
Social - encourage people into the city centre
Economic - People spending money in the area
Mill Bay:
Social - range of new housing
Economic - range of construction jobs, new school
Environmental - cleaned up marina, urban greening

Urban Change in a Major NEE City: RIO DE JANEIRO Case Study

Location and Background

Rio is a coastal city situated in the South East region of Brazil within the continent of South America. It is the second most populated city in the country (6.5 million) after Sao Paulo.

City's Importance

- Has the second largest GDP in Brazil It is headquarters to many of Brazil's main companies, particularly with Oil and Gas.
- Sugar Loaf mountain is one of the seven wonders of the world.
- One of the most visited places in the Southern Hemisphere.
- Hosted the 2014 World Cup and 2016 Summer Olympics.

Migration to Rio De Janeiro

The city began when Portuguese settlers with slaves arrived in 1502. Since then, Rio has become home to various ethnic groups.

However, more recently, millions of people have migrated from rural areas that have suffered from drought, lack of services and unemployment to Rio. People do this to search for a better quality of life.

This expanding population has resulted in the rapid urbanisation of Rio de Janeiro.

City's Opportunities

Social: Standards of living are gradually improving. The Rio Carnival is an important cultural event for traditional dancing and music.

Economic: Rio has one of the highest incomes per person in the country. The city has various types of employment including oil, retail and manufacturing.

Environmental: The hosting of the major sporting events encouraged more investment in sewage works and public transport systems.

City Challenges

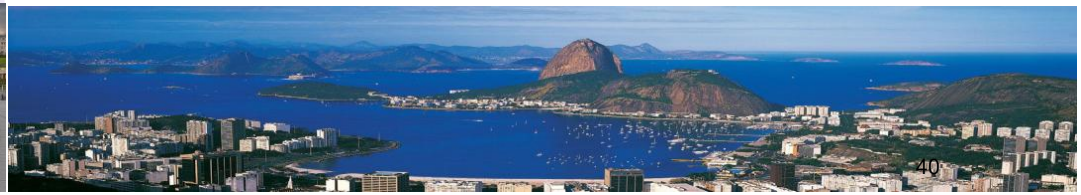
Social: There is a severe shortage of housing, schools and healthcare centres available. Large scale social inequality, is creating tensions between the rich and poor.

Economic: The rise of informal jobs with low pay and no tax contributions. There is high employment in shanty towns called Favelas

Environmental: Shanty towns called Favelas are established around the city, typically on unfavourable land, such as hills.

Self-help schemes - Rocinha, Bairro Project

- The authorities have provided basic materials to improve peoples homes with safe electricity and sewage pipes.
- Government has demolished houses and created new estates.
- Community policing has been established, along with a tougher stance on gangs with military backed police.
- Greater investment in new road and rail network to reduce pollution and increase connections between rich and poor areas.



HISTORY KNOWLEDGE ORGANISOR – Weimar & Nazi Germany

Rise of Hitler: 1919-32

National Socialist German Workers Party (NSDAP)

Democracy	WWI ended	1918
Orator	Hitler joins the NSDAP	1919
Constitution	Hitler leader the NSDAP	1921
Reichstag	The SA formed	1921
Elections	Munich Putsch	1923
Paramilitary Force	Re-launch of Nazi Party	1925
Nationalism	Hitler forms the SS	1925
Socialism	Bamberg Conference	1926
Totalitarianism	German Election	1933

Key People

Rudolph Hess	Joseph Goebbels	Ernst Rohm
Heinrich Himmler	Hermann Goring	Wilhelm Frick
Reinhard Heydrich	Martin Niemoller	Cardinal Galen
Edelweiss Pirates	White Rose Group	Swing Kids
Gertrud Scholtz-Klink	Sofie Scholl	Adolf Hitler

Dictatorship: 1932-9

Establishing	Chancellor	1933
Dictatorship	Reichstag Fire	1933
Trade Unions	Enabling Act	1933
Political Parties	Religious Persecution	1933
Decree	Gestapo	1933
Opposition	Concordat	1933
Nationalism	Nuremberg Rally	1933
Influential	The Peoples Court	1934
Patriotism	Night of the Long Knives	1934
Denunciation	Fuhrer	1934
Interrogation	Total Power	1934
Terror	Machinery of Terror	1933-9
Enlightenment		

Propaganda ('weapon on the wall')

Legacy: Pre 1919

Kaiser	Kaiser Wilhelm I
Chancellor	Kaiser Wilhelm II
Unification	Otto Von Bismarck
1st Reich (962-1806)	Phillip Scheidemann
2nd Reich (1871-1918)	Friedrich Ebert
Armistice	Matthias Erzberger
Demonstrations	Paul Von Hindenburg
Abdicate	Industrialisation
German Revolution	Militarism
Republic	Nationalism

Weimar Republic: 1918-32

Weimar Government	Sparticists Revolt	1919
Putsch	Kapp Putsch	1920
Guilt Clause	Reparations missed	1922
Civil Servant	French Occupy Ruhr	1923
Constitution	Passive Resistance	
Electorate	Hyperinflation	1923
Proportional representation	League of Nations	1919
Hyperinflation	Dawes Plan	1924
Rentenmark	The Locarno Pact	1925
Economy	Kellogg-Briand Pact	1928
November Criminals	Young Plan	1929
Stock Market	Wall Street	1929
American Loans	Great Depression	1929-39

Left Wing – Sparticists/Communists
Right Wing – Freikorps brigade/Kapp Putsch

Life in Germany: 1933-9

Unemployment	Women's leader of DFW	1934
Blood and Soil	Lebensborn Programme	1935
Autobahns	Strength through joy	1935
Mother's Cross	Beauty of labour	1935
Bronze Medal (4)	Reich Labour Service	1935
Silver Medal (5-7)	Volkswagen Scheme	1935
Gold Medal (8+)	Rearmament	1935

DAF (Deutsche Arbeitsfront) German Labour Front
BDM (The league of German Maidens)
DFW (German Women's Enterprise) 193

'Kinder', 'Kirche', 'Kuche'. (children, church, kitchen)

Racial Policy

Anti-Semitism
Eugenics
Racial hygiene
Kristallnacht
Ubermenschen
Untermenschen
Social-Darwinism
Concentration Camps

Jews
Gypsies
Slavs (Eastern Europe)
Black people
Homosexuals
Disabled
Tramps
Non-Aryan people

Art

Component 2:
Responding to a Brief

Carnival

Key Words

festival, fiesta, fete, gala, celebration, parade, march, 3D dimensions, intentions, recording skills, visual language, primary, secondary, stimulate, designing, resistant, non-resistant, modelling, carving, constructing, joining, moulding, volume, space, surface, firm, structure, measuring, estimating, firming, assembling, finishing, investigating, properties, combinations, maquettes, exploratory, select.

Techniques, Materials and Processes: sculpture, clay, wood, wire, paper, maquettes, natural and man-made fibres, weaving, construction, plastics, fabrics, mod roc, withies, paper mache.

PETER MINSHALL

PHILIP TREACY

Carnival - a festival involving processions, music, dancing and the use of masquerade:

Artists, designers, crafts people, sculptors, interior designers, architects and product designers have working in three dimensions in common. 3D art, craft and design covers a wide range of practices across different disciplines to create objects that we may see or use in our homes, in public spaces, in galleries, in shops or in the workplace.

Working in 3D and exploring 3D visual language requires skills in handling 3D materials and techniques. In Component 2 you will experiment with a range of 3D visual languages whilst being inspired by Carnivals.

Tips for Success

- Experiment with a diverse range of materials, equipment and techniques when developing 3D visual language.
- Develop in-depth investigations into a range of professional 3D practitioners and analyse how they communicate their ideas.
- Imaginatively develop ideas that meet the requirements of the brief.
- Analyse and explain the progress of your ideas and your use of 3D methods.
- Consider and record Health & Safety constraints and the formal elements used in your work.
- Ensure your ideas have purpose and meaning.
- Understand that each material has its own set of rules and methods - but rules can be broken through experimentation and manipulation.
- **Take creative risks.**

MICHAEL CHRISTIAN

Assessment Objectives	
AO1	Demonstrate understanding of the requirements of a brief.
AO2	Develop and produce a response to a brief
AO3	Present a response to a brief.

Inspiration/Artists

Venetian	Headdresses	Philip Treacy
African	Costumes	Peter Minshall
Mexican	Installations	
Gargoyles	Conceptual	Michael Christian
Carnivals	Floats	
Festivals	Masks	Sergio Boldrin

VENETIAN

AFRICAN

FAMOUS CARNIVALS & FESTIVALS

- Rio de Janeiro
- Notting Hill
- Mardi Gras
- Viareggio Carnival
- Trinidad & Tobago Carnival
- Burning Man
- Day of the Dead - Dia De Los Muertos
- Coachella

DAY OF THE DEAD

MARDI GRAS

Useful Websites

- *www.craftscouncil.org.uk*
- *www.vam.ac.uk*
- *www.fashion-era.com*
- *www.culture24.org/*

1.3 Putting a Business Idea into Practice

1.3.1 Aims & Objectives

Aims – a long term, strategic goal eg grow the business

Objective- a short term specific target eg increase market share by 5% this year

Financial Objective – one that involves money eg improve sales, profit, market share, survival etc

Non Financial Objectives – one that does not involve money : personal satisfaction, challenge, control, independence, social benefit

1.3.2 Revenue, Costs and Profit

Formulas needed

Revenue = Selling Price x Quantity **Profit**

= Revenue – Total Cost

Total Cost = Fixed Cost + Variable Cost

Total Variable Cost = Variable Cost per unit x Quantity

Breakeven = Fixed Cost/(Selling Price-Variable Cost)

Margin of Safety = Actual Sales – Breakeven Level

Interest = (Total Repayment – Borrowed Amount)/Borrowed Amount

1.3.2 Revenue, Costs and Profit

Key Terms

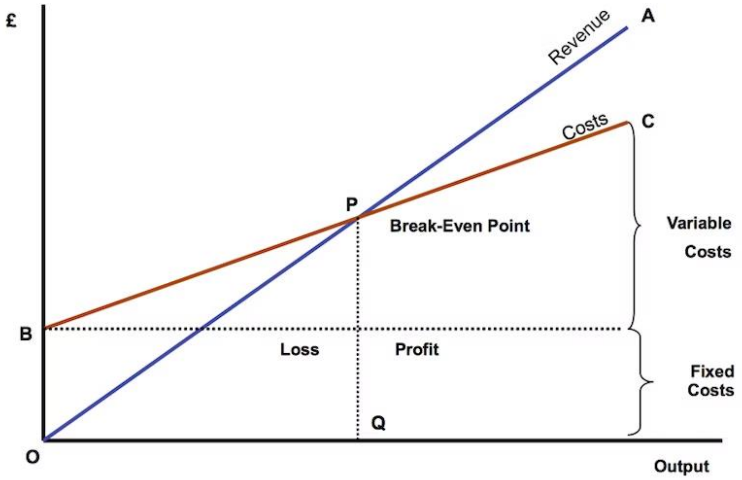
Variable Costs – costs that change with the level of output eg raw materials

Fixed Costs – costs that do not change with the level of output eg rent

Interest – cost of borrowing money from the bank or other financial institution

Breakeven – the minimum level of output needed to cover all costs, so no profit or loss is made

Margin of Safety – the amount of sales the business can afford to lose without making a loss



Cash low Forecasts

Opening Balance – money in the bank at the beginning of the month

Cash in – all money into the business including revenue, investment, loans etc

Cash out – all money out of the business including purchases and expenses

Net Cash Flow – How much the money in the business has changed

Closing Balance – money in the bank at the end of the month

CASH FLOW FORECAST

£	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9
Opening Balance	**0**	**(4,850)**	**(9,950)**	**(14,300)**	**(8,650)**	**(13,700)**	**(18,500)**	**(21,900)**	**(26,400)**
CASH INFLOW									
Online Shopping Revenues	2,000	2,250	2,500	3,000	3,250	3,500	4,000	4,250	4,500
Government Grant				10,000					
Total Inflows	**2,000**	**2,250**	**2,500**	**13,000**	**3,250**	**3,500**	**4,000**	**4,250**	**4,500**
CASH OUTFLOW									
Office rental	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)
Employee Salaries	(5,000)	(5,000)	(5,000)	(5,000)	(6,000)	(6,000)	(6,000)	(6,000)	(6,000)
Utilities (energy, water and broadband)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)	(300)
Travel	(450)	(450)	(450)	(450)	0	0	0	(450)	(450)
Digital Marketing	0	(500)	0	(500)	(500)	(500)	0	(500)	(500)
Shipping	(100)	(100)	(100)	(100)	(500)	(500)	(100)	(500)	(500)
Total Outflows	**(6,850)**	**(7,350)**	**(6,850)**	**(7,350)**	**(8,300)**	**(8,300)**	**(7,400)**	**(8,750)**	**(8,750)**
NET CASHFLOW									
Closing balance	**(4,850)**	**(5,100)**	**(4,350)**	**5,650**	**(5,050)**	**(4,800)**	**(3,400)**	**(4,500)**	**(4,250)**
	Parentheses denote negative numbers								

Sources of Finance for Business

Short Term

Overdraft – having a negative balance in the bank account

Trade Credit – buy now pay later given by suppliers

Long Term

Personal Savings – business owners putting in their own money

Venture Capital – (Dragon Den) experienced business people invest for a share of the business and lend their expertise and experience to help business succeed

Share Capital – selling shares in the ownership of the business to others

1.4 Putting a Business Idea into Practice

1.4.1 Business Start ups

Franchise – when one business (the franchisor) sells the right to use their brand and sell their product to an individual or other business (the franchisee).

Sole Trader - a business owned by only one person, who can employ others if they like. A sole trader has unlimited liability.

