November - December

Year 10

KNOWLEDGEABLE AND EXPERT LEARNERS



Self Quizzing

Flash Cards

Mind Maps

Brain Dumps

enjoy learn succeed

INDEPENDENT LEARNING BOOKLET

NAME: .....

TUTOR GROUP: .....

CONTENTS

- Using Class Charts Instructions
- Accessing SENECA
- Independent Learning log
- Creating flashcards – instructions
- Subject Knowledge Organisers

You will need an A4 application booklet.

HOMEWORK:

- Your teacher will set specific tasks, with a deadline, on Class Charts
- Instructions for your homework and how to access it are in this booklet
- You must complete and hand in the work by the deadline

INDEPENDENT LEARNING EXPECTATIONS AND REWARDS:

- You should complete 3 tasks over the week (20 mins each – 1 hour in total)
- The tasks will be set on Class Charts to help you keep track of what you need to do.
- You must bring your ILB and application book to school every day.
- You can choose the subject/topic you want to work on.
- Your tutor will check your ILB regularly to see how you are getting on.
- You will be rewarded for going above and beyond expectations.

USING CLASS CHARTS

All of your homework will be set by your teachers using the Class Charts System.
You should check Class Charts every day to make sure you are up to date, and that you meet all your deadlines.
Below, shows you how to log on and track your homework.

Logging in to Class Charts

1. Enter your email address and password into the fields provided



2. Click on the Log in button

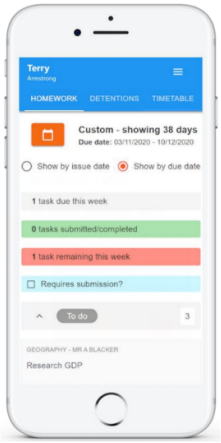


3. Enter your date of birth if prompted and click on the OK button

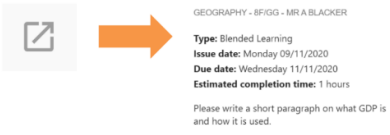


Homework

- Select the homework tab on our account.
- This will display a list of the homework tasks which you have been given.
- To change the date range for displayed homework tasks, click on the orange Date button.
- To display tasks in the order they are expected to be handed in, click on the Due date button.
- To mark a homework task as completed, view the homework task of your choice in more detail and tick the Completed checkbox.

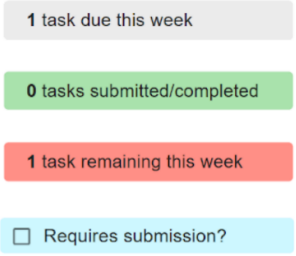


To view a homework task in more detail, click on the expand icon in the bottom right hand corner of the homework tile. A popup will appear that contains the a description of the homework task, the estimated completion time and any links or attachments that may have been included.



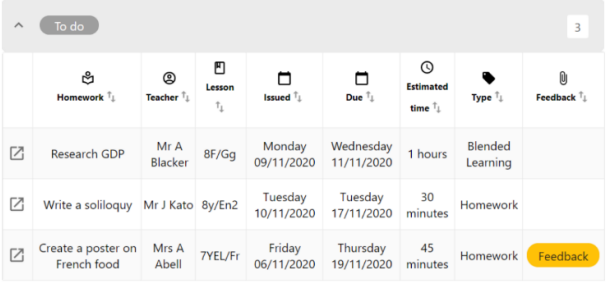
Keeping track of homework

To track your homework use the three banners above the homework status. This shows the the number of homework tasks that are due that week, how many of those tasks you have completed and how many tasks you still need to complete.



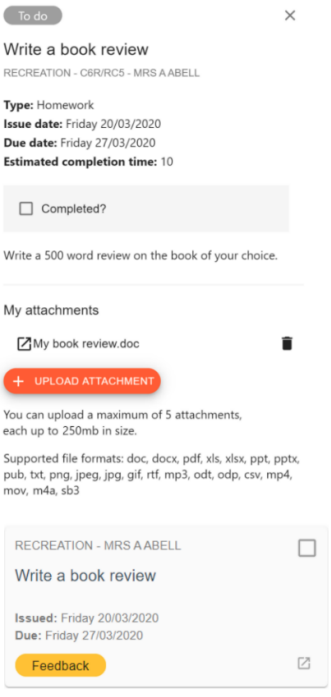
To only see homework tasks that require an attachment submission, tick the checkbox labelled Requires submission.

If you are viewing the Homework tab via a desktop or laptop, expanding a homework status category will display a table overview of each homework task for the selected date range.



Homework attachment submissions

For certain homework tasks, you may be asked by your teacher to upload your work as an attachment. When viewing a homework task in more detail, you will see the Upload attachment button if your teacher is expecting your work to be uploaded. To submit a homework attachment, click on the Upload attachment button and select the files of your choice. Successfully uploaded files will then appear above the button



If your teacher leaves feedback on one of your homework attachments, you will see a Feedback icon appear on the associated homework task.

To view the feedback, click on the expand icon in the bottom right hand corner of the homework tile. Your teacher's feedback will appear directly below your homework attachment

To do
To-Do: These are homework tasks that you need to complete. Once you have completed them, tick the checkbox

Completed
Completed: These are homework tasks that you have ticked as completed but have not been marked by your teacher

Submitted late
Late: These are homework tasks that have been handed in past the deadline.

Not submitted
Not submitted: These are homework tasks that were not handed in on time.

Submitted
Submitted: These are homework tasks that have been handed in on time.

HOW TO ACCESS SENECA

Seneca learning is a free online platform that will help you revise for all your subjects.

1. Go to https://senecalearning.com/en-GB/

2. Click 'Log In' at the top right hand corner.



3. Select 'Continue with Microsoft'.



4. Enter your school email and password.

5. Select the course(s) you want to work on

If you need any help accessing SENECA please speak to your class teacher, or Miss Holmes.

You can also scan this QR code for a video walkthrough of how to log in as a student

SCAN HERE

INDEPENDENT LEARNING LOG
FLASHCARDS

Expectation this ½ term: Flash cards
You should create 5 flash cards and quiz yourself on them atleast twice.
(Two ticks in the tested column)

- Create 5 flash cards (1 task) Test yourself twice
- This should be done three times a week , for approximately 20 minutes.
- Flash cards should be evidenced in your notebook
- If using individual loose flashcards, bring them with you to Tutor Time.
- Use this log to track how what subjects you have done (see example)

Week Beginning	Monday	Tuesday	Wednesday	Thursday	Friday
EXAMPLE:	English: KG1 & 2		History: KG4 & 5		Drama: KG 1 & 3
02/11/26					
09/11/26					
16/11/26 (15 Flash cards complete)					
23/11/26					
30/11/26					
07/12/26 (30 Flash cards complete)					
14/12/26					

FLASHCARDS- INSTRUCTIONS

1.



Identify knowledge

What are you creating flashcards on?

Do you have the resources you need?

- Knowledge organisers
- Textbooks
- Lesson materials

2.



Design

- 1 Question per flashcard.
- Make sure they are concise and clear.
- No extended answer questions.
- To help with organisation you can colour code your flash cards per subject.

3.



Use

- Read the question
- Say your answer out loud, OR, Write your answer down
- Check your answer
- Put your flashcards in two piles, correct and incorrect.
- Quiz yourself on each card at least three times.

4.



Revisit it

- Revisit the questions you got wrong.
- Did you just forget? Or make a small error that can be corrected?
- Do you need to go back to your notes?
- Do you need further help from your teacher?

5.

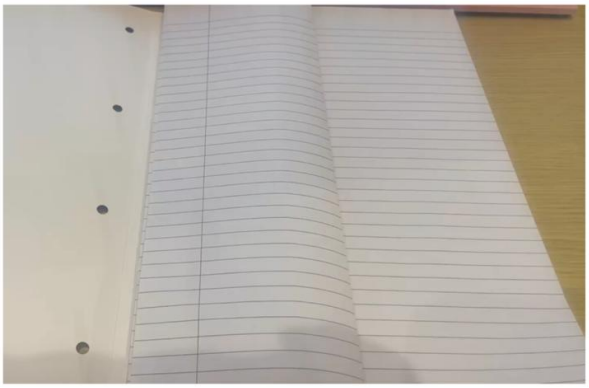


Review

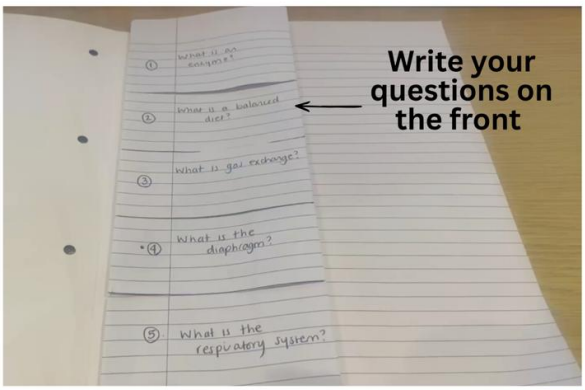
- How have you performed when you look back at your answers?
- Which flashcards need to be repeated next time?
- Is your knowledge secure? If so, move onto applying knowledge in that area in exam questions.

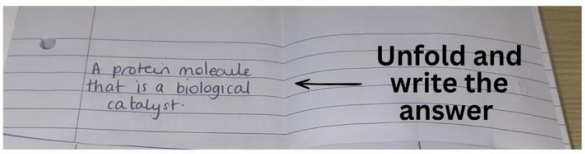
FLASHCARDS- WHAT SHOULD THEY LOOK LIKE?

Step 1. Fold 1 sheet in half

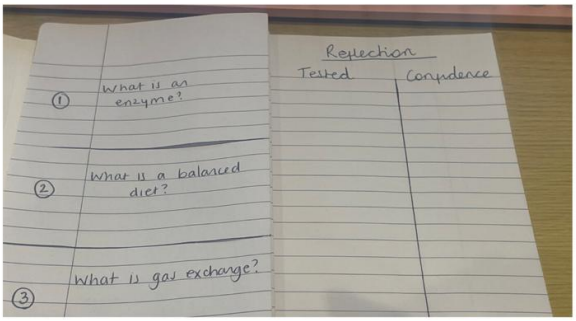


Step 2. Divide into 5 sections

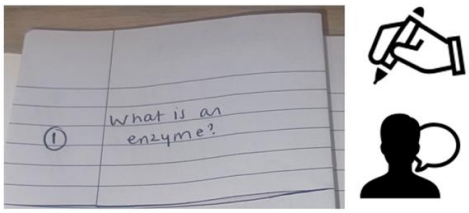




On the next sheet of paper create a reflection column.
Heading 1 - Tested, **Heading 2** - Confidence

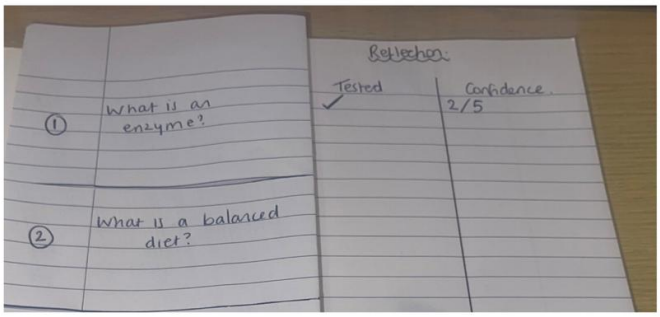


Step 3. Read and answer the question



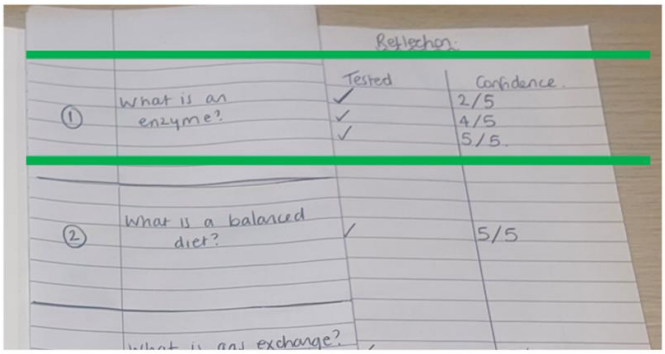
Say your answer out loud or write it down

Check your answer - Fold the paper back and see if your answer was correct



•Each time you test yourself tick the tested column.
•Each time you test your self rank your confidence with that flash card out of 5.

Step 4. Revisit the questions you got wrong



This question has been repeated more than once as it was answered incorrectly.