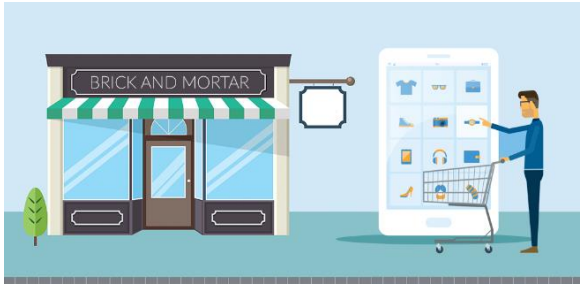
Partnership – business owned by between 2-20 partners who all own part of the business and normally are involved running the business. Partners have unlimited liability.

Private Limited Company – Tend to be family run businesses. They can sell shares to family and friends but not to the general public. Shareholders have limited liability.

Liability – the amount of financial loss or criminal/civil damage you are responsible for.

Unlimited Liability – The owners are responsible for all the debt of the business and could lose their personal possessions like home and car because of it.

Limited Liabiliity – any financial loss is limited to the financial investment made into the company, any personal assets are safe.



1.4.2 Business Location

Factors influencing business location

Proximity (closeness) to: customers, staff, materials and competitors

The nature of the business activity

The impact of the internet on location decisions

e-commerce vs bricks and mortar shops

e-commerce saves on need for expensive high st location next to customers saving money but many enjoy trying goods before they buy.

1.4.3 The Marketing Mix

Key Terms

Marketing Mix – 4Ps – Price Product, Place and Promotion

Adjusting the marketing mix based on the levels of competition. Eg lowering prices if a new competitor starts to steal customers

How changing customer needs impact the marketing mix eg with more people working and more living alone the need for convenience in food is leading to increase in ready meals and deliveries

Impact of technology on the marketing mix, especially e-commerce impacting place and digital communications influencing Promotions.

deliveroo

1.4.4 Business Plans

Business Plans tend to include:

The business idea; aims and objectives; target market (market research); location, marketing mix; forecast revenue, costs and profit; and sources of finance.

Business Plans are used to attract finance from banks (loans) or investors as they show why the business needs the money and by when they will be able to pay it back.

They also help to minimise risk as they aide entrepreneurs to consider different aspects of the business and get prepared. Eg arrange overdraft if a shortage of funds identified for a short period of time.

Knowledge Organiser

NCFE CACHE: Level 1-2 Technical Award Child Development & Care in the Early Years

Content area 1: Child development

Physical Development
Movements, balance and co-ordination
Fine motor – small movements often made using hands, such as picking up a spoon or using a pencil
Gross motor – large movements such as running balancing & throwing.

Communication and Language development
Talking, listening & understanding. Reading & writing for older children.
Receptive language – what children can understand
Expressive language – what children can say

Social & emotional development
Relationships with others, managing feelings, confidence & self-control
Attachment – a close bond between the child & their parents
Bonding – the process by which children & parents develop a strong loving relationship

Cognitive development
Thinking, memory & understanding concepts such as time, colour & number
Object permanence – the ability to understand that objects when placed out of sight are still in existence
Trial by error – seeing what happens after an action has been made & learning from it.

Expected pattern of Physical development.

Fine motor
At birth:
- hands are firmly closed
- Often fold their thumb under fingers

1 years:
- Clasps hands together
- Points using index finger

2 years:
- Draws lines, dots and circles
- Separates interlocking toys

3 years:
- Fastens large zip
- Begins to show preference for dominant hand

4 years:
- Begins to fasten buttons
- Uses spoon and fork well to eat

5 years:
- Can use a knife and fork
- Can thread small beads

Gross Motor
At birth:
- Lies with head to one side
- Head lags when pulled to sitting position

1 year
- Sits down from standing
- Is more mobile

2 years
- Runs with control
- Throws and kicks a ball

3 years
- Can walk backwards and sideways
- Jumps with both feet

Expected pattern of communication and language development
At birth:
- Cries to indicate needs
- Recognises main caregiver's voice

1 years:
- Understands simple frequent words
- Babbles leading to spoken words

2 years:
- Uses 50 words or more
- Refers to self by name

3 years:
- Uses 200 words or more
- Joins in simple rhymes

4 years:
- Enjoys telling and sharing stories
- Can be understood easily by others

5 years:
- Shows signs of reading
- Concentrates and maintains attention

Expected pattern of social and emotional development.
At birth:
- Expresses pleasure when being fed
- Often imitates facial expressions

1 years:
- Enjoys simple games
- Dependant on others

2 years:
- Frustrated when unable to express feelings
- May be clingy

3 years:
- Expresses emotions
- Enjoys playing with others

4 years:
- More confident in new situations
- Can be sensitive to others

5 years:
- Enjoys group play
- Has likes and dislikes

Expected pattern of Cognitive development.
At birth:
- Turns head towards bright light
- Startled by sudden noises

One year
- Understand simple instructions
- Responds to gestures

2 year
- Understands consequences for actions
- Names pictures and objects in book

3 years
- Recognises objects that are heavy and light
- Sorts objects by shape and size

4 years
- Counts to 10
- Names some colours

5 years
- Can count to 20
- Understand basic rules

Holistic Development – Overall development of a child

Transition – a change of place, family circumstance and/or carer.

Content area 2: Factors that influence the child's development

Nature: Biological. Nurture: Environmental

Biological Factors	Example	Environmental factor	Example
Physical traits – some are linked to genetic inheritance.	Height, physical strength, face shape, eye colour.	**Love & interaction** – children thrive if they feel loved & have plenty of positive attention from the adults who care for them.	Cuddles, time to talk, being spoken to positively, being listened to.
Medical conditions - most are linked to genetic inheritance.	Diabetes, asthma, sickle cell anaemia.	**Stimulation & play** – children benefit if there are opportunities to play, talk and do different things.	Going to different places, doing different things, playing with adults and other children, sharing books.
Learning difficulties – are most likely as a result of genetic inheritance.	Autistic spectrum conditions, dyslexia.	**Physical conditions/ socio-economic** – Children need shelter, warmth and to be physically safe. They also need room to move and explore.	Warm home, opportunities to go outdoors, space to play indoors.
Disabilities – some are linked to genetic inheritance, whilst others may occur during pregnancy and birth	Deafness, sight problems, cerebral palsy, spina bifida.	**Food & drink** – children need food & drink that is nutritious and healthy. This helps them to grow and have the energy to explore, move and learn.	Developing good food habits including enjoying vegetables and foods high in nutrients.
Personality & temperament	Shyness, curiosity, outgoing	**Family Lifestyle:**	Abuse, neglect, drug/alcohol abuse, healthy diet, poor diet.
Pregnancy & birth – how healthy a mother is during pregnancy can affect a child's development	German measles, fetal alcohol syndrome, spina bifida, developmental difficulties.	**Personal factors** are about inherited traits and also what happened before and immediately after you were born. **External factors** are about where and how you grew up. They also include the events and experiences that you have had.	

Common Transitions
- Going to a pre-school, nursery or childminder
- Starting school
- Being cared for by a family member
- Going to a club or class
- Changing group or class within a nursery, pre-school or school.
- Arrival of a new baby
- Moving home
- Death or illness of a family member
- Family breakdown e.g. divorce

Impacts of transitions on a child's development
Language development child not wanting to talk, finding it hard to listen and withdrawing.
Intellectual development concentration, memory may be limited, children need to be interested in what they are learning.
Social & emotional can cause anxiety, behavioural changes,
Physical can be loss of appetite. Sleep patterns, regression.

Illness – Stress affects how well children can fight illness. They may get more coughs and colds than usual.

Sleep – When children are stressed, they find it hard to get to sleep or may wake up a lot.

Possible effects of transitions

Lack of energy/ interest – Children many not be interested or have the energy to run or explore, this can mean that physical skills are not being practised.

Feeding – When children are unsure or stressed. They may find it hard to eat or lose their appetite.

Drama

Component 1
Live Theatre Evaluation

Key Terms

Describe - to write what you saw and heard - how actors use theatrical skills.

Analyse - to examine in detail by looking at the different elements and to explain it.

Evaluate - to judge or form an opinion, e.g. explaining what effect was created and how successful it was for the audience.

Knowledge and Understanding of the Play

- Context of the play.
- Features of the style and genre of the play.
- The plot
- Characters
- Reviews of the play and production.
- Drama devices used.
- How relationships with other characters on stage were communicated by the actor.
- Stage Design and how the actors used it.

Writing About Drama

What is a specific example?
WHAT did the actor do?
WHEN did the actor do it?
HOW did the actor do it?
WHY did the actor do it?

Interaction between the actor and other characters?

The outcome for the audience.

THEATRICAL SKILLS?

PHYSICAL SKILLS	VOCAL SKILLS
BODY LANGUAGE	PITCH
POSTURE	PACE
GESTURE	VOLUME
MOVEMENT	TONE
SPATIAL AWARENESS	PROJECTION
USE OF LEVELS	ACCENT
FACIAL EXPRESSION	INTONATION
EYE CONTACT	TIMING
PROXEMICS	EMOTIONAL RANGE
	DELIVERY OF LINES

Component 2
Devised Theatre

STYLE AND PRACTITIONERS

Naturalistic, Epic Theatre, Semi-naturalistic, Abstract, Stanislavski, Brecht, Frantic assembly

GROUP SKILLS

Choral Speech, Choral movement, Counterpoint, Repetition and Echo, Synchronised, movement/ Unison, Canon, Banners, Characterisation, Multi-role

DRAMA DEVICES

STILL IMAGE **THOUGHT-TRACK**
MONOLOGUE **SPLIT STAGE**
CROSS-CUTTING **MIME**
PHYSICAL THEATRE **NARRATION**
FLASH FORWARD **FLASHBACK**
SLOW MOTION
MARKING THE MOMENT

What type of group member are you?

LEADER: you have ideas and are happy to express them. You enjoy being in charge. You may sometimes be frustrated if others aren't following you or disagree with you.

HELPER: you don't usually lead, but you are happy to put forward your ideas and work with others. You may assist Leaders to see their ideas through or encourage others to take part.

PASSENGER: you don't want to lead and you aren't confident about putting your ideas forward. However, you will go along with what the group wants to do.

BLOCKER: you find group work frustrating and you don't positively help the group. You might tend to argue with others, refuse to co-operate or become distracted.

REHEARSAL TECHNIQUES

Character Objectives, hot-seating, Emotional Memory, Improvisation, Character Modelling, Back-story, Research, Internal Dramatic Dialogue

Students must develop their ability to:

- ☺ carry out research
- ☺ develop their own ideas
- ☺ collaborate with others
- ☺ rehearse, refine and amend their work in progress
- ☺ analyse and evaluate their own process of creating devised drama
- ☺ realise artistic intention in devised drama

DRAMA

COMPONENT 2 - DEVISED THEATRE

RESPONDING TO A STIMULUS

- What ideas generally come to mind?
- What does this make you think of?
- How does the stimulus make you feel?
- What themes do you associate with your stimulus?
- Which characters do you associate with your stimulus?
- Which settings do you associate with your stimulus?

- What research will you undertake?
- What did you find out once you had completed research?
- What do you want to show through your character? What do you want the audience to see about them?
- What was the initial purpose of your piece overall? What message do you want to show? How do you want your audience to feel?

Frantic Assembly

Physical Theatre Company

Combines music, movement and text - inter-disciplinary

Chair Duets

Devised Origins

Movement	Expression	Gesture	Interaction	Voice	Audience
Gait - the way you walk. Posture - the position you hold you body when standing or sitting. Stance - the way you stand. Body Language - how you express your emotions through your body.	Facial Expression - showing your character's emotion by using your face. When describing, focus on the eyes, eyebrows and mouth.	A movement, using the hand, that expresses an idea or communicates meaning. When describing, describe in detail, e.g. *"I used a gesture where I outstretched my hand to show I wanted to ignore the other character."*	Eye contact (or lack of). Proxemics - the distance between the characters that communicates their relationship/situation.	Pitch - how high or low your voice is. Pace - how quickly you speak. Volume - how loud you speak. Use of pause - pausing before a line of speech. Tone - showing your character's emotions through your voice.	What effect does this have on the audience? What do you want the audience to see/feel? How do you know your performance was successful? How did the audience react?

CONSTANTIN STANISLAVSKI

NATURALISTIC

The 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.
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.
Subtext	The subtext is the actual meaning and motivation behind the lines that are spoken and the actions taken.
Objectives and super-objectives	An objective is the reason for our actions. What are we trying to achieve? The super-objective is an over-reaching objective, probably linked to the overall outcome in the play.
Given circumstances	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?
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.
Realistic settings and characters	The objective of naturalism is to create a performance that is as close to real life as possible. Therefore, settings and characters should realistic.

BERTOLT BRECHT

NON-NATURALISTIC

Verfremdungseffekt (The V effect OR the alienation effect)	Distancing the audience from becoming attached emotionally to the characters/the narrative by reminding them constantly they are watching a play. This enables the audience to think about the subject(s) and themes of the play and possibly take action rather than just being entertained.
Breaking the fourth wall	Addressing or acknowledging the audience directly in order to remind them they are watching a piece of theatre.
Gestus	Gestus is a clear character gesture or movement used by the actor that captures a moment or attitude rather than delving into emotion,
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.
Placards	A placard is a sign or additional piece of written information presented on stage. Using placards might be as simple as holding up a card or banner. What;s important is that the information doesn't just comment upon the action but deepens our understanding of it.
Non-linear structure	Scenes are episodic, which means they stand alone and are constructed in small chunks, rather than creating a lengthy and slow build of tension. Epic theatre often has a fractured narrative that is non-linear and mumps about in time, including flashbacks/ flash-forwards.
Spass	Making jokes/including comedy to stop the audience from connecting emotionally to the characters. The audience will laugh and then question why they laughed.

GCSE Design and Technology Year 10 Knowledge Organiser

W/B 6th Jan – Smart Materials

While smart materials are modern materials, modern materials are not necessarily smart. To be classed as a 'smart material' they need to exhibit a physical change in response to some external stimuli. In other words, they change when you do something to them, and when you remove what is causing that change they return to their original form. You must also know about quantum tunnelling composites, hydrochromic pigments and polymorph.

SHAPE MEMORY ALLOY (SMA)

SMA wire also called 'Nitinol', as it is a composed of nickel and titanium. Looks like ordinary wire and has many of the same properties.
SMA has a memory - for example, if it is folded to form a shape and then heated above 90 degrees (centigrade) it returns to its original shape.