Step 5. Review

How have you performed when you look back at your answers?
Which flashcards need to be repeated next time?

- **Alternatively you can create your flashcards on individual cards if you have them.**
- **You still need to make a reflection page in your ILB notebook.**
- **Flashcards should be brought to tutor time.**

English Language Paper 2 | Writers' viewpoints and perspectives | Year Group: 10

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Question Summary

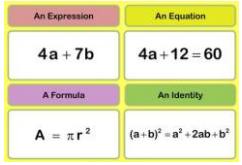
	Skill(s)	Marks, timings and question stems	Paragraph structure
1	**Retrieval and inference**	• **4 marks** • (10 minutes including reading source A) • "Choose four statements…"	Shade the circles in the four boxes of the ones that you think are true.
2	**Summarise**	• **8 marks** • (15 minutes including reading source B) • "What can you infer about the similarities/differences between…" • One paragraph about Source A, one paragraph about Source B	**P**oint **E**vidence **I**nference **C**ompare **P**oint **E**vidence **I**nference
3	**Analysis**	• **12 marks** • (15 minutes) • "How does the writer use language to describe…" • 3 paragraphs	**P**oint **E**vidence **A**nalysis
4	**Compare Writers' Perspectives**	• **16 marks** • (20 minutes) • "Compare how the writers convey their different perspectives on…" • 3-4 paragraphs	**P**erspective **O**pinion **M**ethod **C**ompare **P**erspective **O**pinion **M**ethod
5	**Transactional writing**	• **40 marks** • *24 marks for content and organisation* • *16 marks for technical accuracy* • (45 minutes) • You will be asked to write either an article, leaflet, speech, essay or letter	***Describe*** ***Promote*** ***Crush the counter argument*** ***Conclude*** *You also need to ensure you use the correct features for the form you have been asked to write in.*

Types of Transactional Writing (Q5)

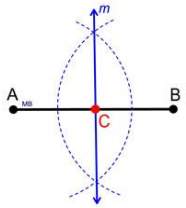
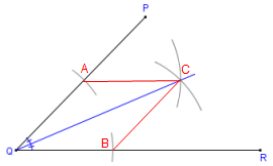
1	**Article**	Attention grabbing headline, strapline, subheadings An overview paragraph Effectively sequenced paragraphs
2	**Leaflet**	Title, subheadings Effective paragraphs/sections
3	**Speech**	Clear address to audience and clear sign off Rhetorical indicators that the audience is being addressed throughout Effective paragraphing
4	**Essay**	Effective introduction and conclusion Effectively sequenced ideas and paragraphs
5	**Letter**	Salutation e.g. 'Dear…' Effective paragraphing using temporal connectives Formal sign off e.g. 'Yours sincerely'

Subject: Maths	Term: Half Term 3 – November Part 1	Year Group:10F

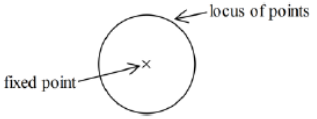
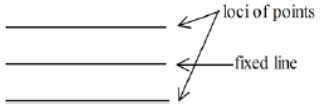
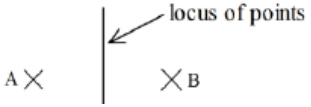
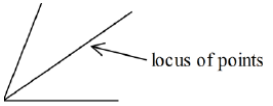
Algebra - Formulae

1	Expression, Equation, Identity, Formulae	
2	Substitution: replacing letters with numbers	$a = 3, b = 2$ *and* $c = 5$. Find: $3a - 2b$ $(3 \times 3) - (2 \times 2) = 5$
3	Rearranging formulae: Use inverse operations on both sides of the formula.	Make x the subject of $y = \frac{2x-1}{z}$ Multiply both sides by z $yz = 2x - 1$ Add 1 to both sides $yz + 1 = 2x$ Divide by 2 on both sides $\frac{yz+1}{2} = x$ We now have x as the subject.

Geometry & Measure - Constructions

1	Bisect a line • Place compasses at either end and go over halfway making a curve.	
2	Bisect an Angle • Using a compass, draw a curve to meet the two lines **(A and B)** • Use these points to find another meeting point, **C.** Draw a line through.	

Geometry & Measure – Loci

1	Circle 	The locus of points that are a fixed distance from a fixed point
2	Parallel lines 	The locus of points a fixed distance from a fixed line
3	Perpendicular bisector 	The line that cuts another in half at right angles
4	Angle bisector 	The locus of points equidistant between two fixed points

Key Vocabulary

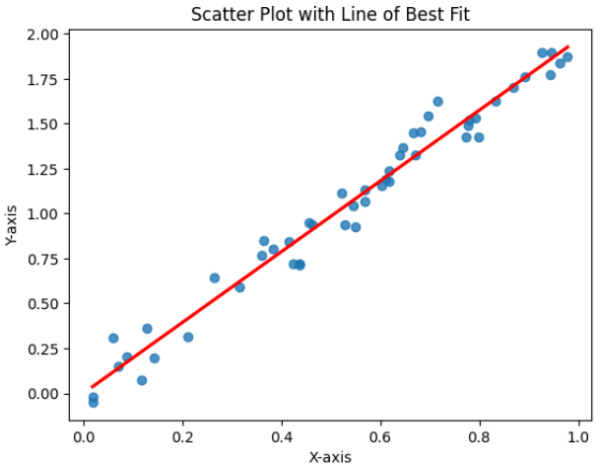
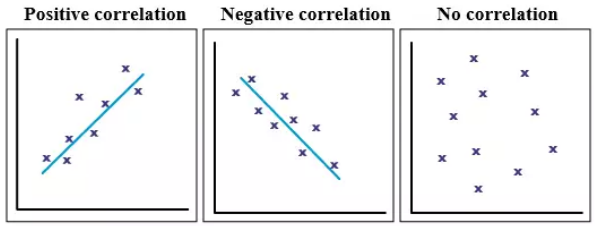
1	Expression	A mathematical statement written using symbols, numbers or letters,
2	Vertex	A corner or a point where two lines meet.
3	Equidistant	A point is equidistant from a set of objects if the distances between that point and each of the objects is the same.
4	Congruent Shapes	Shapes are congruent if they are identical - same shape and same size.
5	Gradient	The gradient of a line is how steep it is.

Subject: Maths	Term: Half Term 3 – November Part 2	Year Group:10F

Algebra - Equations

1	Solve one step equations 0	$x + 3 = 12$ Subtract 3 $x = 9$	$x - 7 = 1$ Add 7 $x = 8$	$3x = 12$ Divide by 3 $x = 4$	$\frac{x}{5} = 10$ Multiply by 5 $x = 50$
2	Solve an equation	Use inverse operations on both sides of the equation (balancing method) until you find the value for the letter.	Solve $2x - 3 = 13$ Add 3 on both sides $2x = 16$ Divide by 2 on both sides $x = 8$		
3	Solve a two-sided equation	$8k + 5 = 4k + 17$ – 4k $4k + 5 = 17$ – 5 $4k = 12$ ÷ 4 $k = 3$			
4	Solve a two-sided equation with brackets	$2(z + 5) = 6(z - 3)$ – 2z $2z + 10 = 6z - 18$ + 18 $10 = 4z - 18$ ÷ 4 $28 = 4z$ $7 = z$			

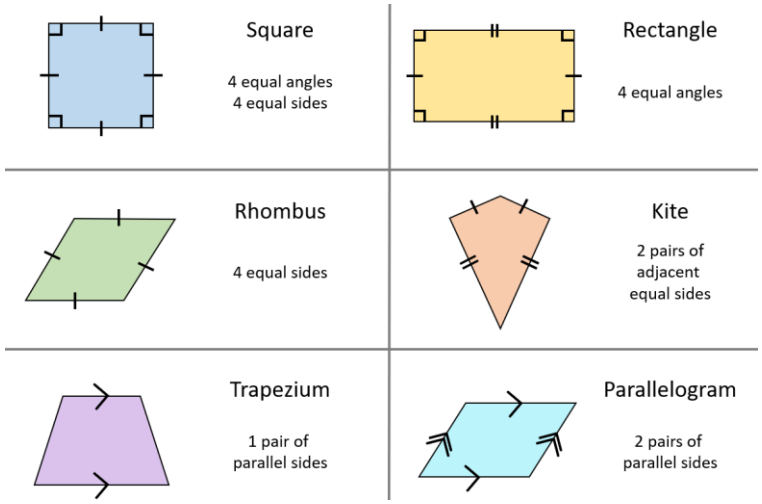
Statistics - Scatter Graphs

1	Causality	When one variable influences another variable
2	Line of best fit	A straight line that best represents the data on a scatter graph 
3	Outlier	A value that "lies outside" most of the values in the data set
4	Positive, Negative or No Correlation	

Subject: Maths	Term: Half Term 3 – November Part 1	Year Group: 10H

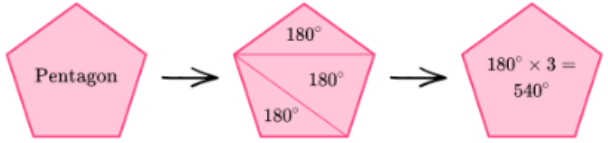
Geometry & Measure – Polygons

1 Types of Quadrilaterals



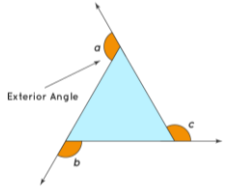
2 Sum of interior angles

For an n-sided polygon
Sum of interior angles = 180 × $(n - 2)$



3 Sum of exterior angles

For all polygons:
Sum of exterior angles = 360



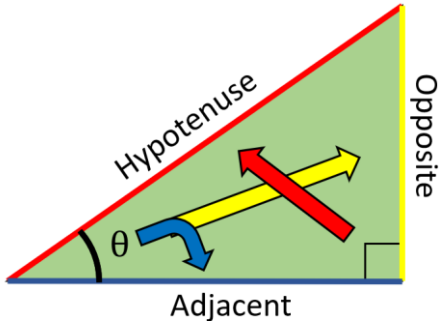
4 Regular polygons

$Exterior\ angle$ = 360 ÷ $number\ of\ sides$
$number\ of\ sides$ = 360 ÷ $Exterior\ Angle$
$Interior\ angle$ = 180 − $Exterior\ angle$

Geometry & Measure – Trigonometry 1

1 Labelling the sides of a Right-Angle Triangle

Hypotenuse – *always* opposite the right-angle & *always* longest.
Opposite – *always* opposite θ.
Adjacent – next to θ.



2 How to find angles/sides in Trigonometry

What sides do you want/have?	Sides	Angles	Formula Triangle
Opposite Hypotenuse	$\sin\theta = \frac{O}{H}$	$\sin^{-1}(\frac{O}{H})$	O / Sin θ | H
Adjacent Hypotenuse	$\cos\theta = \frac{A}{H}$	$cos^{-1}(\frac{A}{H})$	A / Cos θ | H
Opposite Adjacent	$\tan\theta = \frac{O}{A}$	$\tan^{-1}(\frac{O}{A})$	O / Tan θ | A

3 Exact Trigonometry Values

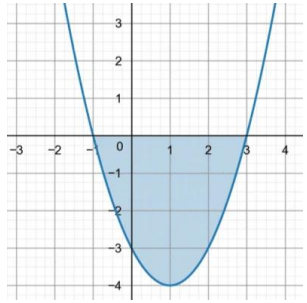
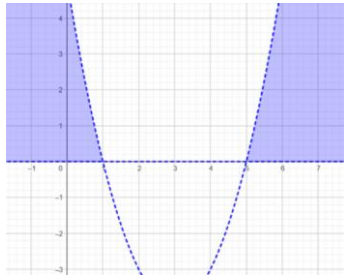
Θ	0°	30°	45°	60°	90°
Sin Θ	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
Cos Θ	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
Tan Θ	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	

Subject: Maths	Term: Half Term 3 – November Part 2	Year Group: 10H

Algebra – Equations & Formulae

1	Expression	A mathematical statement written using symbols, numbers or letters. For example, $3x + 2$ or $5y^2$
2	Equation	A statement showing that two expressions are equal. Equations can be solved. For example, $2y - 17 = 15$
3	Identity	An equation that is true for all values of the variables An identity uses the symbol: ≡ $4(x + 2) \equiv 4x + 8$
4	Formula	Shows the relationship between two or more variables $Area\ rectangle = length\ x\ width$ $A = \pi r^2$
5	Solving inequalities	Inequalities are solved using the same steps as equations. If you multiply or divide an inequality by a negative number, then the inequality sign is reversed. For example, $-5x > 10$ $x < -2$

Algebra – Inequalities

1	Understanding inequality signs	$<$ Less than; $>$ Greater than; $\leq$ Less than or equal to; $\geq$ Greater than or equal to
2	Representing inequalities on a number line	$n > -1$  $n \leq 3$  $-1 < n < 3$ 
3	Quadratic Inequalities	Factorise the quadratic. Sketch the Quadratic and shade the area needed. $x^2 + bx + c < 0$  $x^2 + bx + c > 0$ 

Key Vocabulary

1	Regular polygon	All sides the same length All angles the same size
2	Direct proportion	Two quantities increase at the same rate
3	Indirect proportion	One variable increases at a constant rate as the second variable decreases
4	Constant of proportionality	Represented by k. Its value stays the same
5	Rate of change	The gradient of a tangent to the curve can be used to calculate the rate of change at any given point
6	Conversion graph	A line graph to convert one unit to another.

Subject: Computer Science	**Topic:** Fundamentals of Programming	**Year Group:** 10

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Programming Concepts

Programming	The process of designing, writing, testing and maintaining computer programs.
Algorithm	An algorithm is a sequence of step-by-step instructions to solve a problem. This does not need to be on a computer.
Variable	A named memory location used to store data that can be changed while a program is running.
Constant	A named value stored in memory that cannot be changed during the execution of a program.
Subroutine	A named block of code designed to perform a specific task.
Data Structure *(Arrays)*	Stores multiple values of the same data type under a single variable name. Individual values are accessed using an index.

Programming Constructs

Sequence	Instructions that are executed in order, one after the other.
Selection	A selection statement allows code to be executed when a condition is met.
Iteration	The repetition of a block of code. **Definitive Iteration** Repeats a section of code a fixed number of times (FOR loop). **Indefinitive Iteration** Repeats code until a condition is met or no longer met (WHILE loop).
Nested Constructs	Programming constructs placed inside one another (e.g. nested IF statements or nested loops).

Data Types

Data Types are used to tell the computer what kind of data is being stored in a variable. Choosing the correct data type helps programs store and process data efficiently.

Data Type	Characteristics
Integer (INT)	Stores whole numbers that do not contain a decimal point.
Real/Float (FLOAT)	Stores numbers that contain a decimal point.
Boolean (BOOL)	Stores one of two values only: TRUE or FALSE. Often used when making decisions in a program.
Character (CHAR)	Stores a single character, such as a letter, number or symbol.
String (STR)	Stores a sequence of characters, such as words, sentences or numbers stored as text.

Robust Programs

Input Validation	Checks that data entered is sensible and within an acceptable range.
Authentication	Confirms the identity of a user before access is granted.
Syntax Error	An error caused by incorrect programming language syntax.
Logic Error	An error that causes a program to produce incorrect output.
Runtime Error	An error that occurs whilst a program is running.
Structured Programming	Modularised programming, clear well-documented code.

Boolean Operators

AND	Both conditions must be true.
OR	One or more conditions must be true.
NOT	Reverses a Boolean value.

String Handling

LEN	Finds the length of a string.
Position	Finds the position of a character.
Substring	Extracts part of a string.
+	Concatenates (joins) strings.

Mathematical & Comparison Operators

Operator	Name and description	Example
+	Addition	2 + 2 = 4
–	Subtraction	4 – 2 = 2
/	Division	8 / 4 = 2
*****	Multiplication	4 * 8 = 32
//	Integer Division	12 // 5 = 2
%	Modulus	12 % 5 = 2
**	Exponentiation	3 ** 3 = 9
<	Less Than	5 < 8
>	More Than	8 > 2
<=	Less Than or Equal To	7 <= 14
>=	More Than or Equal To	19 >= 16
= or ==	Equal To	12 = 12
!= or <>	Not Equal To	15 != 3

Subject: Trilogy Science (Chemistry)	Topic: Energy Changes	Year Group: 10

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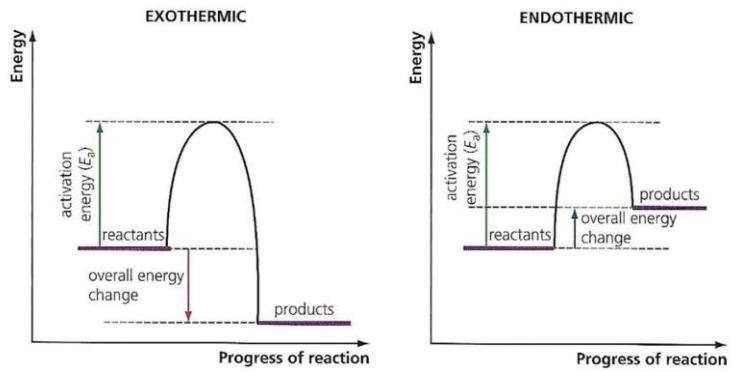
Exothermic and Endothermic

1	An exothermic reaction is one that transfers energy to the surroundings so the temperature of the surroundings increases.
2	An endothermic reaction is one that takes in energy from the surroundings so the temperature of the surroundings decreases
3	Everyday uses of exothermic reactions include self-heating cans and hand warmers.
4	Endothermic reactions include thermal decompositions and everyday uses include sports injury packs.

Energy changes (Higher Tier)

1	During a chemical reaction energy must be supplied to break bonds in the reactants and energy is released when bonds in the products are formed.
2	In an exothermic reaction, more energy is released making the bonds than is taken in to break the bonds and in an endothermic reaction, more energy is taken in to break the bonds than is released when new bonds are made.
3	Energy change = bond energy in reactants – bond energy in products

Reaction profiles

1	Reaction profiles can be used to show the relative energies of reactants and products, the activation energy and the overall energy change of a reaction
2	

Chemistry Only - Chemical Cells

1	Cells contain chemicals which react to produce electricity. They are made of two different metals in contact with an electrolyte.
2	The potential difference of a cell is dependant on the metals. The bigger the difference in reactivity of the metals, the greater the potential difference.
3	In non-rechargeable cells the chemical reactions stop when one of the reactants is used up. In rechargeable cells and batteries, like the one used to power your mobile phone, the chemical reactions can be reversed when an external circuit is supplied.

Key Vocabulary

1	**Exothermic**	Energy is transferred to the surroundings
2	**Endothermic**	Energy is taken in from the surroundings
3	**Activation energy**	The minimum amount of energy that particles must have to react.

Chemistry Only - Fuel Cells

1	A fuel cell works by having a constant supply of a fuel and oxygen from the air. The fuel is oxidised electrochemically to produce a potential difference. Hydrogen fuel cells are an alternative to rechargeable cells and batteries.
2	A fuel cell has 2 electrodes, the anode (negative) and cathode (positive), and an electrolyte.
3	The overall reaction in a hydrogen-oxygen fuel cell is: hydrogen + oxygen → water $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$
4	Half equations: Anode: $2H_2 \rightarrow 4H^+ + 4e^-$ Cathode: $O_2 + 4H^+ + 4e^- \rightarrow 2H_2O$

Required Practical – Measure the temperature change when different volumes of alkali are added to the acid in a neutralisation reaction.

Subject: Biology	Topic: **Infection and Response**	Year Group: 10

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Viral diseases

Example	Symptoms	How it spreads	Prevention/ treatment
Measles	Fever and red skin rash	Inhaling airborne droplets from coughs and sneezes	Prevented with a vaccine
HIV	Initially, flu-like illness. Then virus attacks immune system.	Spread by sexual contact or exchange of bodily fluids	Barrier contraception. Treated with antiretroviral medication
TMV (plant disease)	Plant pathogen causes discolouration (mosaic) in leaves and affects growth.	Contact between plant matter	Remove and destroy (e.g. burn) affected plant matter

Bacterial diseases

Example	Symptoms	How it spreads	Prevention/ treatment
Salmonella	Vomiting, diarrhoea, stomach cramps, fever	Bacteria on undercooked food, such as chicken	Good food hygiene (thoroughly cooking foods, such as chicken) Vaccinating poultry
Gonorrhea	Thick yellow/ green discharge from genitals. Can lead to infertility.	Sexually transmitted disease (STD)	Barrier contraception. Treated with antibiotics (though some strains of gonorrhoea are antibiotic resistant)

Fungal diseases

Example	Symptoms	How it spreads	Prevention/ treatment
Rose black spot (plant disease)	Black spots on leaves	Water or wind spreading fungus spores.	Fungicides Remove and destroy (e.g. burn) affected plant matter

Protist diseases

Example	Symptoms	How it spreads	Prevention/ treatment
Malaria	Severe fever	Mosquitos act as a vector which spread the malaria protist when they bite humans	Mosquito nets, insect repellent, draining standing water (as mosquitos breed in standing water)

Knowledge: Human Defence System

Skin	Acts as a barrier and produces antimicrobial secretions
Nose	Traps particles that contain pathogens
Trachea	Secretes mucus which traps pathogens
Stomach	Produces acid which kills pathogens
White blood cells	Help defend against pathogens by: phagocytosis (engulfing pathogens), making antibodies and antitoxins

Key Vocabulary

1	Communicable Disease	A disease that can be passed on to others
2	Non Communicable Disease	A disease that cannot be passed on to others.
3	Pathogen	Microorganisms that cause infectious diseases.
4	Bacteria	Reproduce rapidly in body and may produce poisons (toxins).
5	Virus	Live and reproduce in cells, causing cell damage.

Subject: Biology	Topic: **Infection and Response**	Year Group: 10

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Antibiotics and painkillers	
Antibiotics	Treat bacterial disease by killing bacterial cells
	Cannot treat viral pathogens
Penicillin	The first antibiotic, discovered by Alexander Fleming
Painkillers	Treat symptoms of disease but do not kill pathogens
Antibiotic resistance	Greater use of antibiotics has led to the emergence of strains of bacteria that are resistant to antibiotics. 1. Bacteria which have higher resistance to antibiotics are able to survive and reproduce, 2. Bacteria with low resistance to antibiotics are killed off. 3. Only bacteria with high resistance to antibiotics remain in the population – the population of bacteria is now antibiotic resistant.

Vaccination	
1	Small quantity of dead or inactive pathogen is injected into the body
2	White blood cells produce antibodies
3	If the same pathogen re-enters the body white blood cells can produce antibodies quickly, and in larger quantities.
4	Antibodies prevent infection
5	If a large proportion of the population is immune, the spread of the pathogen is reduced greatly.

Developing new drugs	
Drugs are tested for	• Efficacy(does it work?) • Dosage (how much should a person take?) • Safety (Are there any side effects? Is taking too much of the drug toxic?)
Stage 1: Pre-clinical trials	1. Drugs are tested on cells/ tissues 2. Drugs are tested on animals
Stage 2: Clinical trials (testing on humans)	1. Drugs are tested on a small group of healthy volunteers 2. Drugs are tested on a small group of ill patients 3. Drugs are tested on a large group of ill patients

Origins of medication		
Drug	Treats	Originally from
Digitalis	Heart disease	Foxgloves
Aspirin	Painkiller	Willow
Penicillin	Antibiotic	Penicillium mould

Subject: TRIPLE SCIENCE ONLY (Biology)	Topic: Infection and Response	Year Group: 10

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Monoclonal Antibodies

Definition: Identical copies of one type of antibody produced in laboratory

1	A mouse is injected with pathogen.
2	Lymphocytes produce antibodies.
3	Lymphocytes are removed from the mouse and fused with rapidly dividing mouse tumour cells .
4	The new cells are called hybridomas
5	The hybridomas divide rapidly and release lots of antibodies which are then collected.

Uses of monoclonal antibodies

Pregnancy tests	Measure the levels of hormones in the blood
Detecting pathogens	Can detect very small quantities of chemicals in the blood
Detecting molecules	Fluorescent dye can be attached so it can be seen inside cells or tissues
Treatment of diseases (e.g. cancer)	Bound to radioactive substance, toxic drug or chemical. Cancer cells are targeted to normal body cells are unharmed

Detection and prevention of plant diseases

Detection
1-Stunted growth
2- Spots on leaves
3- Area of decay
4 -Growths
5- Malformed stems/leaves
6 - Discolouration
7 - Presence of pests

Identification
• Reference using gardening manual or website • Laboratory test for pathogens • Testing kit using monoclonal antibodies

BIOLOGY ONLY – Required practical – culturing microorganisms

1	Bacteria multiply by simple cell division (binary fission), approximately once every 40mins. Bacteria can be grown in nutrient broth solution or as colonies on an agar plate gel.
2	Aseptic techniques to prepare an uncontaminated culture: • Sterilising equipment used to create agar plate • Working near a Bunsen burner to create a convection current of sterilised air. • Sealing the lid of the agar plate at two sides, to allow oxygen to still enter, allowing for aerobic respiration.
3	Required practical: Antibiotics and antiseptics can be used to inhibit the growth of bacteria and zones of inhibition can be calculated. Measure diameter of zone of inhibition (area around antibiotic disc that bacteria hasn't grown) with a ruler. Larger zone of inhibition = more bacteria killed by antibiotic = more effective antibiotic.