TWISTED SMA WIRE HEATED TO 90 DEGREES

RETURNS TO ORIGINAL SHAPE

SMART MATERIALS THERMOCHROMIC INKS

Thermochromic inks change colour in response to changes in temperature. These inks have serious applications such as in the food industry. They can be used to indicate when a packaged food has reached the correct temperature in an oven. They are also used in forehead thermometers.

SMART MATERIALS - PHOTOCHROMIC INKS

Photochromic ink darkens, as the light level increases. Some photochromic inks change colour. In fact, it is UV light that causes the darkening of the ink, which means the ink works best in natural light. This special ink has two main applications; sunglasses and spectacles.

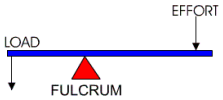
MEDIUM UV LIGHT LEVEL

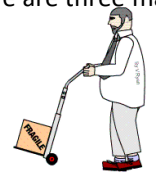
W/B 13th Jan – Mechanisms

Linear	Rotary	Reciprocating	Oscillating
→	↻	↔	↻

Levers move and lift loads by rotating about a stationary point called a fixed pivot (or fulcrum). There are three main types:

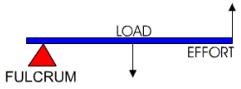
CLASS ONE





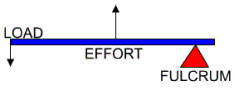
The workman uses a trolley to move the large packing case. The fulcrum

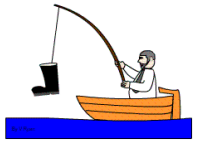
CLASS TWO



The gardener uses a wheel barrow to lift tools and garden waste. The load is in the centre of the barrow

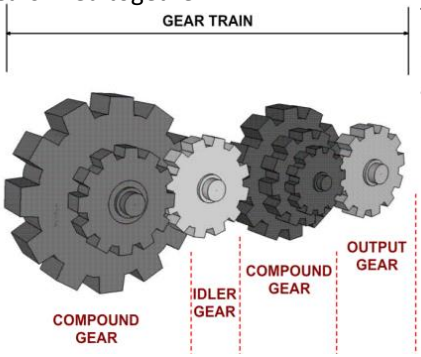
CLASS THREE





The fisherman catches the 'fish' which becomes the load at the end of the lever.

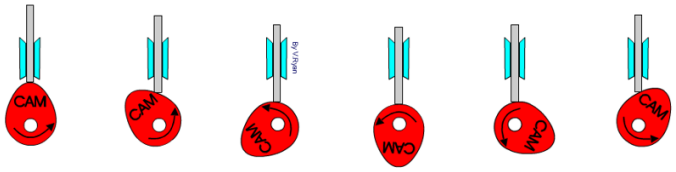
A compound gear is a number of gears fixed together.



They rotate at the same speed. The gears that make up a compound gear usually differ in size and have a different number of teeth. This is useful if there is a need to speed up or slow down the final output.

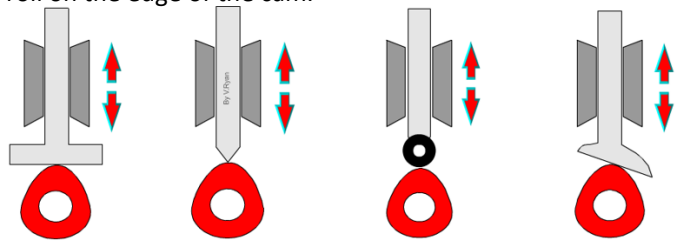
W/B 20th Jan- Mechanisms

A CAM changes the input motion, which is usually rotary motion (a rotating motion), to a reciprocating motion of the follower. They are found in many machines and toys. A CAM has two parts, the FOLLOWER and the CAM PROFILE. Diagrams one to six show a rotating cam pushing a follower up and then allowing it to slowly fall back down.



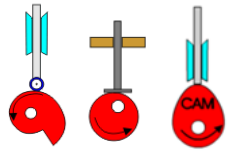
KEY PHRASES	
ONE CYCLE	One rotation/revolution of the cam.
DWELL	When the cam rotates but the follower does not rise or fall.
THE RISE	That part of the cam that causes the follower to rise.

There are different types of follower but they all slide or roll on the edge of the cam.



FLAT FOLLOWER | POINT/KNIFE FOLLOWER | ROLLER FOLLOWER | OFFSET FOLLOWER

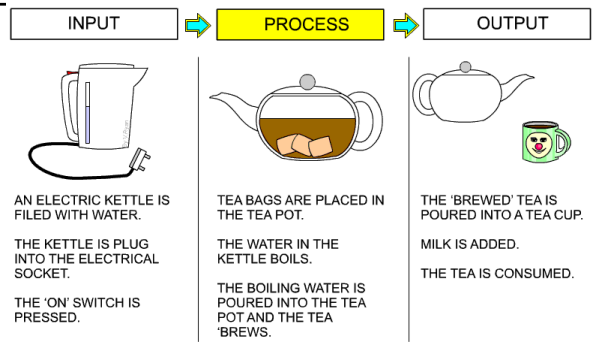
Cams can also come in different shapes to cause different types of movement. Such as a snail, pear and eccentric…



You also need to know about pulley systems and can find out more information about this at: http://www.technologystudent.com/gears1/pulley1.htm

GCSE Design and Technology (Term 3-4) Year 10 Knowledge Organiser

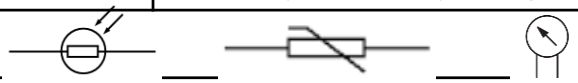
W/B 27th Jan – Electronics



Inputs: these are switches or sensors

Switch	Uses
PTM/PTB switch	Console controller buttons, e.g. fire or jump
Reed (magnetic) switch	Window sensors on alarms, eg window opens and switch contacts open
Toggle switch	Power switches
Rocker switch	Light switches
Tilt switch	To detect if something is no longer level

Sensors	Uses
Light dependent resistor (LDR)	Resistance changes depending on the amount of light allowing electricity to flow and turn on a circuit
Thermistor	Same as an LDR, resistance changes depending on the temperature.
Pressure Sensor	Detect the pressure of liquids or gasses

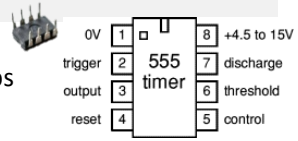


W/B 3rd Feb – Electronics

Process: these make decisions in the circuit

A microcontroller is an example of a SBC (single board computer) and is manufactured as an integrated circuit (IC). It can be programmed to perform different processing functions.

Examples include: 555 timer, Op Amp (Sensor circuit) and PIC chips



Advantages

The size of a circuit can be significantly reduced. This is because programming replaces physical components. They can be reprogrammed many times. This allows changes to be made without replacing actual components. They have pins for connecting several input and output devices, adding to flexibility.

Disadvantages

They often cost more than traditional integrated circuits. They are therefore not always the best option for simple systems. Programming software and hardware is required. This can be expensive to buy. The language of the system must be learned and this adds to training costs.

Outputs: is the response to the input signal and could be light, movement or sound.

Output	Symbol	Use
Lamp/ Bulb		Used to create heat or light
LED		Used as warning lights and standby
Buzzer		Make simple sound
Loud speaker		Make more complex, higher quality sound
Motor		Creates movement (fan or vibrate)

W/B 10th Feb- Composites

Composite materials are made up of different materials which are combined to improve their properties. They can be a combination of natural and synthetic materials but fall into three main categories:

- fibre-based composites
- particle-based composites
- sheet-based composites

Fibre-based composites are reinforced with fibres. By mixing resin or concrete with fibres of glass or carbon we get the ability to mould complex shapes, but reinforcing them with the fibres makes them very strong.

Composite	Materials	Uses
Glass-reinforced plastic (GRP)	Glass fibres and resin	Boats, instrument cases
Carbon-reinforced plastic (CRP)	Carbon fibre and resin	Formula 1 car bodies, crash helmets, sports equipment
Glass-reinforced concrete (GRC)	Glass fibre and concrete	Street furniture, urban features

Particle-based composites are made with small particles of material. By mixing smaller particles of sand with larger particles of cement and aggregate, such as stones, we get a very strong and dense material suitable for building large structures.

Composite	Materials	Uses
Concrete	Cement, sand and aggregate	Buildings, street furniture
Cermet	Ceramic (cer) and metal (met)	Electronic components that need to operate under very hot temperatures

GCSE Design and Technology Year 10 Knowledge Organiser

W/B 24th Feb – Scales of Production

One off production -one product is made often a prototype using highly skilled workers and expensive materials

Architecture, bespoke machinery and wedding dresses are made this way

Batch production -A small quantity of the product is made two or more up to one hundred.

Seasonal goods, food, newspapers and magazines are examples of this

Mass production - A large number of the product is made on a production line. Many hundreds of the product could be made. This is often called repetitive flow production.

Examples include: cars, electronic goods and most clothing and shoes

Continuous production - Many thousands of the product are made. The difference between this and mass manufacturing is that continuous production is on 24 hours a day.

Very simple products that are only made using robots/ machines are made this way such as: nuts/bolts screws, Lego, packaging and toiletries

Just in time production - The arrival of parts at just the exact time that they are required in the factory.

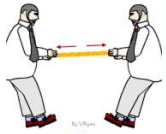
Construction materials and large furniture is made using this method

W/B 3rd Mar – Forces and stresses

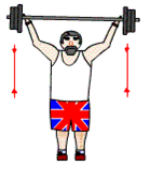
A **Static Load** : A good example of this is holding a stack of books on his back but he is not moving. The force downwards is STATIC.

A **Dynamic Load** : A good example of a dynamic load is carrying a weight of books but walking. The force is moving or DYNAMIC.

Internal Resistance : The person in the diagram sat on the mono-bicycle and the air filled tyre is under great pressure. The air pressure inside it pushes back against his/her weight.

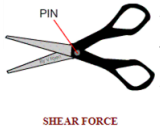


Tension : The rope is in "tension" as the two people pull on it. This stretching puts the rope in tension.

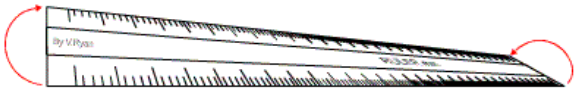


Compression : The weight lifter finds that his body is compressed by the weights he is holding above his head.

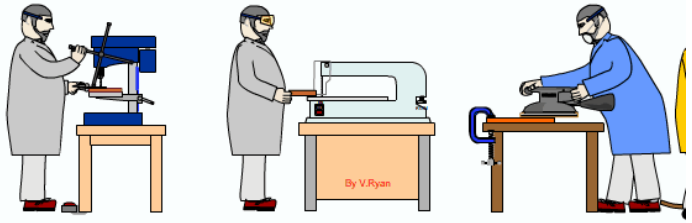
Shear Force : A good example of shear force is seen with a simple scissors. The two handles put force in different directions on the pin that holds the two parts together. The force applied to the pin is called shear force.

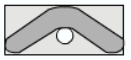


Torsion : The plastic ruler is twisted between both hands. The ruler is said to be in a state of torsion.

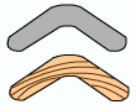


W/B 10th Mar- Quality Control





A card template is placed over the wood to be drilled. The hole in the card template should line up with the hole in the wood.



A second template is placed over the shaped boomerang to check it is the correct size and shape.

After sanding the smoothness of the boomerang is checked by touch. Rough areas are sanded again.

Regulations: There are numerous organisations which take care of the public and the consumers interests. Most of these are set up by manufacturing bodies to make sure that all their members follow their voluntary code of practice. These groups give valuable direction to designers and manufacturers. The government also provides regulations by acts of parliament. One example is for Designers who need to protect their new design ideas from being copied. Copyright, patents and registered design ideas are some examples of how the designer can be protected.

Legislation - You are not normally required to remember all the details of all legislations but the following are worth bearing in mind when designing.

The Consumer Protection Act - Tries to prevent the sale of harmful or defective products.

The Consumer Safety Act - This allows the government to ban the sale of dangerous products.

The Trade Description Act - This makes it illegal to make false claims about a product.

The Weights and Measures Act - This makes it illegal to sell products which are underweight or short measures.

GCSE Design and Technology Year 10 Knowledge Organiser

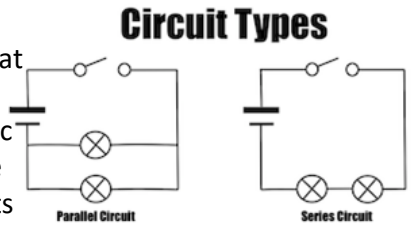
W/B 17th Mar – 2D drawings

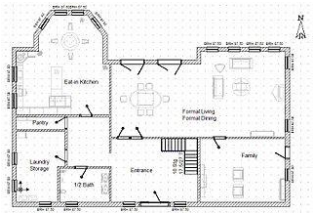
Block diagram

Input	Process	Output
LDR (light sensor)	Op Amp	LED

Schematic diagram

These both show what is needed inside a circuit. The schematic diagram shows more detail on components and where to put them.





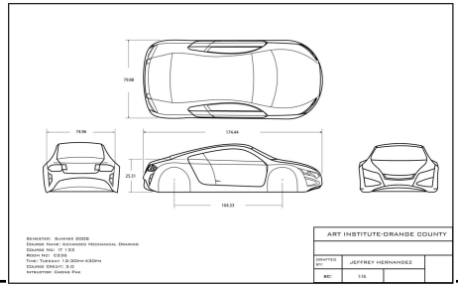
Floor plan

This shows the layout of a room or building from the plan view. It shows key information such as: windows, doors and large furniture. It is used by an architect and any builders

Orthographic projection drawing

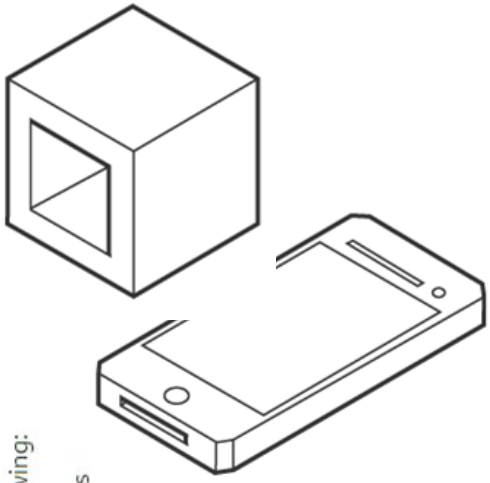
This shows a product in 2D from all sides. They are lined up with construction lines and hidden views are shown with a dashed line. These drawings are always done to scale and show dimensions in mm. It is used by engineers, designers and manufacturers.