Plant defenses

Chemical	Antibacterial substances and toxins made by the plant.
Physical	• Thick waxy layers on leaves • Cell walls stop pathogens entering
Mechanical	• Thorns • Leaves curling up if touched

Subject: French — Foundation Tier Knowledge Organiser — KS4

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Present Tense		
1	Je suis	I am
2	J'ai	I have
3	Je fais	I do/make
4	Je vais	I go
5	J'aime	I like
6	Je déteste	I hate
7	Je joue	I play
8	Je mange	I eat
9	Je bois	I drink
10	Je lis	I read
11	J'achète	I buy
12	Je trouve	I find
13	Je travaille	I work
14	Je pense	I think
15	c'est	it's

Perfect Tense		
1	Je suis allé(e)	I went
2	Je suis parti(e)	I left
3	J'ai fait	I did/made
4	J'ai aimé	I liked
5	J'ai détesté	I hated
6	J'ai joué	I played
7	J'ai mangé	I ate
8	J'ai acheté	I bought
9	J'ai trouvé	I found
10	J'ai travaillé	I worked
11	J'ai regardé	I watched
12	J'ai vu	I saw
13	J'ai bu	I drank
14	J'ai lu	I read

Near Future Tense – I am going to…		
1	Je vais être	be
2	Je vais avoir	have
3	Je vais aller	go
4	Je vais faire	do
5	Je vais jouer	play
6	Je vais regarder	watch
7	Je vais manger	eat
8	Je vais acheter	buy
9	Je vais travailler	work
10	Je vais voir	see
11	Je vais boire	drink
12	Je vais devenir	become
13	Je vais voyager	travel
14	ce sera	it will be

Conditional Tense – I would like to…		
1	Je voudrais être	be
2	Je voudrais avoir	have
3	Je voudrais aller	go
4	Je voudrais faire	do
5	Je voudrais jouer	play
6	Je voudrais regarder	watch
7	Je voudrais manger	eat
8	Je voudrais acheter	buy
9	Je voudrais travailler	work
10	Je voudrais voir	see
11	Je voudrais boire	drink
12	Je voudrais devenir	become
13	Je voudrais voyager	travel
14	ce serait	it would be

Il y a		
1	Il y a	There is/are
2	Il y avait	There was/were
3	Il y aura	There will be
4	Il y aurait	There would be

Structures with infinitives		
1	J'aime aller/faire	I like going/doing
2	Je n'aime pas aller/faire	I don't like going/doing
3	il faut aller/jouer	you have to go/play
4	on peut/doit aller	you can/must go

Imperfect Tense		
1	J'étais	I was/I used to be
2	J'avais	I had/I used to have
3	C'était	It was
4	il y avait	there was/were

Subject: French — Foundation Tier Knowledge Organiser — KS4

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Sentence Starters

1	je pense que	I think that
2	je crois que	I believe that
3	à mon avis	in my opinion
4	selon moi	in my opinion
5	je dirais que	I would say that

Connectives

1	et	and
2	ou	or
3	où	where
4	parce que	because
5	car	as
6	mais	but
7	pourtant	however
8	aussi	also

Intensifiers

1	un peu	a bit
2	assez	quite
3	très	very
4	vraiment	really
5	beaucoup	much/ a lot
6	trop	too

Adjectives

1	amusant	fun
2	intéressant	interesting
3	passionnant	exciting
4	utile	useful
5	beau	beautiful
6	fantastique	fantastic
7	incroyable	incredible
8	ennuyeux/ barbant	boring
9	fatigant	tiring
10	difficile	difficult
11	cher	expensive

Signposting Time Frames

1	l'année dernière	last year
2	la semaine dernière	last week
3	hier	yesterday
4	normalement	normally
5	d'habitude	usually
6	ce soir	this evening
7	la semaine prochaine	next week
8	l'année prochaine	next year
9	dans l'avenir	in the future

Frequency

1	tous les jours	every day
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5	ne…jamais	never
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7	souvent	often
8	quelquefois	sometimes

Exclamations!!!

1	Quel dommage!	What a shame!
2	Quel plaisir!	What a pleasure!

Fancy Phrases

1	je l'ai trouvé génial	I found it great
2	je me suis bien amusé(e)	I really enjoyed myself
3	j'ai tellement hâte	I'm really looking forward to it

Perfect Phrases For Any Essay

1	Hier je suis allé au cinema/au stade/au restaurant/au parc/au café/à la piscine et c'était…	Yesterday I went to the cinema/stadium/restaurant/park/ café/swimming pool and it was…
2	J'ai mangé une pizza/des frites/un hamburger/du jambon/du poisson/une glace et c'était…	I ate a pizza/fries/a hamburger/some ham/fish/an ice-cream and it was…
3	J'ai joué au foot/au tennis/au rugby/au golf et c'était…	I played football/tennis/rugby/golf and it was…
4	J'ai bu un coca/un jus d'orange et c'était…	I drank a coke/an orange juice and it was…

Subject: French

Higher Tier Knowledge Organiser

KS4

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Present Tense - I		
1	Je suis	I am
2	J'ai	I have
3	Je fais	I do/make
4	Je vais	I go
5	Je bois	I drink
6	Je lis	I read
7	Je vois	I see
8	J'achète	I buy
9	Je trouve	I find
10	Je travaille	I work
11	Je pense	I think
12	Je crois	I believe
13	Je dois	I have to
14	Je peux	I can
15	Je veux	I want to

Perfect Tense (past)- I		
1	Je suis allé(e)	I went
2	Je suis parti(e)	I left
3	J'ai fait	I did/made
4	J'ai aimé	I liked
5	J'ai détesté	I hated
6	J'ai joué	I played
7	J'ai mangé	I ate
8	J'ai acheté	I bought
9	J'ai trouvé	I found
10	J'ai travaillé	I worked
11	J'ai regardé	I watched
12	J'ai vu	I saw
13	J'ai bu	I drank
14	J'ai lu	I read

Imperfect Tense - I used to		
1	J'étais	… be
2	J'allais	… go
3	J'avais	… have
4	Je faisais	… do
5	Je jouais	… play
6	Je regardais	… watch
7	J'écoutais	… listen
8	Je mangeais	… eat
9	Je buvais	… drink
10	J'achetais	… buy
11	J'aimais	… like
12	Je lisais	… read
13	Je travaillais	… work
14	Je détestais	… hate

Future Tense – I will		
1	Je serai	…be
2	J'aurai	…have
3	J'irai	…go
4	Je ferai	…do
5	Je jouerai	…play
6	Je regarderai	…watch
7	Je mangerai	…eat
8	J'achèterai	…buy
9	Je travaillerai	…. work
10	Je verrai	….see
11	Je boirai	….drink
12	Je lirai	…read
13	Je partagerai	… share
14	J'écouterai	… listen

Conditional – I would		
1	Je serais	…be
2	J'aurais	…have
3	J'irais	…go
4	Je ferais	…do
5	Je jouerais	…play
6	Je regarderais	…watch
7	Je mangerais	…eat
8	J'acheterais	…buy
9	Je travaillerais	…work
10	Je verrais	…see
11	Je boirais	…drink
12	Je lirais	…read
13	Je partagerais	…share
14	J'écouterais	…listen

Present Tense – We/they		
1	On va	We go
2	On joue	We play
3	On peut	We/you can
4	On fait	We do
5	Ils sont	They are

Past Tense – We/they		
1	On a vu	We saw
2	On a fait	We did
3	On a joué	We played
4	On est allés	We went
5	On est partis	We left

Imperfect – We /they		
1	On était	We used to be
2	On avait	We used to have
3	On allait	We used to go
4	Ils étaient	They were
5	Ils avaient	They had

Future – We /they		
1	On sera	We will be
2	On aura	We will have
3	On ira	We will go
4	Ils seront	They will be
5	Ils auront	They will have

Conditional – We/they		
1	On serait	We would be
2	On aurait	We would have
3	On irait	We would go
4	Ils seraient	They would be

Subject: French — Higher Tier Knowledge Organiser — KS4

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Sentence Starters

1	je pense que	I think that
2	je crois que	I believe that
3	à mon avis/selon moi	in my opinion
5	je dirais que	I would say that
6	il me semble que	it seems to me that
7	d'un point de vue personnel	from a personal point of view
8	bien que je sache que	although I know that
9	à cause du fait que	due to the fact that
10	Je considérais que	I would consider that
11	il faut que je dise que	I have to say that

Connectives

1	mais	but
2	pourtant	however
3	en revanche	however
4	néanmoins	nevertheless
5	certes	admittedly
6	aussi	also
7	donc	therefore
8	d'ailleurs	besides

Intensifiers

1	un peu	a bit
2	assez	quite
3	très	very
4	vraiment	really
5	beaucoup de	Lots of
6	trop	too
7	tellement	so
8	extrêmement	extremely

Avoir/Etre/Faire

1	C'est	It is
2	Ce sera	It will be
3	Cétait	It was
4	Ce serait	It would be
5	Il y a	There is
6	Il y aura	There will be
7	Il y avait	There was
8	Il y aurait	There would be
9	Il fait beau	It's nice
10	Il fera froid	It will be cold
11	Il faisait chaud	It was hot
12	Il ferait orageux	It would be stormy

Exclamations!!

1	Quel dommage!	What a shame!
2	Quel plaisir!	What a pleasure!

Pronouns

1	Mon/ma/mes	My
2	Son/sa/ses	His/her
3	Notre/nos	Our
4	Leur/leurs	Their
5	Lui/Elle/eux	Him/her/them

Frequency

1	tous les jours	every day
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1	après avoir mangé	after having eaten
2	je l'ai trouvé génial	I found it great
3	je me suis bien amusé(e)	I really enjoyed myself
4	ça m'a vraiment plu	I really enjoyed it
5	ça en valait la peine	It was worth it
6	je n'aurais jamais pensé	I would never have thought
7	j'ai tellement hâte	I'm really looking forward to it
8	le jeu en vaudra la chandelle	it will be worth it

Subject: French — Higher Tier Knowledge Organiser — KS4

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Subject: German | Foundation Tier Knowledge Organiser | KS4

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Present Tense

1	Ich bin	I am
2	Ich habe	I have
3	Ich mache	I do/make
4	Ich gehe	I go
5	Ich fahre	I travel
6	Ich mag	I like
7	Ich hasse	I hate
8	Ich spiele	I play
9	Ich esse	I eat
10	Ich trinke	I drink
11	Ich lese	I read
12	Ich sehe	I see
13	Ich kaufe	I buy
14	Ich finde	I find
15	Ich arbeite	I work
16	Ich denke	I think
17	Ich muss	I have to
18	Ich kann	I can
19	Ich will	I want to
20	Es ist	it's

Perfect Tense

1	Ich bin gegangen	I went
2	Ich bin gefahren	I travelled
3	Ich bin geflogen	I flew
4	Ich bin geblieben	I stayed
5	Ich habe gemacht	I did/made
6	Ich habe gespielt	I played
7	Ich habe gegessen	I ate
8	Ich habe getrunken	I drank
9	Ich habe gekauft	I bought
10	Ich habe gearbeitet	I worked
11	Ich habe gesehen	I watched
12	Ich habe gelesen	I read
13	Ich habe gefunden	I found
14	Ich habe besucht	I visited

Using Geben

1	Es gibt	There is/are
2	Es gab	There was/were
3	Es wird…geben	There will be
4	Es würde…geben	There would be

Simple Past

1	Ich war	I was
2	Es war	It was
3	Sie waren	They were
4	Ich hatte	I had
5	Es gab	There was/were

Conditional Fancy

1	Ich wäre	I would be
2	Es wäre	It would be
3	Sie wären	They would be
4	Ich hätte	I would have
5	Es gäbe	There would be

Future/Conditional Tense

Ich werde/möchte… = I will/would like to

1	…sein	be
2	…werden	become
3	…gehen	go
4	…fahren	travel
5	…spielen	play
6	…essen	eat
7	…trinken	drink
8	…sehen	see
9	…arbeiten	work
10	…lesen	read
11	…machen	make/do
12	…besuchen	visit

Structures With Infinitives

1	Ich muss…machen	I have to do
2	Ich darf…machen	I am allowed to do
3	Ich kann…machen	I can do
4	Ich soll…machen	I should do
5	Ich will…machen	I want to do
6	Man muss/kann/soll…machen	You must/can/should do

Subject: German | Foundation Tier Knowledge Organiser | KS4

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Sentence Starters		
1	Meiner Meinung nach	In my opinion
2	Meines Erachtens	In my opinion
3	Im Großen und Ganzen	All in all
4	Ich denke, dass…	I think that
5	Ich würde sagen, dass	I would say that
6	Ich muss sagen, dass	I have to say that

Connectives		
1	und	and
2	aber	but
3	denn	because
4	oder	or
5	jedoch	however
6	außerdem	furthermore
7	weil/da	because
8	dass	that

Intensifiers		
1	ein bisschen	a bit
2	ziemlich	quite
3	sehr	very
4	wirklich	really
5	echt	genuinely
6	zu	too
7	so	so
8	ganz	totally

Adjectives		
1	lustig	funny
2	interessant	interesting
3	spannend	exciting
4	nützlich	useful
5	schön	beautiful
6	toll	great
7	unglaublich	incredible
8	langweilig	boring
9	anstrengend	tiring
10	schwierig	difficult
11	teuer	expensive
12	billig	cheap

Signposting Time Frames		
1	letztes Jahr	last year
2	letzte Woche	last week
3	gestern	yesterday
4	normalerweise	normally
5	gewöhnlich	usually
6	heute Abend	this evening
7	nächste Woche	next week
8	nächstes Jahr	next year
9	in der Zukunft	in the future
10	am Wochenende	at the weekend

Frequency		
1	jeden Tag	every day
2	ab und zu	from time to time
3	einmal pro Woche	once a week
4	zweimal pro Monat	twice a month
5	nie	never
6	immer	always
7	oft	often
8	manchmal	sometimes

Exclamations!!!		
1	Wie Schade!	What a shame!
2	Wahnsinn!	Wow!

Fancy Phrases		
1	Es hat eine Menge Spaß gemacht	It was loads of fun
2	Es hat sich wirklich gelohnt	It was really worth it
3	Das hat mir gefallen	I liked it
4	Ich freue mich schon darauf	I am already looking forward to it
5	Ich werde mich amüsieren	I will enjoy myself

Perfect Past Examples		
1	Letztes Wochenende bin ich ins Kino/Café/Restaurant/Stadion/Museum gegangen und es hat eine Menge Spaß gemacht.	Last weekend I went to the cinema/café/restaurant/stadium/ museum and it was loads of fun.
2	Ich habe Hähnchen, Pommes und Salat gegessen und ich habe Cola getrunken. Das Essen war sehr lecker und es hat sich wirklich gelohnt. Wahnsinn!	I ate chicken, chips and salad and I drank cola. The food was very tasty and it was really worth it. Wow!

Fantastic Future Examples		
1	Nächstes Jahr werde ich mit meinen Freunden nach Berlin fahren und ich freue mich schon darauf.	Next year I will travel with my friends to Berlin. I am already looking forward to it.
2	Ich möchte ins Café gehen und ich möchte Pizza essen. Ich werde mich amüsieren, weil ich Pizza liebe.	I would like to go to café and I would like to eat pizza. I will enjoy myself I love pizza.

Subject: German — Higher Tier Knowledge Organiser — KS4

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Present Tense

1	Ich bin	I am
2	Ich habe	I have
3	Ich mache	I do/make
4	Ich gehe	I go
5	Ich fahre	I travel
6	Ich mag	I like
7	Ich hasse	I hate
8	Ich spiele	I play
9	Ich esse	I eat
10	Ich trinke	I drink
11	Ich lese	I read
12	Ich sehe	I see
13	Ich kaufe	I buy
14	Ich arbeite	I work

Present tense other subjects

1	Er/sie fährt Wir fahren	He/she travels We travel
2	Er/sie sieht Wir sehen	He/she sees We see
3	Er/sie isst Sie essen	He/she eats They eat
4	Er/sie liest Sie lesen	He/she reads They read

Perfect Tense

1	Ich bin gegangen	I went
2	Ich bin gefahren	I travelled
3	Ich bin geflogen	I flew
4	Ich bin geblieben	I stayed
5	Ich habe gemacht	I did/made
6	Ich habe gespielt	I played
7	Ich habe gegessen	I ate
8	Ich habe getrunken	I drank
9	Ich habe gekauft	I bought
10	Ich habe gearbeitet	I worked
11	Ich habe gesehen	I watched
12	Ich habe gelesen	I read
13	Ich habe gefunden	I found
14	ich habe besucht	I visited

Past tense other subjects

1	Er/sie hat…gespielt	He/she played
2	Sie/er ist… gegangen	She/he went
3	Wir haben…gemacht	We did/made
4	Sie sind…gefahren	They travelled

Simple Past

1	ich war	I was
2	es war	it was
3	sie waren	they were
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Conditional Fancy

1	ich wäre	I would be
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Future/Conditional Tense

ich werde/möchte/will
= I will/would like to/want to

Er/sie wird = he/she will
Wir werden = we will

1	…sein	be
2	…werden	become
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Subject: German | Higher Tier Knowledge Organiser | KS4

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Sentence Starters

1	Meiner Meinung nach	In my opinion
2	Meines Erachtens	In my opinion
3	Im Großen und Ganzen	All in all
4	Auf der einen Seite	On the one hand
5	Aber auf der anderen Seite	But on the other hand
6	Es scheint mir, dass	It seems to me that
7	Ich denke, dass…	I think that
8	Ich würde sagen, dass	I would say that
9	Obwohl ich weiß, dass	Although I know that
10	Ich glaube, dass…	I believe that
11	Ich muss sagen, dass	I have to say that

Connectives

1	und	and
2	aber	but
3	denn	because
4	sondern (neg)	but
5	jedoch	however
6	deshalb	therefore
7	trotzdem	nevertheless
8	außerdem	furthermore
9	weil/da	because
10	dass	that
11	obwohl	although
12	wenn	if/when

Intensifiers

1	ein bisschen	a bit
2	ziemlich	quite
3	sehr	very
4	wirklich	really
5	echt	genuinely
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2	ich habe mich wirklich amüsiert	I really enjoyed myself
3	es hat sich wirklich gelohnt	it was really worth it
4	das hat mir gefallen	I liked it
5	ich hätte nie gedacht	I would have never thought
6	je (heißer), desto besser	the (hotter) the better
7	ich freue mich schon darauf	I am already looking forward to it
8	es wird bestimmt viel Spaß machen	it will definitely be lots of fun

Business — Putting a business idea into practice (1) — 1.3

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Costs

1	**How are total costs calculated?**	Total Costs = FC = TVC TVC = VC x number of products sold Fixed Costs – Do not change with the number of products sold Variable Costs – Changes with the number of product sold
2	**How is revenue calculated?**	Total Revenue is calculated by: Selling Price x Number of Sales
3	**How is profit/loss calculated?**	Total Profit is calculated by: Total Revenue – Total Costs

Break Even Units Formula

$$\text{Break Even Units} = \frac{\text{Fixed Costs}}{\text{SP} - \text{VC}}$$

Break Even

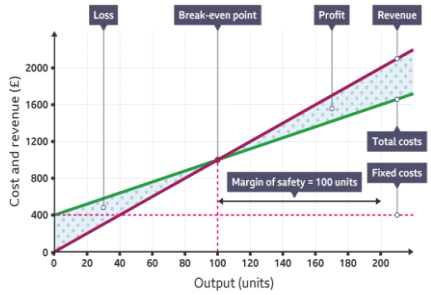
1	**Key Idea**	Break-even is the point at which a business does not make a profit or a loss – its revenue from sales and its total costs are equal. The number of products that must be produced/sold to reach this point is called the Break-even Point. Majority of the time this is not a good position for a Business to be in.
2	**Key Idea**	Break Even Analysis is carried out to identify how many products a business needs to sell in order to start making a profit.
3	**How is break calculated?**	The formula for Break-even is: Fixed Costs Selling Price per Unit – Variable Cost per Unit
4	**Key idea**	It is an **important** figure for any business because it tells **management** how much reduction in revenue will result in break-even. A higher MOS reduces the risk of business losses.
5	**Key idea**	Increasing selling prices will lower a business's Break-even Point, they will need to produce/sell less in order to Break-even
6	**Key idea**	An increase in either Fixed or Variable Costs (or both) will result in a higher Break-even Point for a business; they will need to produce/sell more in order to Break-even.
7	**Margin of Safety**	The Actual Output (sales) – the BEP = MoS
8	**Contribution**	Selling price – variable costs
9	**Key Idea**	Break Even must **ALWAYS be rounded up** A Business can not sell half a unit 10.1 must always be rounded up to 11

Cash Flow

1	**How is Net Cash Flow calculated?**	Inflows – Outflows
2	**Opening Balance**	The Closing Balance of one month is used as the Opening Balance for the next month
3	**Cash Flow Key Idea**	Is the most important financial concept for a Business. More Businesses will fail because of lack of cash flow than any other reason.

Sources of Finance

1	**Short Term**	Overdraft – high interest rate, but quick access Trade Credit – needs to be paid or will result in no new materials Loan – pay interest on outstanding balance, quite easy to get it
2	**Long Term**	Mortgage – high interest rates Personal Savings – no interest to pay Venture Capital – Dragons Den Share Capital – New investors give money for a share of the profits (dividend) Retained Profits – no interest to pay but means no 'pot' if any unexpected costs Crowd Funding – usually done online. People give small donations towards a 'big cost' that they want to support
3	**Internal**	Finacne that comes from within the Business. Eg, retained profits
4	**External**	Sources of finace that come from outside the business. Eg, Loans



Key Vocabulary

1	**Costs**	Costs are the things businesses have to pay for in order to produce a product or provide a service.
2	**Fixed costs**	Fixed costs are things a business pays for that do not change depending on the amount of a product a business makes – so these costs stay the same no matter how many products a business produces.
3	**Variable costs**	Variable costs are the costs a business pays that change depending on how many products a business produces – these costs increase when more products are made.
4	**Revenue**	Revenue is the money generated from selling products or services. It is not profit, but the money coming in to a business from sales.
5	**Profit**	Profit is the money left over from revenue once costs have been paid – it's the money a business makes once all costs have been covered. If Costs are higher than revenue the Business will make a loss.
8	**Cash Flow**	The movement of money in to and out of the Business.
9	**Inflows**	Any money coming in to the Business
10	**Outflows**	Any money going out of the Business
11	**Interest**	The amount charged for borrowing money Also the amount of money paid to savers

Aims and Objectives

1	**Why are they needed**	They give the Business a focus and goal to work towards
2	**Financial objectives**	survival, profit, sales, market share, financial security
3	**Non-financial Objectives**	social objectives, personal satisfaction, challenge, independence and control.
4	**Why do Businesses have different Objectives**	A new business needs to focus on survival, whereas an established Businesses will want to increase their share of the market. Businesses Objectives need to be different depending on their current situation.
5	**SMART objectives**	Specific Measurable Agreed Realistic Timely

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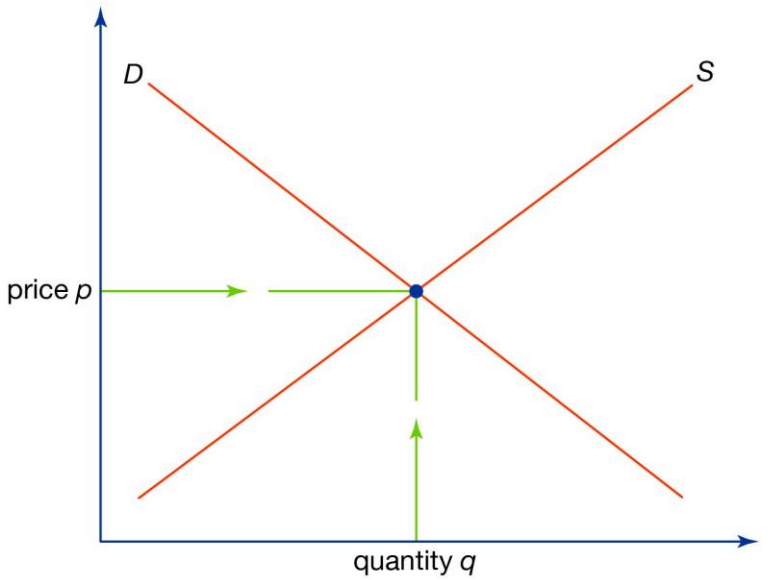
Demand