An **orthographic projection drawing** always has at least 3 views:
Plan view (top)
Front view
Side view



W/B 24th Mar – 3D drawings

Isometric drawings are used to show a graphical representation of a 3D object. They are used by architects and engineers to communicate their ideas to the client and manufacturer, showing the product or design **to scale**.

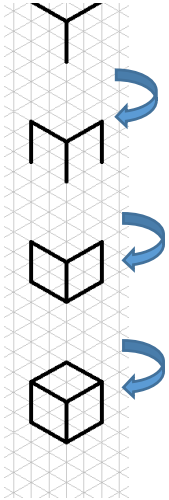


Isometric

Isometric drawings, sometimes called isometric projections, are a good way of showing measurements and how components fit together. Unlike perspective drawings, they don't get smaller as the lines go into the distance.

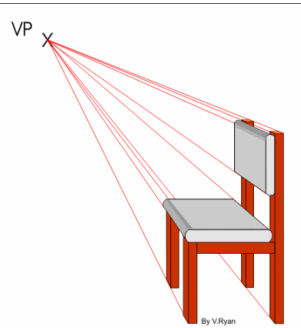
There are three main rules to isometric drawing:

- **horizontal** edges are drawn at 30 degrees
- **vertical** edges are drawn as vertical lines
- **parallel** edges appear as parallel lines

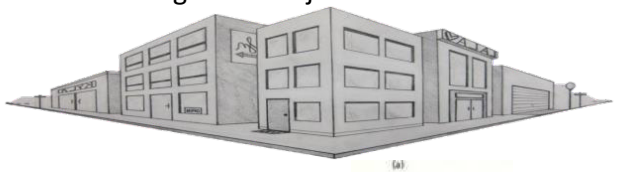


W/B 31st Mar- 3D drawings

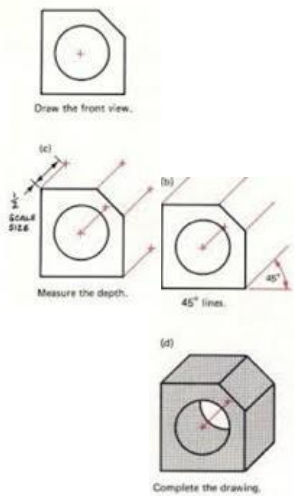
Single-point perspective - This shows an object from the front in a realistic way as it gets smaller going into the distance. The front view goes back towards a vanishing point, which is a point on the horizon line that all lines meet at.



Two-point perspective - This shows an object from the side with two vanishing points. It gives the most realistic view of a product as it shows the item edge on, as we would see it. It is often used to produce realistic drawings of an object.



Oblique projection is a simple type of technical drawing of graphical projection used for producing two-dimensional images of three-dimensional objects. The objects are not in perspective, so they do not correspond to any view of an object that can be obtained in practice, but the technique does yield somewhat convincing and useful images.



NCFE Health & Social Care - CA1 - Health & Social Care Provisions

13 Fundamentals of Standards

- Person centred care
- Dignity and respect
- Consent
- Safety
- Safeguarding from abuse
- Food and drink
- Premises and equipment
- Complaints
- Good governance
- Staffing
- Fit and proper staff
- Duty of candour
- Display of ratings

Healthcare often refers to medical needs and **physiological** well being of the person and includes their physical and mental health.

Social care is more focused on the **emotional and social wellbeing** of the individual and includes a much broader focus such as practical support.

Purposes of health and social care provision:

1. Provide a standard of care to meet the legislative and regulatory requirements.
2. Provide types of intervention specific to the individuals needs and preferences.
3. Provide individualised care to meet long-and short-term needs and preferences.

Types of provision

- Statutory - government funded
- Private - profit making services
- Voluntary - charities, non profit
- Informal - personal relationship, unpaid care

Health Services	Social Services
Hospitals Ambulance GP Dentists Pharmacy - *POM; Pharmacy; GSL*	Residential Community Respite Foster

Practitioners & their Roles in HSC:

- Nurse: Collaborates in care planning, monitors health status, administers medication, and supports holistic needs.
- Doctor: Diagnoses and treats physical and mental health conditions in hospitals or as General Practitioners (GPs).
- Paramedic: Responds to community emergency calls, assesses individuals, and provides life-saving medical interventions.
- Physiotherapist: Assesses and supports individuals with tailored exercise programs, manual therapy, and advice for injury, illness, or disability.
- Occupational Therapist: Assesses and supports individuals' physical, psychological, social, and environmental needs, providing adaptations.
- Dentist: Assesses oral health and provides dental treatments.
- Pharmacist: Dispenses medication and offers advice on individual health issues.

Allied Health Professionals

Other Key Terms within Health & Social Care

Allied Health Professionals - Practitioners who are not doctors, nurses or dentists.
Examples include paramedics, physiotherapists, occupational therapists and dieticians.

Dietitian - assesses and provides nutritional advice to promote a balanced diet.

6C's

Care
Compassion
Courage
Commitment
Competence
Communication

7 Care Values

Safeguarding
Rights
Confidentiality
Dignity
Independence
Respect
Duty of Care

Ambulance Call Out Categories

Category 1: Life threatening. 7 minutes. Life threatening injuries, cardiac arrest, serious allergic reaction;
Category 2: Emergency calls. 18 minutes. Stroke, difficulty breathing, chest pain;
Category 3: Urgent. 120 minutes. Late stages of labour, non- severe burns, diabetes; abdominal pain can include patients being treated at home;
Category 4: Less urgent calls. 180 minutes. Diarrhoea and vomiting, back pain, urine infections. Might be referred to a GP or pharmacist.

Legislations in Health & Social Care

- Equality Act (2010): Defines protected characteristics including age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, and sexual orientation.
- Health and Safety at Work etc. Act (1974): Defines responsibilities for maintaining health and safety at work.
- Data Protection Act (2018): Defines data protection principles requiring fair, lawful, and transparent handling and processing of personal information.
- Health and Social Care Act (2012): Defines the planning, delivery, and monitoring of healthcare services.
- Care Act (2014): Defines duties regarding the assessment of needs and eligibility for publicly funded care and support.

The role of regulatory and inspection bodies

- **Care Quality Commission (CQC):** Regulates health and adult social care services
- **Ofsted**: Regulates education, children's services and schools
- **The Health and Care Professions Council (HCPC):** Register of health and care professionals
- **Nursing and Midwifery Council (NMC):** Register of those who can practice nursing and midwifery
- **Social Work England:** Register of those who can practice social work

Roles & Responsibilities of the practitioner

- Understand the related legislation, policies and procedures
- Adhere to the underpinning policies and procedures
- Work within own professional boundaries
- Understand how to escalate any concerns
- Allow for access to quality health and social care services

Life Stages Across The Human Lifespan

Infancy (0-2 Years)	Childhood (3-10 Years)	Adolescence (11-17 Years)	Early Adulthood (18-29 Years)	Middle Adulthood (30-60 Years)	Late Adulthood (60+ Years)

Expected milestones of growth and development

Some changes are more significant than others and these are called milestones.

Milestones can sometimes be referred to as 'norms' and can help show what most children can do at particular ages.

*However, all individuals will develop in their own unique way and there will be lots of differences.

Gross motor skills are movements that use large muscle groups such as the head and torso. For example, running and jumping.

Fine motor skills are precise and sophisticated movements that require the co-ordination of small muscle groups such as those in the fingers, for example gripping an object.

Growth and Development

Growth = refers to an increase in physical size (mass and height). Growth is measurable.

Development = the emergence and increase in sophistication of skills, abilities and emotions. e.g. making new friends is social development, bonding is emotional development.

To measure growth in infancy, 3 measurements are used:

- Weight
- Length
- Head circumference

AREAS OF DEVELOPMENT

PHYSICAL - The advancement and control of the individual's bodily movements and functions

EMOTIONAL - The individual's ability to develop, manage and express feelings and show empathy for others

COGNITIVE - The development of language and communication

SOCIAL - The individual's ability to build relationships and interact with others

Maslow's Hierarchy of Needs

Self-actualisation and realisation of the individual's full potential is when we have achieved all our goals and have reached our full potential.

Esteem, dignity and respect from others gives us a sense of self purpose and help us achieve positive self-concept.

Social needs (love and belonging) give us a sense of belonging.

Safety, security and control in the individual's life helps to keep us safe and secure.

Physiological and biological requirements for human survival are basic needs that keep us alive and functioning.

Specific Disabilities & Conditions

Alzheimer's disease is a progressive neurological disorder that affects the brain, leading to memory loss, impaired thinking, and behavioral changes. It is the most common form of dementia among older adults.

Crohn's disease is a chronic inflammatory condition of the digestive tract, causing abdominal pain, diarrhea, weight loss, and fatigue.

Osteoporosis is a bone disease characterized by weak and brittle bones, increasing the risk of fractures.

Obesity refers to having an excessive amount of body fat, which can lead to various health problems such as heart disease, diabetes, and joint issues.

Spina bifida is a congenital condition where the spinal cord or its covering does not fully develop, potentially causing paralysis and other neurological complications.

Types of Referrals

Self-referral: An individual accesses services themselves. Might be making an appointment or attending a walk in.

Professional referral: A health and social care professional refers someone to another. Might be referred to a specific professional or to a service.

Third party referral: A family member or friend accesses services on someone's behalf.

Barriers in Health and Social Care

The barriers in health and social care are physical barriers, psychological barriers, financial barriers, geographical barriers, cultural/language barriers and resource barriers.

Barriers Link to NHS Website

https://www.england.nhs.uk/wp-content/uploads/2019/04/breaking-down-barriers-to-better-health-and-care-march19.pdf

Multicultural society - Where many cultures exist together.

Respect - All individuals who access a health and social care service should be treated with respect. This includes ensuring that the location is as accessible as possible for them.

A subculture - A culture within a culture. One culture can have many subcultures within it.

Autonomy - Where the individual has self-rule. A key aspect of accessibility is that it allows the individual autonomy.

Examples of promoting autonomy and encouraging respect

1 - A primary school has a new outdoor play area which is wheelchair-friendly.

2 - A residential care home has a hoist for getting into and out of the bath. It has a remote control which can be used by the resident.

Partnerships Working in Health & Social Care

The Health and Social Care Act (2012) defines the planning, delivering, and monitoring of healthcare services.

The Care Act (2014) defines duties in relation to assessment of needs and their eligibility for publicly funded care and support.

Potential barriers to partnership working and strategies to overcome barriers. Understand barriers to partnership working and strategies to overcome the barriers:

• barriers: o communication: ▪ level of understanding ▪ level of trust ▪ assumptions o time management: ▪ ineffective time management skills ▪ conflicts in priorities ▪ workload • strategies to overcome the barriers: o communication: ▪ agree shared goals ▪ be inclusive ▪ avoid use of jargon ▪ build respect and confidence ▪ acknowledge and understand viewpoints of others o time management: ▪ establish practitioners' commitment and availability ▪ select agreed dates, times and venues ▪ use appropriate mode of communication

Partnership Services

Health services – To meet the medical or rehabilitation care needs of an individual.
Housing services – To ensure that individuals have suitable accommodation to meet their care needs.
Transport services – To ensure individuals have the mobility to access other services to meet their care needs.
Leisure services – To ensure individuals have access to activities that will support their wellbeing and mental health needs.
Legal services – To ensure individuals have advocates and support to access the services that they need.

Advantages of person centred approach (people)

- Increased self-esteem and confidence
- Better relationships
- Individuals being more in control of their care
- build trusts between the service user and health care practitioner
- Meets all the needs and preferences and gives support
- Promote independence
- Empowerment

Challenges (resources)

- Increase in cost of care
- Strain on resources
- Individuals confused by options (lack of knowledge)
- Extended recover time
- Not making the best choice and conflict of interest

Person-Centred Practice

Person-centred practice is care which is respectful, and focused on the wishes and needs of the individual. When practice is person-centred, it respects the values and beliefs of the person receiving it.

Key Words

Purpose
Implementing
Holistic
Strategies
Assessment

A Care Plan

A record that outlines the standardised care and support required to meet the individual's holistic needs and preferences with reference to Maslow's hierarchy of needs

Holistic needs:
Physical, Cognitive, Social & Emotional

Level 1/2 Hospitality and Catering: Unit 1-1.1.1 - Standards and ratings

Standards and ratings: You will need to be able to know the importance of standards and ratings within the hospitality and catering industry, they are hotel and guest house standards, and restaurant standards.

Hotel and guest house standards

Hotels and guest houses standards are awarded and given star ratings. You should know what criteria is needed to be met for an establishment to receive each star rating.

Star rating 1 = Basic and acceptable accommodation and facilities. Simple rooms with no room service offered.

Star rating 2 = Average accommodation and facilities, a small establishment, and would not offer room service or have a restaurant.

Star rating 3 = Good accommodation and facilities. One restaurant in the establishment, room service available between certain hours, and Wi-Fi in selected areas are provided. The establishment could have a pool and gym.

Star rating 4 = Very good accommodation and facilities. Large hotel & reception area of a very good standard. Certain hours of room service, with a swimming pool and valet parking offered.

Star rating 5 = Excellent standard of accommodation, facilities, and cuisine. Offer valet parking, 24 hr room service, spa, swimming pool, gym, and concierge service.