1	**Demand**	Demand is the quantity of a good/service that consumers are willing and able to buy at a given price.
2	**The demand curve**	A demand curve shows an **inverse** relationship between price and quantity
3	**Contraction/extension of demand**	A movement along the demand curve can be caused by a change in price only, contraction happens due to higher prices and extension due to lower prices
4	**Factors that cause a shift in the demand curve**	**PASIFiC** Population, Advertising, Substitutes, Income, Fashion and trends, Complements

Supply

1	**Supply**	Supply is the quantity of a good/service that producers are willing and able to supply at any given price.
2	**The supply curve**	The supply curve shows a **direct** relationship between price and quantity supplied
3	**Contraction/extension of demand**	A movement along the supply curve can be caused by a change in price only, contraction happens due to lower prices and extension due to higher prices
4	**Factors that cause a shift in the supply curve**	**PINTSWEC** Productivity, Indirect taxes, Number of firms, Technology, Subsidies, Weather, External shocks, Cost of Production

Supply and demand

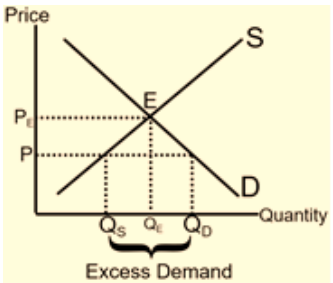


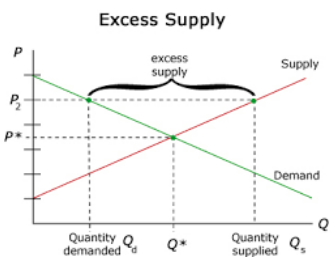
Excess Demand

Excess Demand occurs when the Price of a good is lower than the Equilibrium Price, meaning more consumers will want to buy the good than suppliers are willing to sell. The difference between the Quantity Demanded (QD) and the Quantity Supplied (QS) is the Excess Demand.

Excess Supply

Excess supply occurs when the price of a good is higher than the equilibrium price, meaning consumers are not willing or able to buy as many goods/services at that price. There are too many goods but not enough buyers.





Equilibrium

Equilibrium	Equilibrium Price and Quantity Bought and Sold is reached where Supply and Demand is Balanced. At this price the market clears as there are no consumers or suppliers left willing but unable to buy or sell at that price.

Substitute goods & complementary goods

Basis	Substitute goods	Complementary goods
Meaning	Substitute goods refer to those goods which can be used in place of one another to satisfy a particular want.	complementary goods refer to those goods which are used together to satisfy a particular want
Nature of demand	Substitute goods have competitive demand	Complementary goods have joint demand.
Relation	Price of one substitute good has positive relationship with quantity demand of another substitute good.	Price of a complementary good has a negative relationship with quantity demanded of another complementary good.
Examples	(1) Tea and coffee (2) Coke and Pepsi	(1) Tean and sugar (2) Car and petrol

Price elasticity of demand

$$\frac{\%\text{ Change in Quantity demanded}}{\%\text{ Change in price}}$$

Factors influencing Ped

- The number of close substitutes
- The cost of switching between products
- The degree of necessity or whether the good is a luxury
- The proportion of a consumer's income allocated to spending on the good
- The time period allowed following a price change
- Whether the good is subject to habitual consumption
- Peak and off-peak demand

Price elasticity of demand

PED measures the responsiveness of quantity demanded to changes in price

If Ped = 0 demand is perfectly inelastic - demand does not change at all when the price changes – the demand curve will be vertical.

If Ped is between 0 and 1 (i.e., the % change in demand from A to B is smaller than the percentage change in price), then demand is inelastic.

If Ped = 1 (i.e. the % change in demand is exactly the same as the % change in price), then demand is unit elastic. A 15% rise in price would lead to a 15% contraction in demand leaving total spending the same at each price level.

If Ped > 1, then demand responds more than proportionately to a change in price i.e. demand is elastic. For example, if a 10% increase in the price of a good leads to a 30% drop in demand. The price elasticity of demand for this price change is –3xx`x`

Price elasticity of supply

$$\text{Price Elasticity Of Supply} = \frac{\%\text{ change in quantity supplied}}{\%\text{ change in price}}$$

Price elasticity of supply

Price Elasticity of Supply (PES) measures the responsiveness of the quantity supplied of a good to changes in its price.
PES helps us understand how much the quantity supplied changes when the price changes.

Price elasticity of supply

Perfectly Inelastic (PES = 0):

In the case of perfect inelasticity, quantity supplied does not respond to price changes.
Producers are unable or unwilling to adjust supply in response to price fluctuations.

Relatively Elastic (PES > 1):

In relatively elastic supply, a percentage change in price results in a larger percentage change in quantity supplied.

Relatively Inelastic (0 < PES < 1):

In relatively inelastic supply, a percentage change in price results in a smaller percentage change in quantity supplied.

Factors influencing Price elasticity of supply

- Spare production capacity/resource availability
- Time period and production speed
- Ease and cost of factor substitution
- Perishability
- Production technology

Subject: Geography | Topic: Urban issues | Year Group: 10

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A. A growing percentage of the world's population lives in urban areas.

1	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.** 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.

B. Urban growth creates opportunities and challenges for cities in LICs and NEEs.

1	Rio De Janeiro	**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**
2	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.**
3	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.**
4	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.** • **Whilst the Project has had some success it is expensive (US$1 billion is the figure estimated to do the same to all favelas)**

C. Urban change in cities in the UK leads to a variety of social, economic and environmental opportunities and challenges.

1	Importance of London	The UK largest and wealthiest city It has world city status- so has global influence. Financial centre of the world (along with New York). Location for the headquarters of large international companies and British companies. Centre for media and communications.
2	Opportunities	Social: Cultural mix- ethnic diversity . London has a well integrated transport system including public transport. Recreation and entertainment opportunities. Economic: Excellent employment opportunities. Growth in services- professional ,real estate and business services, management consultancy and law. Environmental: Urban greening- London is one of the world's greenest cities. 47% is green space – parks, woodlands, cemeteries and gardens. Spaces offer recreational opportunities. There are 30,000 allotments in London here people grown food. 61% of waste in London is recycled.
3	Challenges	Social: There is a severe shortage of housing, schools and healthcare centres available. Inequality in education outcomes, in Newham only 62% of people have 5 GCSE's or more. Life expectancy is also lower at 75 years. Economic: High levels of deprivation in some parts of London, especially in the Eastend in places like Newham where the unemployment the rate is 9.4% Environmental: High levels of air pollution in London. Almost a quarter of all of London's waste goes to landfill
4	Olympic park (east village)	Area of the lower lea valley has been regenerated by developing the Olympic park. This has create 2,800 new homes, new employment opportunities for 25,000 people, provided new schools and leisure facilities for residents. However it 9.3 billion of tax payers money, and hasn't continued to attract visitors to the area.

D. Urban sustainability requires management of resources and transport.

1	Sustainable cities	Sustainable urban living means being able to live in cities in ways that do not pollute the environment. Homes in the East village use waste hot water from the near by power station to heat their homes, so use 30% less energy than other areas. Water is also recycled reducing the East Village water consumption by 50%.
2	London's congestion scheme	• Have public transport, cycle lanes & cycle hire schemes (Boris Bikes) • Having congestion charges discourages drivers from entering the busy city centres. • Development of cross rail, designed to carry more passengers and reduce journey times to encourage more people to use the tube. However this has led to a 25% increase in ticket prices to use the Crossrail.





Subject: Geography	Topic: Urban issues	Year Group: 10

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1) Brownfield site	Land that has been used, abandoned and now awaits some new use. Commonly found across urban areas, particularly in the inner city.
2) Dereliction	Abandoned buildings and wasteland.
3) Urbanisation	The process by which an increasing percentage of a country's population comes to live in towns and cities. Rapid urbanisation is a feature of many LICs and NEEs.
4) Urban regeneration	The revival of old parts of the built-up area by either installing modern facilities in old buildings (known as renewal) or opting for redevelopment (ie demolishing existing buildings and starting afresh).
5) Urban sprawl	The unplanned growth of urban areas into the surrounding countryside.
6) Waste recycling	The process of extracting and reusing useful substances found in waste.
7) Economic opportunities	Chances for people to improve their standard of living through employment.
8) Greenfield sites	A plot of land, often in a rural or on the edge of an urban area that has not yet been subject to any building development.
9) inequalities	Differences between poverty and wealth, as well as in peoples' wellbeing and access to things like jobs, housing and education. Inequalities may occur in housing provision, access to services, access to open land, safety and security.
10) Integrated transport systems	- When different transport methods connect together, making journeys smoother and therefore public transport more appealing. Better integration should result in more demand for public transport and should see people switching from private car use to public modes of transport, which should be more sustainable. It may also lead to a fall in congestion due to less road users.
11) Mega cities	An urban area with a total population in excess of ten million people.
12) Migration	When people move from one area to another. In many LICS people move from rural to urban areas (rural-urban migration).
13) Natural increase	The birth rate minus the death rate of a population.
14) pollution	The presence of chemicals, noise, dirt or other substances which have harmful or poisonous effects on an environment.
15) Rural-urban fringe	A zone of transition between the built-up area and the countryside, where there is often competition for land use. It is a zone of mixed land uses, from out of town shopping centres and golf courses to farmland and motorways.
16) Sanitation	Measures designed to protect public health, including the provision of clean water and the disposal of sewage and waste.
17) Social deprivation	The degree to which an individual or an area is deprived of services, decent housing, adequate income and local employment.
18) Sustainable urban living	A sustainable city is one in which there is minimal damage to the environment, the economic base is sound with resources allocated fairly and jobs secure, and there is a strong sense of community, with local people involved in decisions made. Sustainable urban living includes several aims including the use of renewable resources, energy efficiency, use of public transport, accessible resources and services.
19) Squatter settlement	An area of poor-quality housing, lacking in amenities such as water supply, sewerage and electricity, which often develops spontaneously and illegally in a city in an LIC.
20) Social opportunities	Chances for people to improve their quality of life, for instance access to education and health care.
21) Traffic congestion	Occurs when there is too great a volume of traffic for roads to cope with, so traffic jams form and traffic slows to a crawl.
22) Urban greening	The process of increasing and preserving open space such as public parks and gardens in urban areas.

Health and Social Care	RO32 Principles of care in Health and Social Care – Topic area 1	Year 10

1.1 Types of Care	
Health care settings	Dental practice, GP surgery, Health centre, Hospital, Nursing home, Optician, Pharmacy, Walk-in centre
Health Care Examples	• Visiting the dentist twice a year for a check-up or A&E (Accident and Emergency) for a sports injury • Pregnant woman visiting the hospital for an ultrasound scan on her unborn baby
Social care settings	Residential home, Retirement home, social services department, support group, community centre, day centre, food bank, homeless shelter.
Social Care Examples	• An individual staying at a homeless shelter or struggling to cope with a physically disabled child • Dementia resident cannot care for themselves in their own home, now living in a residential care home.
1.2 The Rights of service users	
Choice	• Choosing which activities they participate in • Choosing what to eat • Choosing the type of treatment
Confidentiality	• Service users have a duty of care to protect service users' personal information (verbal and written) • Service providers cannot discuss service users care with their family and friends not directly involved in their care. Conversations should be in a private room (cannot overhear) • Keep personal information secure in a locked cupboard or filing cabinet. Computers should be password protected. Providers need a log in with a secure email/ password to access data/wear a security badge
Consultation	• Service users should be involved in all decisions that are made about them. • Service providers must find out and respect the service users' opinions, beliefs and concerns to build trust. • Service users involved in decision-making will feel more in control reducing fears or worries they have.
Equal and Fair treatment	• Every service user can access health and social care services, regardless of who they are (not unfairly because of their colour, age, gender, money available or ability to care for themselves. • Misconception - we should treat everyone in the same way, but this means some will be disadvantaged. E.g., providing information in large print, different language, braille.
Protection from abuse and Harm	• Includes health and safety, safe working practices and knowledge of what to do if you have concerns. • Service providers have a duty to prevent harm and abuse - have a clear complaints procedure. • Staff should monitor behaviour, be vigilant and receive the correct training to be able to recognise signs of abuse and how to report them. Harm - Can occur in unsafe or inaccessible to service users (inadequate lighting, slippery floors, missing handrails equipment not checked regularly, procedures not followed) Abuse - Can occur deliberately or accidentally (racism, lack of training, sexual orientation) it could be cruel comments, physical action or isolation.

Health and Social Care	RO32 Principles of care in Health and Social Care – Topic area 1	Year 10

Key Terms	
Consultation	Service providers share information with service users and vice versa, so care decisions can be made together.
Empowerment	Relates to the control or 'power' a service user feels they have over their life
Holistic approach	Consider the emotional and psychological needs as well as the physical health

1.3 The benefits to service users' health and wellbeing when their rights are maintained

Empowerment - Control or 'power' will support the resident to feel stronger and more confident therefore more independent and self-reliant in making their own decisions	
Independence and self-reliance	Promoting self-worth and self-confidence. Contributing to self-esteem.
Feelings of Control	Ensuring their rights are met giving them a sense of control e.g., Am I okay to listen to your chest?
Choice	To increase their understanding and increase their self-esteem.
High self-esteem - if rights are maintained they will feel valued and respected increasing their self-esteem	
Feeling valued	Feeling worthy of care. More likely to ask for additional support in the future.
Feeling respected	Asking their preferred name and listening to them properly, developing a partnership
Positive mental Health	This contributes to a person's self-esteem and self-worth, allowing people to cope with change better Take a holistic approach considering how the person feels about their care.
Service users' needs are not met - care should be specific and well planned to the service user.	
Appropriate care or treatment	Service users receive care that is appropriate to their needs e.g. lifts, wide doorways and ramps.
Improvements in physical or mental health	Service users' health and wellbeing will benefit
Trust - service users will feel safe and confident with the care provided.	
Safety from harm	Trusting relationships will allow confidence to develop because they feel safe and secure
Best interests	Care should have their best interest at heart. Gives reassurance and confidence in their care. Staff training makes service users safe
Confidence in the care received	They will feel worthy, valued, respected and safe. Trust is linked to confidentiality where conversations are not overheard. This creates confidence.

Subject: History	Topic: The Korean War	Year Group: 10

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1. Capitalism vs communism		
1	**Features of a capitalist country**	1. Governments should be elected by the people through fair elections, 2. People should have opportunity to become very wealthy 3. Society is made up of free individuals
2	**Features of a communist country**	1. One unelected political party runs the country. 2. Wealth is to be shared between citizens. 3. No private businesses, the government controls the production of goods and food. 4. The collective is more important than individuals

2. The Cold War		
1	**Why did the USA and USSR disagree after WW2?**	1. After victory in WW2 both sides disagreed because the Soviets wanted to keep Germany weak and America wanted to help them recover to trade. 2. Communist Russia came to control most of eastern Europe and Americans saw this as a threat to their way of life
2	**Why did tensions increase?**	1. 1945 - USA dropped the first ever atomic bombs on Japan which led the USSR to be more aggressive in taking control of countries in Eastern Europe. 2. 1947 - USA set up the Marshall Plan to give billions of dollars to help countries in Europe recover from the war as part of the 'Truman Doctrine' to contain communism. 3. 1947 - USSR set up setting up the Cominform for communist countries to co-operate against America and the west.

Key word	Definition
38th parallel	Line dividing that US and USSR used to divide Korea in to two zones.
Cominform	Group set up by Stalin to coordinate actions of communist countries against the West.
Communism	Political ideology opposed to capitalism where government distributes wealth among citizens.
Containment	US policy from 1947 to prevent communism from spreading any further.
Limited Warfare	Where Superpowers do not use their full force to prevent a larger conflict
MAD – Mutually Assured Destruction	The idea that because both superpowers had nuclear weapons using them against each other would destroy both countries.
Marshall Plan	US policy to provide aid to countries to prevent them becoming communist.
Nationalism	The idea, held by both Korean leaders, that Korea had its own special identity and should be one country.
Proxy War	Where two powerful nations use a smaller conflict to advance their interests
Stalemate	Neither side can win. This was the situation in Korea from March 1951
Superpower	A very powerful and rich country. (USA and USSR)
Truman Doctrine	President Harry Truman's pledge to stop the spread of communism (1947)
UN	United Nations – set up after WW2 to prevent conflict
Veto	The right to block a decision made by others

Subject: History	Topic: The Korean War	Year Group: 10

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3. The division of Korea		
1	**Korea in WW2**	1. Korea was invaded by Japan 2. Korea was freed by both the USA and the USSR
2	**Why was Korea split?**	1. So that no one ideology had an advantage, it was decided that Korea would be divided along the 38th Parallel 2. The UN said this was temporary until an election to unite the country
3	**Why did tensions increase?**	1. Stalin put communist Kim Il Sung in charge of the North and the US held elections which placed Syngman Rhee in charge of the South 2. Both leaders were nationalists and wanted to unite Korea under their own ideology 3. The divide put the capital, Seoul, in the South 4. The 38th parallel divided families, farms, railway lines and more 5. Both superpowers wanted to keep influence in Korea

4. China and the UN disagreement		
1	**How did China become communist?**	1. China has been in a civil war between the Chinese government and Mao's communist forces 2. The USA had supported the government with weapons and supplies 3. The Communists took control in 1949
2	**Why did this worry the USA?**	1. ¼ of the world's population was now living under communism 2. USA had been focusing on Europe but now there was a risk of Asia being overrun by communism 3. China bordered North Korea
3	**How did this cause trouble in the UN?**	1. Before Mao's victory, China had been one of the 5 permanent members of the security council 2. After the communist takeover, China had to reapply for it's place but the USA vetoed the decision 3. This angered the USSR who stormed out and decided to boycott the UN meetings

5. Stalin and North Korea		
1	**How did the USSR help North Korea?**	1. North Korea was dependent on the USSR for military and economic support 2. In March 1949 Kim Il Sung asked Stalin to support an invasion of the South – he didn't give permission
2	**Why did Stalin change his mind?**	1. In April 1950, Stalin gave his permission 2. US kept withdrawing troops and gave South Korea limited military equipment, leaving them vulnerable 3. The USSR had successfully tested a nuclear bomb 4. China had become communist

Subject: History	Topic: The Korean War	Year Group: 11

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6. Timeline of events		
1	**June 1950**	1. North Korea invaded South Korea 2. The UN called an emergency meeting and decided to intervene to protect South Korea 3. This happened because the USSR were boycotting the UN meetings
2	**June-Sept 1950**	1. The North pushed South quickly and captured Seoul within 3 days 2. By early September the North had captured all of the South but a small area around Pusan
3	**Sept 1950**	1. The US put General MacArthur in charge of the UN troops. 2. He planned attacks to land at Inchon and from Pusan
4	**Oct 1950**	1. The UN and South Korean troops recaptured Seoul and quickly pushed the North Korean troops back above the 38th Parallel 2. The UN and US troops chose to push on into North Korea in an attempt to unite the country 3. China became worried about the advance of these troops and Mao issued a waring that they would intervene – MacArthur ensured Truman that this was a bluff 4. On the 14th, 200,000 Chinese troops crossed the Yalu River to support the North Koreans
5	**1951**	1. The entry of China's large army pushed the US and UN forces back across the 38th Parallel 2. By January, they captured almost all of Korea 3. But their supply lines were over-stretched and the US and UN forces pushed them back to the 38th parallel 4. Stalemate had been reached
6	**April 1951**	1. President Truman wanted to avoid a full-scale war with China and felt the US was successful in containing communism. 2. MacArthur wanted to continue the attack and even sent a letter China threatening to use nuclear weapons 3. He had gone too far and was sacked by Truman sacked in April.

6. Timeline of events		
7	**July 1951**	1. Both sides suffered heavy casualties as they tried to break the stalemate 2. Peace talks began in July, but broke down as both sides kept fighting to try to gain an advantage
8	**1952**	1. The USA began heavy bombing raids in the North aimed at military targets 2. Heavy damage was taken by the civilian population especially when napalm was used
9	**Nov 1952**	1. Truman decided not to run for re-election, having lost popularity over the Korean War 2. The Republican Eisenhower won. He received support from strong anti-communists
10	**March 1953**	1. The death of Stalin had a huge effect on world relations 2. Many believed that the Cold War tensions could begin to ease.
11	**27th July 1953**	1. An armistice was signed by the USA, China and North Korea. 2. South Korea refused to sign but had to accept it

Subject: History	Topic: The Korean War	Year Group: 10

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7. Impact of the Korean War		
1	**Terms of the peace treaty**	1. North and South Korea would remain, independent separate countries divided at the 38th parallel 2. A 3KM wide demilitarised zone was placed between the two countries to act as a buffer where no armed forces were allowed to go.
2	**South Korea**	1. 217,000 troops died, over 400,00 wounded & 1 million civilians killed 2. Overall Korea lost 80% of it's infrastructure
3	**North Korea**	1. Human cost: Over 400,000 troops died & 1.5 million wounded. 600,000 civilians killed 2. Damage: North Korea was damaged most by bombings – housing shortage was so severe after that people had to live in caves
4	**USA**	1. Human cost: 36,568 troops dead with 100,000 wounded 2. Financial cost: The USA spent billions on the war and more than $60 billion on developing nuclear bombs in 1952. 3. Weapons build-up: During the war the USA was in an arms race with the USSR – they increased the number of nuclear bombs to 750 and growing their army by 50% to 3.5 million. 4. Relationships: The USA made many alliances with non-communist countries in Asia and beyond as part of the Truman Doctrine - began helping the French in Vietnam. Cut off all dealings with China.
5	**UN**	1. Human Cost: 3,063 military deaths and 11,817 wounded 2. Reputation : gained respect for taking quick and decisive action & the USSR returned to the security council. However, many other countries believed the war had shown the US to be a 'puppet' of the USA.
6	**USSR**	1. Human Cost: Only USSR troops were used as fighter pilots, so lost very few troops. 2. Financial Cost: Spent huge amounts on nuclear weapons during the war as well as vast sums of money on military aid to North Korea and China. 3. Relationships: Achieved a closer relationship with China. Increased tensions with the USA
7	**China**	1. Financial Cost: China was a very poor country & the cost of the war had a drastic effect on the country. 2. Relationships: China became closer to the USSR and were now seen as a major military power. End to trade with the world's richest country for almost 25 years.

Subject: RE	Topic: Christian Beliefs	Year Group: Year 10

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Beliefs about God		
1	**What is the nature of God?**	God is omnipotent, loving and just. God's attributes enables Him to be one God, with all of the possible good qualities.
2	**What conflicts arise?**	How can God be loving and powerful when evil exists? This is the Problem of Evil Can God be transcendent and immanent at the same time? Can God be just and loving?
3	**Beliefs about creation?**	Genesis tells that God made a perfect world in 7 days. God saw "what he had made and it was good."
4	**Was Jesus there?**	Jesus was at creation as 'the Word.' ("In the beginning was the Word, and the Word was with God…").
5	**Different interpret-ations?**	Liberal Christians read the bible symbolically, fundamentalists read it literally. E.g. number 7 symbolises perfection.

Jesus Christ		
1	**Chronology of Jesus' life**	Incarnation, crucifixion, resurrection, ascension
2	**What is the symbolism of crucifixion?**	Jesus atoned for humanity's sin and made it possible that we could be forgiven for our original sin.
3	**Symbolism of resurrection?**	Jesus overcame death, fulfilled prophecy, proved his part in the Trinity, and performed a miracle beyond all miracles.
4	**Symbolism of ascension?**	Jesus told disciples to evangelise and keep faith despite not having Jesus. Some Xns believe that Jesus will return at the end of the world to bring justice.
5	**Blasphemy?**	Jesus was put on the cross by the Jews, for making the blasphemous claim that he was the son of God.