Restaurant standards

Restaurant standards have three main possible awards or ratings that you should know. They are listed below:

AA Rosette award

Ratings between one and five rosettes could be awarded based on the following:

- different types and variety of foods offered
- quality of the ingredients used
- where the ingredients are sourced
- how the food is cooked, presented and tastes
- skill level and techniques used as well as the creativity of the chef.

https://www.stirkhouse.co.uk/about-us/awards/attachment/award-rosette

Michelin star

A rating between one and three Michelin stars could be awarded based on the following:

- quality of ingredients used
- cooking and presentation techniques
- taste of the dishes
- standard of the cuisine
- value for money.

https://guide.michelin.com/us/en/california/to-the-stars-and-beyond

Good food guide

A rating between one and 10 could be awarded based on the following:

- cooking skills
- quality of ingredients
- techninques and cooking skills shown.

Level 1/2 Hospitality and Catering Knowledge Organiser: Unit 1: 1.1.1 -
Types of Hospitality and catering provisions

Hospitality and catering providers
You must understand, be able to name, and explain the two different provisions in hospitality and catering.
Commercial: the business aims to **make profit** from the hospitality and catering provision that they provide.
Non-commercial: the service provider **doesn't aim** to make a profit from the service they provide.

Commercial (residential)

Commercial (residential): meaning the hospitality and catering provision aims to create a profit from the service they provide, but also offers accommodation.

For example:
- hotels, motels & hostels
- B&B, guest houses and Airbnb
- holiday parks, lodges, pods, and cabins
- campsites and caravan parks.

Non-commercial (residential)

Non-commercial (residential): the hospitality and catering provision offers accommodation but does not aim to make a profit from the service they provide.

For example:
- hospitals, hospices, and care homes
- armed forces
- prisons
- boarding schools, colleges, and university residences.

Commercial (non-residential)

Commercial (non-residential): catering establishments that aim to make a profit from their service, but no accommodation is provided.

For example:
- restaurants and bistros
- cafes, tea rooms and coffee shops
- takeaways
- fast food outlets
- public houses and bars
- airlines, cruise ships, long distance trains
- pop up restaurants
- food and drink provided by stadiums, concert halls and tourist attractions
- mobile food vans and street food trucks
- vending machines.

Non-commercial (non-residential)

Non-commercial (non-residential): catering establishments with no accommodation provided and don't aim to make a profit from their service.

For example:
- schools, colleges, and universities
- meals on wheels
- canteen in working establishments (subsidised)
- charity run food providers.

Level 1/2 Hospitality and Catering: Unit 1-1.1.1 -
Types of service in commercial and non-commercial provisions

Types of service in commercial and non-commercial provision
You need to be able to understand and know the different types of service within commercial and non-commercial provision. They are split into two main categories of food service and residential service.

Food service

The different types of food services in the catering sector are listed below. You should know the meaning of each one and be able to provide examples. For instance;

Table service
- Plate: the food is put on plates in the kitchen and served by waiting staff. Good portion control and food presentation consistent.
- Silver: a waiter will transfer food from a serving dish to the customer's plate using a silver spoon and fork at their table.
- Banquet: a range of foods suitable for large catered events such as weddings, parties, or award ceremonies.
- Family style: the food is placed on serving bowls on the customer's table for customers to share between them.
- Gueridon: is served from a trolley to the customer's table, the food is then cooked and/or finished and presented in front of the customer. Creates an atmosphere of sophistication and entertainment.

Counter service
- Cafeteria: all types of food and drink are shown on a long counter for customers to move along with a tray for them to choose what they want to eat.
- Fast food: the food and drink is displayed on a menu behind the counter, often with pictures. Quick, simple, and usually served with disposable packaging.
- Buffet: a range of foods served on a big serving table where customers walk up to collect their plate and help themselves to food and drink. The food can be hot or cold, and some items could be served by waiting staff.

Personal service
- Tray or trolley: the meals are served on trays from a trolley and customers sometimes order items in advance.
- Home delivery: the customer's order is made over the phone or online, and is then delivered by the business to their address.
- Takeaway: food that's cooked by the business onsite and then eaten elsewhere.

Residential service

Listed below are the different types of residential types of service in the hospitality and catering sector. You should know the different types of service offered in various hospitality provisions.

Rooms:
- single/ double/ king/ family
- suite (en-suite bath/ shower room, shared facilities).

Refreshments:
- breakfast/ lunch/ evening meal
- 24-hour room service/ restaurant available.

Leisure facilities:
- spa
- gym
- swimming pool.

Conference and function facilities:
- large rooms
- overhead projector and computer
- pens and paper provided
- refreshments available.

Level 1/2 Hospitality and Catering: Unit 1-1.1.2 -
Types of employment roles and responsibilities within the industry

Types of employment roles and responsibilities within the industry
There are four main areas within the industry that you should know the roles and responsibilities within. They are listed below:

Front of house

- Front of house manager: oversees all staff at the restaurant, provides training, hiring of staff, and ensures good customer service.
- Head waiter: oversees the waiting staff of the restaurant in high-end eating establishments.
- Waiting staff: greets customers, shows them their table, takes food and drink orders from customers, and serves them their order. Makes sure customers' needs are met, and that the food order is made correctly.
- Concierge: advises and helps customers with trips and tourist attractions. Books taxis for customers and parks customer cars.
- Receptionist: takes bookings, deals with questions and complaints from customers, checks-in customers, takes payment, and provides room keys.
- Maître d'hôte: oversees the service of food and drinks to customers. They greet customers, check bookings, reservations, and supervise waiting staff.

Kitchen brigade

- Executive chef: in charge or the whole kitchen, developing menus and overlooking the rest of the staff.
- Sous-Chef: the deputy in the kitchen and is in charge when the executive chef isn't available.
- Chef de partie: in charge of a specific area in the kitchen.
- Commis chef: learning different skills in all areas of the kitchen. Helps every chef in the kitchen.
- Pastry chef: prepares all desserts, pastry dishes and bakes.
- Kitchen assistant: helps with the peeling, chopping, washing, cutting of ingredients, and helps washing dishes and stored correctly.
- Apprentice: an individual in training in the kitchen and helps a chef prepare and cook dishes.
- Kitchen porter/ plongeur: washes the dishes and other cleaning duties.

Housekeeping

- Chambermaid: cleans guests' rooms when they leave, and restocks products that have been used, they also provide new bedding and towels.
- Cleaner: cleans hallways and the public areas of the establishment.
- Maintenance: repairs and maintains the establishment's machines and equipment, such as heating and air conditioning. These responsibilities could also include painting, flooring repair or electrical repair.
- Caretaker: carries out the day to day maintenance of the establishment.

Management

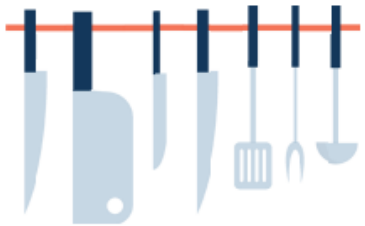
- Food and beverage: responsible for the provision of food and drink in the establishment which will include breakfast, lunch, dinner, and conferences.
- Housekeeping: ensuring laundering of bed linen & towels, ordering of cleaning products and overseeing housekeeping staff duties.
- Marketing: promotes events and offers to increase custom at the establishment, and is responsible for the revenue of the business.

Level 1/2 Hospitality and Catering: Unit 1-1.1.3 -
Working conditions in the hospitality and catering industry

Types of employment contracts and working hours

You need to know the following types of employment contacts and working hours.

- **Casual:** this type of contact could be provided through an agency and used to cover employees that are absent from work due to illness. There is no sick pay or holiday entitlement with this type of employment.
- **Full time (permanent):** working hours including start and finishing times are fixed and stated in this type of contract. A contact of this nature allows the employee to have sick pay and holiday entitlement.
- **Part-time (permanent):** working hours mean that the employee works on certain days of the week. Work times are stated in the contract, including the starting and finishing times that are fixed in this type of contract. The employee has sick pay and holiday entitlement in this type of contact.
- **Seasonal:** this type of contract is used when a business needs more staff due to busy times throughout the year, such as the Christmas period. The contract will state for the employee to work for a specific time frame only. Also, the contract would not expect further or regular work after the contact is complete.
- **Zero hours contract:** this type of contact is chosen between the employer and the employee. This means that the employee can sign an agreement to be available for work when the employer needs staff. No number of days or hours is stated in the contract and the employer doesn't require to ask the employee to work, and neither does the employee have to accept the work offered. No sick pay or holiday entitlement is offered for this type of contract.



Pay and benefits in the industry

The following pay and benefits are what you should be aware of in the industry.

- **A salary:** this type of pay is a fixed amount of money paid by the employer monthly, but is often shown as an annual sum on the contract.
- **Holiday entitlement:** employees are entitled to 28 days paid a year. Part-time contracts are entitled less depending to their contract hours.
- **Pension:** on retirement age, an employee qualifies for a pension contribution by the employer and the government.
- **Sickness pay:** money paid to the employee with certain contracts when they are unable to go to work due to illness.
- **Rates of pay:** national minimum wage should lawfully be offered to all employees over 18 years of age. This rate is per hour and is reviewed each year by the government.
- **Tips:** money given to an employee as a 'thank you' reward for good service from the customer.
- **Bonus and rewards:** given from an employer to the employee as a way of rewarding all the hard work shown from the employee throughout the year, and helping make the business a success. Also known as remuneration.

Working hours

The working hours directive in the UK states that employees on average cannot work more than 48 hours which is worked out over a period of 17 weeks. Employees can choose not to follow this and work more hours if they want to.

People under the age of 18 cannot work more than eight hours a day and 40 hours a week.

Employees that work six hours or more a day must have a break of 20 minutes, and have the right to have at least one day off every week.

Level 1/2 Hospitality and Catering: Unit 1-1.3.1 -
Health and safety in hospitality and catering provisions

Control of Substances Hazardous to Health Regulations (COSHH) 2022

What employers need to do by law	What paid employees need to do
Control substances that are dangerous to health.	Attend all training sessions regarding COSHH.
Provide correct storage for those substances and appropriate training for staff.	Follow instructions carefully when using the substances.
Some examples of substances that are dangerous to health include cleaning products, gases, powders & dust, fumes, vapours of cleaning products and biological agents.	Know the different types of symbols used to know different types of substances and how they can harm users and others when used incorrectly.

Health and Satefy at Work Act 1974 (HASAWA)

What employers need to do by law	What paid employees need to do
Protect the health, wellbeing and safety of employees, customers and others.	Take reasonable care of their own health and safety and the health and safety of others.
Review and assess the risks that could cause injuries.	Follow instructions from the employer and inform them of any faulty equipment.
Provide training for workers to deal with the risks.	Attend health and safety training sessions.
Inform staff of the risks in the workplace.	Not to misuse equipment.

Personal Protective Equipment at Work Regulations (PPER) 1992

What employers need to do by law	What paid employees need to do
Provide PPE e.g. masks, hats, glasses and protective clothes.	Attend training and wear PPE such as chef's jacket, protective footwear and gloves when using cleaning chemicals.
Provide signs to remind employees to wear PPE.	
Provide quality PPE and ensure that it is stored correctly.	

Report of Injuries, Diseases and Dangerous Occurences Regulations (RIDDOR) 2013

What employers need to do by law	What paid employees need to do
Inform the Health and Safety Executive (HSE) of any accidents, dangerous events, injuries or diseases that happen in the workplace.	Report any concerns of health and safety matters to the employer immediately. If nothing is resolved, then inform the HSE.
Keep a record of any injuries, dangerous events or diseases that happen in the workplace.	Record any injury in the accident report book.

Manual Handling Operations Regulations 1992

What employers need to do by law	What paid employees need to do
Provide training for staff.	Ask for help if needed.
Assess and review any lifting and carrying activities that cannot be avoided.	Squat with feet either side of the item. Keep back straight as you start to lift. Keep the item close to your body whilst walking. Make sure you can see where you're going.
Store heavy equipment on the floor or on low shelves.	
Provide lifting and carrying equipment where possible.	

Risks to health and security including the level of risk (low, medium, high) in relation to employers, employees, suppliers and customers

Review and assess level of risks in the workplace e.g. slips, trips, falls, burns etc by completing a risk assessment to avoid from happening.

Hazard Analysis and Critical Control Points (HACCP)

Every food business lawfully needs to ensure the health and safety of customers whilst visiting their establishment. To ensure this, they need to take reasonable measures to avoid risks to health. HACCP is a food safety management system which is used in businesses to ensure dangers and risks are noted and how to avoid them.

All food businesses are required to:

- assess and review food safety risks
- identify critical control points to reduce or remove the risk from happening
- ensure that procedures are followed by all members of staff
- keep records as evidence to show that the procedures in place are working.

Food Hazards

A food hazard is something that makes food unfit or unsafe to eat that could cause harm or illness to the consumer. There are three main types of food safety hazards:

- **Chemical** – from substances or chemical contamination e.g. cleaning products.
- **Physical** – objects in food e.g. metal or plastic.
- **Microbiological** – harmful bacteria e.g. bacterial food poisoning such as Salmonella.

HACCP table

Here is an example of a HACCP table – it states some risks to food safety and some control points.

Hazard	Analysis	Critical Control Point
Receipt of food	Food items damaged when delivered / perishable food items are at room temperature / frozen food that is thawed on delivery.	Check that the temperature of high-risk foods are between 0°C and 5°C and frozen are between -18°C and -22°C. Refuse any items that are not up to standard.
Food storage (dried/chilled/frozen)	Food poisoning / cross contamination / named food hazards / stored incorrectly or incorrect temperature / out of date foods.	Keep high-risk foods on correct shelf in fridge. Stock rotation – FIFO. Log temperatures regularly.
Food preparation	Growth of food poisoning in food preparation area / cross contamination of ready to eat and high-risk foods / using out of date food.	Use colour coded chopping boards. Wash hands to prevent cross-contamination. Check dates of food regularly. Mark dates on containers.
Cooking foods	Contamination of physical / microbiological and chemical such as hair, bleach, blood etc. High risk foods may not be cooked properly.	Good personal hygiene and wearing no jewellery. Use a food probe to check core temperature is 75°C. Surface area & equipment cleaned properly.
Serving food	Hot foods not being held at correct temperature / foods being held too long and risk of food poisoning. Physical / cross-contamination from servers.	Keep food hot at 63°C for no more than 2 hours. Make sure staff serve with colour coded tongs or different spoons to handle food. Cold food served at 5°C or below. Food covered when needed.

Level 1/2 Hospitality and Catering: Unit 1: Contributing factors to the success of hospitality and catering provision (AC1.4)

Contributing factors
The hospitality and catering sector is very competitive, and many businesses fail in the first year of operation. There are many factors that must be managed carefully for hospitality and catering businesses to make a profit and continue to operate in the long term.

Basic costs

Labour: These costs include employee wages, National Insurance contributions and pension contributions.

Material: These costs include decoration, furnishings, kitchen and dining equipment, ingredients, printing and health and safety equipment.

Overheads: These costs include rent, rates, gas and electricity, insurance, licensing, training and maintenance.

Economy

The value of the pound (**£**) can affect the hospitality and catering sector. If the economy is good, people will be willing to spend more. If the economy is weak (recession), people may decide that eating out or going on holiday is a luxury and will spend less.

VAT (Value Added Tax) is added to the final cost of goods and services offered in the hospitality and catering sector. The money from VAT goes to the government to pay for services everyone uses for example the NHS.

Environmental impact

Running a hospitality or catering provision uses a lot of resources. Businesses are encouraged to **reduce, reuse**, and **recycle**. Energy efficient equipment such as low energy light bulbs can save a business money. Using local and seasonal ingredients reduces the amount of CO_2 released into the atmosphere during transport. All waste should be separated and recycled or composted when possible.

Profit

Gross Profit: The difference between how much a menu item costs to make and how much it sells for. Ingredient costs should not be more than 30% of the gross profit. If the ingredient cost for a chocolate brownie dessert is £1.50 and the menu price is £4.50, the gross profit is £3.00.

Gross Profit % = (3.00 ÷ 4.50) x 100 = 66.6%

Net Profit = What is left from the gross profit once all costs (as listed above) are covered.

New technology

New technologies have benefitted the sector in positive ways. These include:

- **cashless systems** such as contactless cards and mobile payment apps
- **digital systems** such as online booking/ordering and key cards
- **office software** such as stock ordering systems.

Media

The hospitality and catering sector is very competitive, so most businesses try to make good use of the media to advertise. Most businesses will have their own **website**, which customers can use to view menus and make bookings.

- **Print Media:** Ads in magazines and newspapers, flyers and money-off vouchers.
- **Broadcast media:** Television, radio and online ads.
- **Social media:** Customer feedback and reviews.

Consumers are increasingly using smartphones to book, order, pay and review.

Level 1/2 Hospitality and Catering: Unit 1:
The operation of front and back of house: Front of house (AC2.2)

Operational requirements

To run a successful hospitality and catering business, it is important that the front of house is welcoming to all customers. A logical layout and workflow will mean that the customers will be able to enjoy organised, efficient service.

In a catering establishment such as a café, the front of house is where the customers are served.

In a residential establishment such as a hotel, the front of house is where guests are received before checking in to their room.

Catering and residential establishments have common front of house areas, which help to ensure a smooth operation of the business.

Front of house dress code

The front of house dress creates a first impression. In some establishments a **uniform** may be worn. In other establishments, employees may be required to wear colours such as black and white. In addition:

- clothing must be clean and ironed
- if worn, jewellery, perfume and make-up must be minimal
- personal hygiene must be maintained
- name badges may be required.

Restaurant workflow

The workflow should be organised so that orders can be filled, and food can be passed from the kitchen as quickly as possible.

Reception: Guests are greeted and shown to their seats in the dining area.

Seating/dining area: In a large restaurant, this area is divided into **stations**. Each station is managed by a waitperson.

Counter service: Food is on display for customers to choose and pay at the end. Some restaurants also offer seated counter service.

Bar: An area for socialising or eating in a less formal space.

Equipment station: Small items such as cutlery and serviettes and food items such as condiments should be available to wait staff.

Toilets: Customer toilets should be clean and welcoming.

Safety Equipment: First aid boxes and fire extinguishers must be easily accessed.

Hotel workflow

The workflow of a hotel should be organised so that guests can be checked in as quickly as possible.

Reception: Guests are checked in and receive keys/ key cards for their room.

Lobby/waiting area: This area should have comfortable seating for the guests. Drinks may be available in the lobby.

Stairs/Lifts: These provide access to rooms and other facilities.

Toilets: Customer toilets should be clean and welcoming.

Administration and documents

Businesses may employ an administrator who keeps track of:

- staff employment and training records
- stock orders, delivery records and invoices
- health and safety documents
- financial information
- customer feedback
- advertising.

Level 1/2 Hospitality and Catering: Unit 1:
The operation of the kitchen: Equipment (AC2.1)

Kitchen equipment
It is important that a business invests in good quality kitchen equipment to produce food safely. Even though good quality equipment is expensive, for example stainless steel pots and pans, in the long run they will pay for themselves as they should not need to be replaced often. Good quality electrical equipment will cost less to run, which will also save money and increase profits.

Large equipment

Storage:	walk-in fridge, freezer, blast chiller, glass chiller.
Preparation:	floor standing food mixer.
Cooking:	conventional oven, deep fat fryer, hot water urn, standing *bain-marie*, hot plate/griddle, steamer, grill/salamander.
Cleaning:	pass-through dishwasher, glass washer.

Mechanical equipment

Preparation:	weighing scales, electric whisk, food processor, blender, mincer, meat slicer, vegetable peeler, juicer, ice cream maker.
Cooking:	temperature probes.
Specialist equipment:	conveyor toaster, panini maker, coffee maker, pizza oven, *sous vide*, pasta maker.

Small equipment

Preparation:	mixing bowls, measuring jugs and spoons, whisks, spatulas, sieves, knives, chopping boards, zester, juicer, piping bags and tips, graters.
Cooking:	pots and pans, baking dishes, baking trays, tongs, colanders.
Serving:	plates, bowls, glassware.

Cleaning and safety materials and equipment

Cleaning:	detergents, cleaning chemicals, scouring pads, cloths, mops, dustpan and brush, buckets, recycling and waste bags and bins.
Preparation:	date labels for food storage, foil, baking paper.
Safety:	fire extinguisher/blanket, smoke/CO_2 alarm, first aid box, oven gloves.

Level 1/2 Hospitality and Catering: Unit 1:
The operation of the kitchen (AC2.1)

Operational requirements
To run a successful hospitality and catering business, it is important that the back of house is well designed to allow safe working conditions for the kitchen staff. A good workflow also allows the safe movement of front of house staff between the kitchen and dining room so that customers enjoy efficient food service.

Kitchen workflow

Delivery area	Located at the kitchen entrance. Deliveries are checked against the order and temperatures of high-risk foods are recorded.
Storage area	Cool area: contains fridges and freezers for storing high-risk foods, as well as space for storing fresh fruit and vegetables. Dry area: for storing canned and dry goods.
Staffing area	A separate area where employees can change into work clothing. Staff toilets and hand washing facilities are provided. This area may also be used as a breaktime lounge.
Preparation area	A large kitchen will have separate areas for the preparation of meat and poultry, fish, fruits and vegetables and pastries and desserts.
Cooking area	A large kitchen will have separate cooking areas for hot wet foods such as soups, sauces and steamed vegetables and a dry cooking area for roasting, baking, grilling and frying.
Serving area	A large kitchen will have separate areas for plating and presenting hot and cold foods. Waiters will collect orders from "the pass" to deliver to customers in the restaurant.
Cleaning area	This area should be separate from the main kitchen. Dirty crockery and cutlery as well as pots and pans from the kitchen are cleaned and stored in this area.
Waste area	This area should be separate from the main kitchen. Food waste and recyclable and non-recyclable waste is sorted and then disposed in the correct bins, which should be located outside.

Back of house dress code

The traditional chef's uniform is designed to show authority in the kitchen. Known as "chef's whites", they come in many colours. Key uniform items are: a long-sleeved, double-breasted jacket, long trousers, head covering, apron, and non-slip, toe-protected shoes. The clothing and shoes protect the wearer from injury while the head covering protects the food from hair and sweat.

Level 1/2 Hospitality and Catering: Unit 1:
Food related causes of ill health (AC4.1)

Food related causes of ill health

Ill health could be caused by any of the following:

- **bacteria**
- **allergies**
- **intolerances**
- **chemicals** such as:
  - detergent and bleach
  - pesticides and fertilisers.

Intolerances

Some people feel unwell when they eat certain foods. Common foods that cause intolerance include:

- milk (lactose)
- cereals (gluten)
- artificial sweeteners (Aspartame)
- flavour enhancers (MSG).

Food poisoning bacteria

The main causes of food poisoning bacteria are:

- **Bacillus cereus:** found in reheated rice and other starchy foods.
- **Campylobacter:** found in raw and undercooked poultry and meat and unpasteurised milk.
- **Clostridium perfringens:** found in human and animal intestines and raw poultry and meat.
- **E-coli:** found in raw meat, especially mince.
- **Listeria:** found in polluted water and unwashed fruit and vegetables.
- **Salmonella:** found in raw meat, poultry and eggs.
- **Staphylococcus aureus:** found in human nose and mouth.

Food and the law

Food can cause ill-health if it is stored, prepared and/or cooked incorrectly or if a person unknowingly eats a food that they are allergic or intolerant to. All hospitality and catering provision need to follow laws that ensure food is safe to eat. They are:

- **Food Labelling Regulations (2006):** A label must show all ingredients including allergens, how to store and prepare the food, where it came from, the weight of the food and a use-by or best-before date.
- **Food Safety (General Food Hygiene Regulations) 1995:** This law makes sure that anyone who handles food - from field to plate – does so in a safe and hygienic way. The **HACCP** system is used throughout the hospitality and catering sector.
- **Food Safety Act 1990:** This law makes sure that the food people it is safe to eat, contains ingredients fit for human consumption and is labelled truthfully.

Food allergies

An allergy is a reaction to something found in food. In the case of a severe allergy, the reaction can lead to death.

Common allergens include:

Cereals	Eggs	Seeds
Soya	Fish and shellfish	Strawberries
Peanuts	Wheat	Milk and dairy
Celery	Tree nuts	Mustard

Level 1/2 Hospitality and Catering:
Unit 1: Symptoms and signs of food-induced of ill-health (AC.4.2)

Symptoms and signs of food-induced ill-health:

An "upset tummy" is a familiar symptom for someone who thinks they might have food poisoning; this is known as a non-visible symptom. There are many other signs and symptoms that could show that a person might be suffering from ill-health due to the food they have eaten. Some of the symptoms can be seen (visible symptoms) such as a rash. It is important to be able to recognise visible and non-visible symptoms to help someone suffering from food-induced ill-health.

Visible symptoms

Visible symptoms of food poisoning, chemical poisoning, allergic reaction and food intolerance include:

- **Diarrhoea:** a common symptom of most types of food poisoning bacteria and can also be a symptom of lactose intolerance.
- **Vomiting:** a common symptom of most types of food poisoning bacteria, but may could also be caused by taking in chemicals accidently added to food.
- **Pale or sweating/chills:** a high temperature is a common symptom of E-coli and Salmonella.
- **Bloating:** a symptom of lactose intolerance.
- **Weight loss:** a symptom of gluten intolerance (coeliac disease).

Allergic/anaphylactic reaction

- **Visible symptoms:** red skin, a raised rash, vomiting, swelling of lips and eyes and difficulty breathing.
- **Non-visible symptoms:** swelling of tongue and throat, nausea (feeling sick) and abdominal pain.
- **Anaphylaxis:** a severe reaction to eating an allergen that can lead to death. An injection of adrenaline (for example, an EpiPen) is the treatment for an anaphylactic reaction.

Non-visible symptoms

Non-visible symptoms of food poisoning, chemical poisoning, allergic reaction and food intolerance include:

- **Nausea (feeling sick):** the most common symptom for all types of food-induced ill-health.
- **Stomach-ache/cramps:** abdominal pain is common symptom of lactose intolerance as well as a sign of an allergic reaction. Cramps may happen at the same time as diarrhoea.
- **Wind/flatulence:** a common symptom of lactose intolerance.
- **Constipation:** a symptom of Listeria food poisoning.
- **Painful joints:** a symptom of E-coli food poisoning.
- **Headache:** a symptom linked to Campylobacter, E-coli and Listeria.
- **Weakness:** non-stop vomiting, and diarrhoea can leave a person feeling weak. Gluten intolerance (coeliac disease) can leave a person feeling tired because their bodies can't absorb the correct amount of nutrients.

Level 1/2 Hospitality and Catering:
Unit 1-1.4.3: Preventative control measures of food-induced of ill-health

Preventing cross-contamination

Food poisoning bacteria can easily be transferred to high-risk foods. This is called cross-contamination. It can be controlled by:

- washing hands before and after handling raw meat and other high-risk foods.
- using colour-coded chopping boards and knives when preparing high-risk foods.
- washing hands after going to the toilet, sneezing, or blowing your nose and handling rubbish.

Preventing physical contamination

Physical contamination is when something which is not designed for eating ends up in your food. Physical contaminants include hair, seeds, pips, bone, plastic packaging, plasters, broken glass, flies and other insects, tin foil and baking paper, soil, and fingernails.

Physical contamination can be controlled by:

- food workers following personal hygiene rules
- keeping food preparation and serving areas clean
- checking deliveries for broken packaging
- thoroughly washing fruits and vegetables before preparation
- using tongs or gloves for handling food.

Temperature control

Delivery	Storage	Preparation	Service
The temperature of high-risk foods must be checked before a delivery is accepted. The food should be refused if the temperatures are above the safe range. Refrigerated foods = **0-5°C** Frozen foods = **-22°C to -18°C**	High-risk foods must be covered and stored at the correct temperature. Temperatures must be checked daily. Refrigerator = **0-5°C** Freezer = **-22°C to -18°C** Unwashed fruit and vegetables must be stored away from other foods.	High risk-foods need to be carefully prepared to avoid cross-contamination. A food probe can be used to make sure that high-risk foods have reached a safe core (inside) temperature, which needs to be held for a minimum of two minutes. Core temperature = **70°C**	Food needs to be kept at the correct temperature during serving to make sure it is safe to eat. Hot food needs to stay hot and cold food needs to stay chilled. Hot holding = **63°C minimum** Cold holding = **0-5°C**

Level 1/2 Hospitality and Catering:
Unit 1-1.4.4: The Environmental Health Officer

Role of the Environmental Health Officer (EHO)

The role of the Environmental Health Officer (EHO) is to protect the health and safety of the public. They are appointed by local authorities throughout the UK. In the hospitality and catering industry, they are responsible for enforcing the laws linked to food safety. They inspect all businesses where food is prepared and served to members of the public, advise on safer ways of working and can act as enforcers if food safety laws are broken.

EHO inspections

The EHO can carry out an inspection of any hospitality and catering premise at any time during business hours – they do not need to make an appointment. During an inspection, the EHO will check to make sure that:

- the premises are clean
- equipment is safe to use
- pest control measures are in place
- waste is disposed properly
- all food handlers have had food hygiene and safety training
- all food is stored and cooked correctly
- all food has best-before and use-by dates
- there is a HACCP plan to control food hazards and risks.

The EHO is allowed to:

- take photographs of the premises
- take food samples for analysis
- check all record books, including fridge and freezer temperatures, cleaning schedules and staff training
- offer advice on improving food hygiene and safety in the business.

EHO and the law

If the EHO discovers problems with the food safety and hygiene in the premise, they are allowed by law to:

- remove any food that may be hazardous so it can't be sold
- tell the owners to improve hygiene and safety within a set time and then come back and re-inspect
- close the premises if there is a risk to health of the public
- give evidence in a court of law if the owners are prosecuted for breaking food hygiene and safety laws.

Complaints by the public

The EHO will immediately investigate any complaints of suspected food poisoning linked to a particular premise.

Hygiene ratings

When an inspection has been carried out, the EHO will give the business a food hygiene rating. The ratings are published on the Food Standards Agency website as well as on stickers displayed at the business. A rating of 5, or very good, represents the highest standard of food hygiene.

MUSIC

Baroque Concerto Grosso

A **BAROQUE CONCERTO GROSSO** is an instrumental form involving two groups of performers: the **CONCERTINO** (or Concertante) featuring a small group of soloists accompanied by an orchestral accompaniment called the **RIPIENO.**

1600-1750

Harmony & Tonality

All Baroque Concerto Grossos have a **CONTINUO** part – an accompaniment which "fills in the harmonies and texture" played by the **HARPSICHORD** (or Organ) (playing **CHORDAL HARMONY** from **FIGURED BASS NOTATION**) with the **CELLO** or **BASSOON** doubling the Bass Line. **MODULATIONS** (changes of key) tended to go to the Dominant key or to the Relative minor of the original key. Tonality was mainly **DIATONIC** and in either clear **MAJOR** or **MINOR** tonalities.

Form & Structure

THREE MOVEMENTS – contrasted by **TEMPO** and a single mood or style within each movement. Movements in **RITORNELLO FORM** began with a **TUTTI** section which featured a **THEME**. Between appearances of this Ritornello Theme came **EPISODES** (contrasting sections).

1st Movement	Ritornello or a Fugue	Brisk and purposeful
2nd Movement	Da Capo Aria or Ternary Form	Slow and song-like often dotted rhythms
3rd Movement	Ritornello or a Fugue	Fast and Cheerful

Sometimes feature a short **CADENZA** section towards the end of the first movement (unaccompanied).

Rhythm, Tempo & Metre

The three movements of a Baroque Concerto Grosso were contrasted in **TEMPO** – Fast-Slow-Fast – with a consistent tempo within each movement. Dotted Rhythms were often a feature of the slower/second movements.

Texture

Mainly **POLYPHONIC** or **CONTRAPUNTAL** textures – complex and interweaving of parts, though some **HOMOPHONIC MELODY & ACCOMPANIMENT** sections for musical contrast.

Dynamics

TERRACED DYNAMICS – clear dynamic contrasts achieved by the whole orchestra changing the volume suddenly (rather than Crescendos or Diminuendos). No building up or fading down of volume in Baroque Concerto Grossos.

Melody

Melodies are decorated and embellished with **ORNAMENTS** (often by performers) *e.g. trills, turns, mordents and grace notes such as acciaccaturas,* which make melodies sound "busy". Melodies often long and flowing and use **SEQUENCES** (a musical phrase that is repeated at a different pitch either going up or down) and **IMITATION** (where one instrumental part is copied (imitated) by other instruments.

Soloists

The Baroque Concerto Grosso is a work for two or more soloists. The soloists (**CONCERTINO** –meaning "little ensemble") were the "stars of the show" and performed demanding and technically difficult parts.

Soloists vs. Orchestral Accompaniment

The soloists were always "in the spotlight" but sometimes performed with the accompanying orchestra in **TUTTI** sections. Musical contrast between sections is important.

Venue

Baroque Concerto Grossos were performed either in churches, opera houses or small salons (rooms) or courts of wealthy individuals.

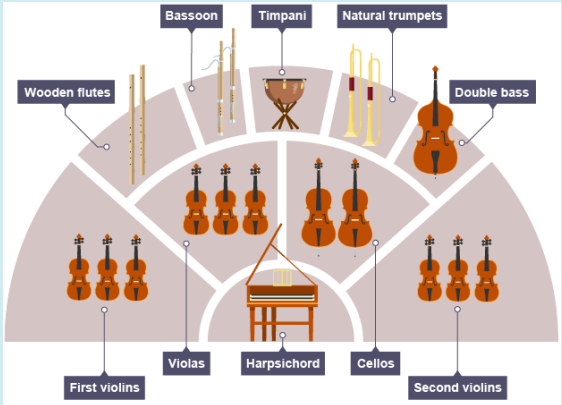
Baroque Concerto Grosso Composers


J. S. Bach


Handel


Vivaldi


Corelli



Instrumentation – Typical Instruments, Timbres and Sonorities

The orchestra used for a Baroque Concerto Grosso was split into two sections: the **RIPIENO** (the main orchestra who provided the accompaniment and less technically-demanding parts) and the **CONCERTINO** (or Concertante) who were the Soloists/Solo Section. The instruments used within the **CONCERTINO** of a Baroque Concerto Grosso can include: Violin, Cello, Recorder, Flute, Oboe, Bassoon, Trumpet and Lute.








The **BAROQUE ORCHESTRA** typically numbered between 10-30 players. The main and largest section was the **STRINGS** *(1st and 2nd Violins, Violas, Cellos and Double Basses)* who played most of the 'main melody'. A small **WOODWIND** section could consist of 2 Wooden Flutes, 2 Oboes and 2 Bassoons. The **BRASS** section may feature 2 "Natural" Trumpets and 2 Horns and the **PERCUSSION SECTION** featured only **TIMPANI** which were used only for dramatic effects. The **CONTINUO** player led and directed the Baroque Orchestra from the Harpsichord (no conductor).

MUSIC

Baroque Solo Concerto

The **BAROQUE SOLO CONCERTO** grew out of the **BAROQUE CONCERTO GROSSO** in which a **single solo instrument** is accompanied by an orchestra.

1600-1750

Harmony & Tonality

All Baroque Solo Concertos have a **CONTINUO** part – an accompaniment which "fills in the harmonies and texture" played by the **HARPSICHORD** (or Organ) (playing **CHORDAL HARMONY** from **FIGURED BASS NOTATION**) with the **CELLO** or **BASSOON** doubling the Bass Line. **MODULATIONS** (changes of key) tended to go to the Dominant key or to the Relative minor of the original key. Tonality was mainly **DIATONIC** and in either clear **MAJOR** or **MINOR** tonalities.

Form & Structure

THREE MOVEMENTS – contrasted by **TEMPO** and a single mood or style within each movement. Movements in **RITORNELLO FORM** began with a **TUTTI** section which featured a **THEME**. Between appearances of this Ritornello Theme came **EPISODES** (contrasting sections)

1st Movement	Ritornello or a Fugue	Brisk and purposeful
2nd Movement	Da Capo Aria or Ternary Form	Slow and song-like often dotted rhythms
3rd Movement	Ritornello or a Fugue	Fast and Cheerful

Sometimes feature a short **CADENZA** section towards the end of the first movement (unaccompanied).

Rhythm, Tempo & Metre

The three movements of a Baroque Solo Concerto were contrasted in **TEMPO** – Fast-Slow-Fast – with a consistent tempo within each movement. Dotted Rhythms were often a feature of the slower/second movements.

Texture

Mainly **POLYPHONIC** or **CONTRAPUNTAL** textures – complex and interweaving of parts, though some **HOMOPHONIC MELODY & ACCOMPANIMENT** sections for musical contrast.

Dynamics

TERRACED DYNAMICS – clear dynamic contrasts achieved by the whole orchestra changing the volume suddenly (rather than Crescendos or Diminuendos). No building up or fading down of volume in Baroque Solo Concertos.

Melody

Melodies are decorated and embellished with **ORNAMENTS** (often by the soloist) *e.g. trills, turns, mordents and grace notes such as acciaccaturas,* which make melodies sound "busy". Melodies often long and flowing and use **SEQUENCES** (a musical phrase that is repeated at a different pitch either going up or down) and **IMITATION** (where one instrumental part is copied (imitated) by other instruments.

Soloists

The Baroque Solo Concerto is a work for a single solo instrument. The soloist's parts were often very technically difficult with a chance for the solo performer to "show off" their technical ability and skill.

Soloist vs. Orchestral Accompaniment

The soloist was always "in the spotlight" but sometimes performed with the accompanying orchestra in **TUTTI** sections. Musical contrast between sections became more important than in Concerto Grossos.

Venue

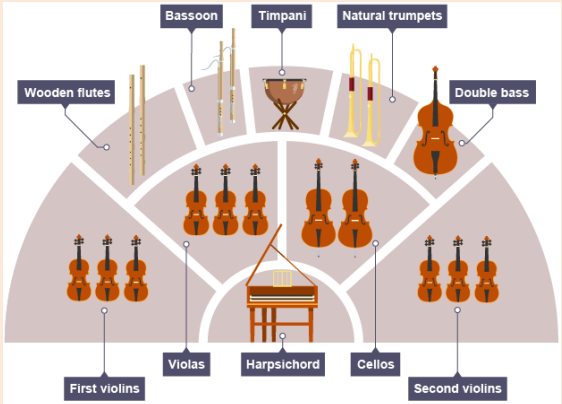
Baroque Solo Concertos were performed either in churches, opera houses or small salons (rooms) or courts of wealthy individuals.

Baroque Solo Concerto Composers


J. S. Bach


Handel

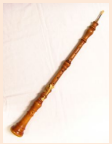

Vivaldi



Instrumentation – Typical Instruments, Timbres and Sonorities

The orchestra used to accompany Baroque Solo Concertos was slightly larger than the Baroque Concerto Grosso but typically numbered between 10-30 players. The main and largest section was the **STRINGS** *(1st and 2nd Violins, Violas, Cellos and Double Basses)* who played most of the 'main melody'. A small **WOODWIND** section could consist of 2 Wooden Flutes, 2 Oboes and 2 Bassoons. The **BRASS** section may feature 2 "Natural" Trumpets and 2 Horns and the **PERCUSSION SECTION** featured only **TIMPANI** which were used only for dramatic effects. The **CONTINUO** player led and directed the Baroque Orchestra from the Harpsichord (no conductor). The instruments used as soloists within Baroque Solo Concertos included the Violin, Cello, Recorder, Flute, Oboe, Bassoon, Trumpet and Lute.





MUSIC

Classical Solo Concerto

During the **CLASSICAL PERIOD**, the Baroque Concerto Grosso went "out of fashion" and Classical composers continued to write **SOLO CONCERTOS** for a single solo instrument with more difficult and technically demanding solo parts (**VIRTUOSIC**), accompanied by a now, much larger and more developed, orchestra.

1750-1820

Harmony & Tonality

SIMPLE HARMONY making use of mainly **PRIMARY CHORDS – I, IV** and **V**. **DIATONIC** harmony in either clear **MAJOR** or **MINOR** tonalities. **MODULATIONS** to **RELATED KEYS** (relative major/minor, subdominant major and minor and dominant major/minor).

Venue

Performance spaces were becoming larger than in the Baroque period due to size of orchestras. Recital and Concert Halls and Opera Houses were popular venues for performing Concertos.

Form & Structure

THREE MOVEMENTS – contrasted by **TEMPO** and style/mood. **RONDO** form now popular (ABACADA...) where A is the recurring **THEME** between contrasting **EPISODES** (B, C, D..) and **SONATA FORM** (**EXPOSITION, DEVELOPMENT, RECAPITULATION, CODA)** now popular. Classical Solo Concertos often have long orchestral sections before the soloist enters – "delayed entry of the soloist". Movements longer than Baroque.

1st Movement	Sonata Form	Brisk and purposeful
2nd Movement	Ternary or Variation Form	Slow, lyrical and song-like
3rd Movement	Rondo, Variation Form or Sonata Form	Fast and Cheerful

Rhythm, Tempo & Metre

The three movements of a Classical Solo Concerto were contrasted in **TEMPO** – Fast-Slow-Fast and style/mood. Some changes of **TEMPO** for effect/expression.

Texture

Busy Baroque Polyphonic Textures now replaced with clearer **HOMOPHONIC (MELODY AND ACCOMPANIMENT)** textures.

Dynamics

Wider range of Dynamics – ***pp, ff, mp, mf*** **CRESCENDOS** and **DECRESCENDOS** or **DIMINUENDOS** now used showing an increasing range of dynamics and more emphasis on expression in the music.

Melody

The melodies in Classical Solo Concertos were **LIGHT, SIMPLE** and **ELEGANT** and continue to use **SEQUENCES** and **ORNAMENTS** (although not as much as in the Baroque period). Musical phrases are **BALANCED** and **EVEN** (e.g. 4 or 8 bars) maybe with some **QUESTION AND ANSWER** phrases.

Soloist

CADENZA – became integral to the end of the 1st movement (and sometimes last movement) – very difficult and **VIRTUOSIC** unaccompanied sections allowing the soloist to show off their technical skill often containing lots of fast scale passages, broken chords and decorated and ornamented melodies. Often cadenza sections end with a long, held **TRILL** to signal to the orchestra to enter again for the final **CODA** section. Cadenzas were improvised by the soloists during performance, however, composers such as Beethoven wrote cadenzas out on the score. The soloist's part was more technically demanding and **VIRTUOSIC** than in Baroque Concertos.

Soloist vs. Orchestral Accompaniment

Sometimes the soloist and orchestra perform sections in **DIALOGUE** with each other. **The conductor follows the soloist and the orchestra follow the conductor** depending on the soloist's **INTERPRETATION** of the piece (which requires rehearsal).

Classical Solo Concerto Composers

Haydn

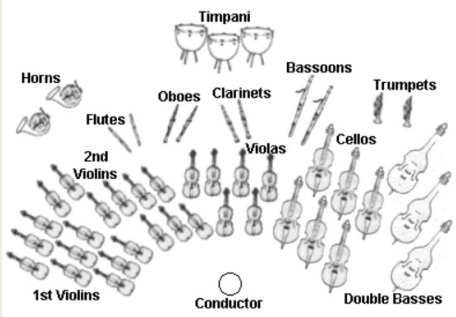
Solo Trumpet, Flute, Oboe, Bassoon, Violin, Cello and Piano Concertos

Mozart

27 Solo Piano Concertos and Concertos for Solo Violin, Clarinet, Horn and Flute.

Beethoven

Solo Concertos for Piano and Violin. Early style was "Classical".



Instrumentation – Typical Instruments, Timbres and Sonorities

As the Harpsichord declined in popularity, Classical composers no longer added **CONTINUO** parts to the orchestral accompaniment and a **CONDUCTOR** was now established to lead the orchestra. The **CLASSICAL ORCHESTRA** grew in size and new instruments such as the Clarinet were added. The **CLASSICAL ORCHESTRA** typically numbered between 30-60 players. The **STRINGS** *(1st and 2nd Violins, Violas, Cellos and Double Basses)* continued to be the 'main section' playing most of the 'main melody' and contained more players than in Baroque orchestras. The **WOODWIND** now typically featured 2 x **METAL** Flues, 2 x Oboes, 2 x Bassoons, and 2 x **(newly invented)** Clarinets. **BRASS** continued to consist of 2 x Horns and 2 **(now valved)** Trumpets and the **PERCUSSION** continued to feature only the **TIMPANI**. Classical composers wrote Solo Concertos for instruments including the **PIANO** (newly invented and replacing the Baroque Harpsichord), **VIOLIN, CELLO, FLUTE, OBOE, CLARINET** (also newly invented), **BASSOON** and **FRENCH HORN**.

MUSIC

Romantic Solo Concerto

ROMANTIC SOLO CONCERTOS continued to be instrumental works for a **single solo instrument** with orchestral accompaniment but became much more **DRAMATIC** sounding and emotive. Sometimes **DOUBLE CONCERTOS** were written for2 solo instruments.

1820-1900

Harmony & Tonality

Harmony continued to be mainly **DIATONIC** but much more use of **CHROMATIC HARMONY, DISSONANCE** *(clashing notes and chords)* and **ADDED NOTE CHORDS** *e.g. 9ths* to create dramatic effects.

Form & Structure

1st Movement	Sonata Form	Allegro – soloist plays virtually throughout
2nd Movement	Ternary or Variation Form	Slow, lyrical and song-like, often short and acting mainly as an introduction to the very fast and virtuosic finales. Sometimes linked to final movement with a pause.
3rd Movement	Rondo, Variation or Sonata Form	Fast and Cheerful

THREE MOVEMENTS – *(sometimes "linked" (Mendelssohn) or even in just one movement (Liszt)*

Rhythm, Tempo & Metre

Frequent changes of time signature and tempo.

Texture

HOMOPHONIC (MELODY AND ACCOMPANIMENT) but more complex than in Classical Concertos.

Dynamics

Extremes of dynamics common (***ppp, fff***) and specific **EXPRESSION MARKINGS** *e.g. espressivo, dolce, appassionato*

Melody

The regular and balanced phrases of the Classical Concerto were less important with composers giving more freedom to expression within their melodies which were now often long and dramatic, loud and powerful or warm and emotional.

Soloists (and Articulation)

The soloist's part became even more difficult, **VIRTUOSIC** and technically difficult to play. **CADENZA** sections continued to allow the soloist to "show off" becoming more complex and difficult with lots of **MELODIC DECORATION**, **ORNAMENTATION** and **FAST SCALE PASSAGE** and demanding playing techniques particular to the solo instrument *e.g. glissandi on the piano, double stopping and harmonics on the violin*. Cadenzas were now written out and not improvised by the performer. Soloist often enters immediately (**NO ORCHESTRAL INTRODUCTIONS**) at the start of the 1st movement sharing themes with the orchestra.

Soloists vs. Orchestral Accompaniment

In the Romantic period, the soloist stepped forward as a "heroic figure" with the orchestra slipping back into a more "subordinate" role, but these changing roles also added to excitement and drama and more "competition" between soloist and orchestra. The conductor continues to follow the soloist and the orchestra follows the conductor. The soloist's interpretation of the music is now more important due to the music being more dramatic and powerful.

Venue

Many Romantic Solo Concerto composers were also **VIRTUOSO PERFORMERS** *e.g. Franz Liszt, Chopin, Clara Schumann* and *Niccolo Paganini (Violin Virtuoso)* who wrote and performed in large-scale public concerts, subscription concerts and festivals. Larger concert halls had to be built due to the rise of the "middle class" concert goer.

Romantic Solo Concerto Composers

Beethoven

Late Concertos

Brahms

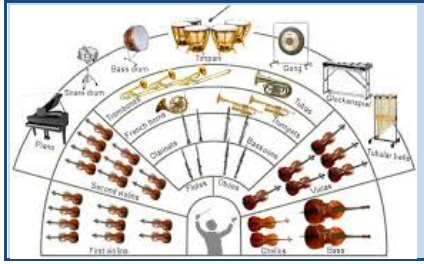
Violin and Piano Concertos

Liszt

Piano Concertos

Mendelssohn

Solo Violin Concerto



Instrumentation – Typical Instruments, Timbres and Sonorities

The Romantic orchestra was large and often contrasted dramatically with the soloist. With the growth of the Romantic orchestra, new **TIMBRES** and **SONORITIES** became available to composers who explored rich and colourful orchestration. The **STRINGS** section was enlarged again, often with the addition of Harps. New instruments were added to the **WOODWIND** section such as the Double Bassoon, Cor Anglais, Bass Clarinet and Piccolo. The **BRASS** section saw Trombones and a Tuba added along with an extra Trumpet and two further French Horns and the **PERCUSSION** section now featured a vast array of Drums, Cymbals, Pitched Percussion and other instruments which could be hit, struck, banged or plucked! There could be between 90-100 players in a Romantic orchestra. Romantic composers wrote Solo Concertos for almost any orchestral instrument, but the **PIANO** and **VIOLIN** continued to be popular choices as solo instruments.

Year 10 Cambridge National in Sports Studies – Knowledge Bank

A range of negative effects of the media on sport in relation to spectators and live sport
External factors affecting decline in live spectatorship
Ethical appropriateness of sponsors
How the media is assisting a widening wealth divide in sport
Impact of wider global issues on sport/ performers and spectators
Media demands affecting sport fixture scheduling

Negative impacts of the media on sports and sports performers
Coverage of inappropriate behaviour: On-field and Off-field
Rejection of sporting heroes
Scrutiny and criticism of participants: Performers, Officials, Leaders
Increased pressure on athletes to look a certain way and links to mental health

OCR
Oxford Cambridge and RSA

Year 10 Cambridge National in Sports Studies – Knowledge Bank

Cambridge Nationals

Key components of Individual Performance	Key components of Team Performance
• Skills and Techniques • Creativity • Tactics and Strategies • Compositional Ideas • Decision Making • Management/Maintenance of Performance	• Skills and Techniques Creativity Tactics and Strategies Compositional Ideas Decision Making Awareness of role within team Contribution to the team

R184 Content for Flash Cards

Year 10 Cambridge National in Sports Studies – Knowledge Bank

Cambridge Nationals

SPORT STUDIES

Barriers to Participation Traditionally Affect Different User Groups*

Employment/Unemployment
- Economically disadvantaged
- Unemployed people
- Shift workers

Lack of transport
- Young children
- Retired people/over 60s
- People with disabilities

Lack of awareness of provisions
- Teenagers
- Ethnic groups
- People with disabilities
- Retired people/ over 60s

Family Commitments
- Parents (Singles and couples)
- Carers

Lack of positive sporting role models
- Retired people/over 60s
- Females
- People with disabilities

Lack of positive family role models
- Teenagers
- Young children

Lack of appropriate activity provision
- Gender groups
- Young children
- People with disabilities
- Retired people/over 60s

Lack of media coverage
- Females
- Different ethnic groups

Lack of disposable income
- Unemployed/Economically disadvantaged
- Young children
- Families with children

*Barriers not restricted to these user groups

Improving Participation

Provision → The availability of sport

Promotion → The advertising and marketing of sports

Access → The accessibility of sport to all people in society

Provision: Appropriate Programmes; Activities; Sessions; Available times for different user groups

Promotion: Advertisements; Initiatives; Taster Sessions; Incentives

Access: Improving transport availability; Improving availability of facilities and equipment; Creating access to facilities for all user groups; Creating appropriate pricing for all user groups

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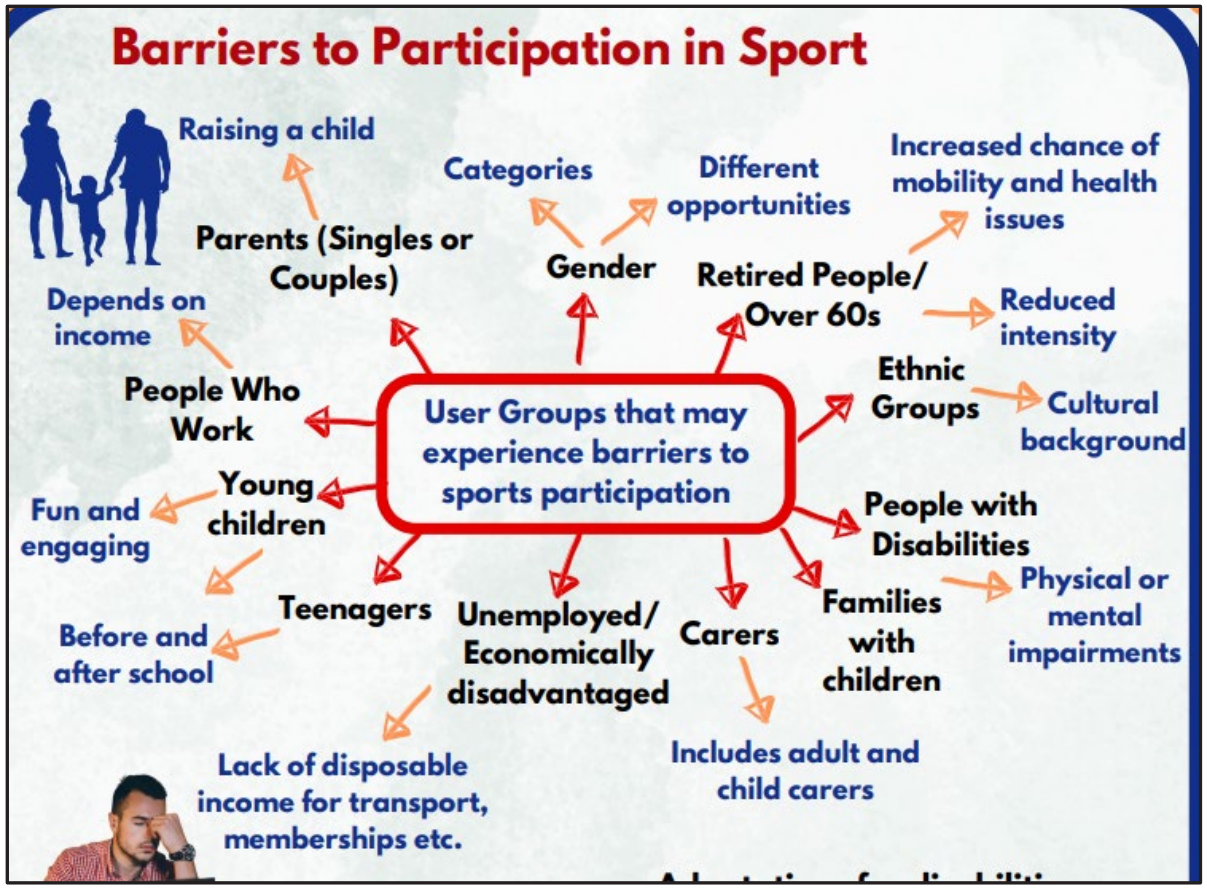

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YOUNGMiNDS
fighting for young people's mental health

HELP AND SUPPORT

ChildLine 0800 1111

mind for better mental health

THE MIX

Provides support for anyone under the age of 25
www.themix.org.uk | 0808 808 4994

CAMPAIGN AGAINST LIVING MISERABLY CALM

Confidential support to people experiencing difficulties
ww.thecalmzone.net
0800 58 58 58
Everyday, 5pm-midnight

Free 24/7 call service for all ages to talk about your issues
www.samaritans.org | 116 123

stem4
supporting teenage mental health

Free service & apps supporting mental health for ages 11-19
www.stem4.org.uk

PAIGNTON ACADEMY

In School

Speak to your Tutor

Find a member of staff with an Orange Lanyard

Speak to any member of staff

Use the 'Safeguarding Concern Form'
on your school desktop page

Speak to your Head of House
or Pastoral Manager