The Afterlife		
1	**What is judgement?**	God judges people based on their actions at death. The parable of the Sheep and Goats show that putting faith into action is important.
2	**What is life after death?**	Heaven is eternal reward with God; Hell is eternal punishment.
3	**What did Jesus show?**	Resurrection could mean we get a spiritual body in heaven and Jesus showed that death.
4	**Why is it important?**	Good actions and faith are rewarded by God. God's justice means everyone will receive the afterlife that is best for them

Salvation		
1	**What is salvation?**	Salvation is God's gift to humanity and is being saved from our sinful selves.
2	**How can we be saved?**	Salvation can come through three forms: grace (God's endless and unconditional love), faith (our commitment) and good works (putting faith into action). Xns disagree as to which is most important for salvation.
3	**How does Jesus affect salvation?**	Jesus's crucifixion took the penalty of original sin. This means that whilst we are still sinful, there is a possibility that God could forgive us for them, rather than give us punishment we deserve, ie death.
4	**What is sin and original sin?**	Sin is going against God's will and rules. Original sin was caused by Adam's disobedience. Everyone inherits original sin from Adam.

Students should be aware that the religious traditions of Great Britain are, in the main, Christian, and that religious traditions in Great Britain are diverse. They include Christianity, Buddhism, Hinduism, Islam, Judaism and Sikhism, and non-religious beliefs such as atheism and humanism.

Subject: RE	Topic: Christian Beliefs	Year Group: Year 10

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Key Word	Definition
Ascension	Going or being taken up; the event forty days after the resurrection when Jesus returned to glory in heaven.
Atonement	Making amends or payment for a wrong. The belief that reconciliation between God and humanity that was brought about by the death of Jesus as a sacrifice
Bible	Source of wisdom and authority; a holy book containing both the Old and New Testaments
Christ	Literally means 'Anointed One' in Greek; the Hebrew equivalent is Messiah. The leader promised by God to the Jews; Christians believe Jesus to be the Christ
Creation	Bringing the world into existence; the belief that the world is God's loving creation
Crucifixion	The death of Jesus; a form of the death penalty used by the Romans
Evangelism	Preaching the gospel (the good news about God) to convert people to the Christian faith
Evil	The opposite of good; a cause of suffering and against the will of God`
The Father	The first Person of the Trinity, the belief in God as creator and sustainer of the universe.
Grace	The unconditional and generous love that God shows to people who do not deserve it.
Heaven	Belief that after death Christians can enter a state of being with God for eternity.
Hell	Belief in a place of eternal suffering, or a state after death of being in separation from God.
Holy Spirit	The third Person of the Trinity; believed to be present with believers since Pentecost and active on earth.
Incarnation	Literally 'in flesh', or 'enfleshed;' belief that God took on human form in the person of Jesus.
Jesus	Believed by Christians to be the Son of God, he was a first century Jewish teacher living and travelling in Palestine/Israel.
Judgement	The belief that God will decides whether each person should receive eternal life or eternal punishment based on their earthly life.
Just	Fair or equal treatment, a state of justice. Belief about the nature of God as treating all people justly.
Omnipotent	Belief that God is 'all powerful'
Omniscient	Belief that God is 'all-knowing'
Oneness	The belief that God is one singular divine being (who can be manifest in the Three Persons of the Trinity).
Original sin	Belief human nature is flawed, and that we all have the tendency to sin; traditional belief held by some Christians that this came from Adam & Eve's eating of the forbidden fruit as recorded in Genesis 3.
Reconciliation	Making up and rebuilding relationships between two groups/sides after disagreement.
Resurrection	- Being raised from the dead; the event three days after the crucifixion when it is believed that God raised Jesus from the dead. - The form that many Christians believe the afterlife will take, referring to either physical or spiritual bodies.
Salvation	Being saved; belief that through God's grace, Jesus' death and resurrection brought about salvation for humanity. Saving of the soul and being able to enter eternal life in heaven.
Sin	Behaviour which is against God's laws and wishes/against Christian principles of morality.
Son of God	A title used for Jesus; the second Person of the Trinity. Shows the special relationship between Jesus and God.
Trinity	The belief that God as One includes God also being manifest in three Persons: the Father, Son and Holy Spirit.
The Word	In the Bible, John 1 describes God creating the world through his eternal Word. This links the eternal Word to Jesus in the statement: '"The Word was made flesh and dwelt among us" (John 1:14).

Key Quotes: Christian Beliefs (Paper 1)

'you shall have no other Gods before me' **Bible OT**	'love never fails' **Bible NT**	'God so loved the world that he gave his only son' **Bible NT**	'whoever believes in him shall not perish but have eternal life' **Bible NT**	
'it is sown a natural body and it is raised a spiritual body' **Bible NT**	'Nothing is impossible with God' **Bible NT**	The word became flesh' **Bible NT**	'I am the way the truth and the life' **Bible NT**	'surely this man was the son of God' **Bible NT**
For the wages of sin is death, but the gift of God is eternal life' **Bible NT**	'In the beginning was God and the word was with God' **Bible OT**			

GCSE Drama	Topic: Devising Theatre - BRECHT	Year Group: YEAR 10

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BACKGROUND INFORMATION	
BORN - DIED	1898-1956.
NATIONALITY	German
AIM OF WORK	Aimed to appeal to less privileged classes, treating contemporary issues such as war, stock-markets, poverty, unemployment and corruption in high places.
OCCUPATION	Marxist playwright, poet and director. Political writer and director.

BRECHT'STHEORY AND STYLE	
Epic Theatre	The term used to describe Brecht's theory and technique.
Verfrem-dungseffekt	'Alienation' or 'distancing' effect. The familiar is made strange so the audience think about the issues in the piece clearly rather than getting too emotional.
Didactic Theatre:	Theatre that teaches the audience a moral message.

	KEY TECHNIQUES IN EPIC THEATRE	
1	Montage	A series of freeze frames, images, projections or scenes put together in no particular order. Often music is played over the top.
2	Narration	The actor tells the story out loud. Sometimes the narrator will tell us what happens in the story before it has happened.
3	Direct Address	Speaking directly to the audience breaks the fourth wall and destroys any illusion of reality.
4	Gestus	A clear gesture or movement used by the actor which captures the attitude of a character or situation.
5	Figures (not characters)	Playing a 'type' of person in society rather than a character.
6	Third Person Narration	The actor tells the story out loud using names or pronouns such as 'he' 'she' 'him' 'they' etc… even if they are talking about themselves. This is to distance the character from the actor and the audience.
7	Speaking stage directions	Saying the stage directions out loud. This reminds the audience that they're watching a play and forces them to analyse the actions and the message of the play.
8	Multi-role	When an actor plays more than one character onstage. The differences in character are marked by changing voice, movement, gesture and body language but the audience can clearly see that the same actor has taken on more than one role.
9	Split-role	When more than one actor plays the same character. For instance, the actor playing the main character might rotate from scene to scene.
10	Placards / Projection	A sign or additional piece of written information presented onstage to deepen the audience's understanding of the theme.
11	Lehrstucke	Shorter, parable pieces - a simple story used to illustrate a moral lesson
12	Spass	Literally translates as 'fun'. Presenting a serious subject in a funny way.
13	Minimal set /costume /props	Simple bits of scenery / furniture / objects / clothing – a mostly bare stage. The set, props and costume used were usually authentic (realistic to the time period).
14	Symbolic Props	Using an item to represent a theme or using one item to represent multiple different objects.
15	Lighting	Simple harsh lighting to 'illuminate the truth'.
16	Song and Dance	Using music to tell the story – often jolly music is used to present a serious theme.
17	Visible stage Mechanics	Scene and set changes (and the stage crew) are visible to the audience.

2.1 Mechanical Properties of Materials

1	**Yield Strength**	The **maximum** force that can be applied before a material begins to **change shape permanently** (will return to its original shape before this point is reached).
2	**Tensile Strength**	The maximum force that a material can take before breaking when it is stretched (pulled).
3	**Compressive Strength**	The ability of a material to withstand loads that reduce the size of that material (squash it).
4	**Elasticity**	The ability of a metal to resume its normal shape after being stretched or compressed.
5	**Ductility**	The ability of a material to be drawn out into wire or thread without losing strength or breaking.
6	**Hardness**	The measure of the resistance of a material to surface indentation, abrasion, or scratching.

2.2 Other Properties Influencing Manufacturing

7	**Malleability**	Is capable of being extended or shaped by beating with a hammer or by the pressure of rollers.
8	**Machinability**	A characteristic of a metal that makes it easy to drill, shape, cut, grind, etc. Materials with good machinability can be cut with relatively little power and low cost.
9	**Material Cost**	Material costs can be a balancing act between the function of the part and the cost. Usually the more expensive materials will be harder, greater wear and corrosion resistance, improved appearance.
10	**Manufacturing Cost**	The material selected will have an impact on the cost of manufacture. Some materials will be harder to machine and will take more time to work with which will have costs implications. Wear and tear on tools, greater energy costs, regular maintenance of machines.
10	**Sustainability**	Meeting the needs of **today** without **compromising** the ability of **future generations** to meet their own needs. **Definition;** The process of **using resources** in a way that **does not** compromise the environment or deplete the materials for future generations.

Standard Plastic Stock Shapes –

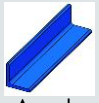
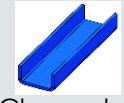
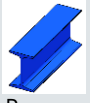
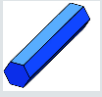

Sheet


Rod

Tube


Granules

Standard Metal Stock Shapes –

Angle, Channel, I-Beam,, Sheet, Rod, Flat, Hex, Tube, Threaded Rod, Square Bar

Engineering Manufacture

Unit R014: Principles of engineering manufacture
Topic Area 2: Engineering Materials

KS4

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2.3.1 Materials; Metals

Ferrous Metals		These Metals Contain **IRON** (Fe).
1	**Iron**	Machine Bases, Metalworking Vices
2	**Tool Steel (Carbon Steels)**	Screwdrivers, Hammers, Saws
3	**Low Carbon Steel (Mild Steel) (<0.6% Carbon)**	Low carbon steel has good enough strength for **building frames in construction projects**
4	**High Carbon Steels (Tool Steel) (>0.6% Carbon)**	Extreme hardness and resistance to wear, very high carbon steel often used for **cutting tools that retain their sharp edge.** (Not as high carbon content are used for Screwdrivers, hammers, saws)
5	**Stainless Steel**	Sinks, Rules, Cutlery
6	**High Speed Steel**	Drill Bits, Lathe Tools
Non-ferrous Metals		Metals which **do not** contain IRON.
7	**Copper**	Plumbing & Electrical Components
8	**Aluminium**	Cooking Foil, Sauce Pans, Ladders
9	**Zinc**	Coatings On Steel Products
Alloys		A mixture. of **two or more** metals.
10	**Brass**	Plumbing Accessories
11	**Bronze**	Boat Propellers

2.3.2 Materials; Polymers

Thermoplastics		**Can** be remoulded numerous times with the application of heat.
1	**Acrylonitrile-butadiene-styrene (ABS)**	Appliance casings
2	**High Impact Polystyrene (HIPS)**	Vacuum Forming, electronics casings
3	**Polycarbonate**	Safety Goggles, Bullet Proof Windows.
4	**Polylactic acid (PLA**	Eco-Products; **cups, lids, cutlery, straws and containers** made from a biopolymer called PLA. Made from starchy plants like corn. Also **Medical Equipment, Food Containers**.
Thermosetting Plastics		Polymers which **cannot** be remoulded once set in shape.
5	**Polyester Resin**	Used in GRP – Car/ Boat bodies
6	**Urea-formaldehyde**	Electrical fittings, Door Handles.
7	**Epoxy Resin**	Glue, Casings, Coatings.
8	**Phenol-formaldehyde**	Heat resistant saucepan handles

2.3.3 Materials; Ceramics

Ceramics have a high resistance to heat and wear

1	**Tungsten Carbide**	Cutting Tool Tips
2	**Silicate Glass**	Resistant to very high temperatures and very strong, used in the lining of melting furnace burners, as blocks with windows for pyrometers.
3	**Silicon Glass**	Silicon glass is widely used in **optics, photometry and spectroscopy**. It is used in laser lenses and mirror prisms

2.3.4 Materials; Composites

A material made from **two or more** different materials that, when combined, are stronger than those individual materials by themselves. The microstructure can be seen to the naked eye.

1	**Glass Reinforced Plastic (GRP)**	Car / Boat Bodies, Bike frames
2	**Carbon Fibre**	Bicycle Frames, Sports equipment

2.3.5 Materials; Smart & New Materials

Smart materials react to a stimulus in a controlled way, the change can also be reversed.

1	**Shape-memory Alloys**	Dental Braces, surgical implants, fire prevention.
2	**Thermochromic Materials**	React to heat - Thermometers for rooms, refrigerators, aquariums, and medical use.
4	**Quantum Tunnelling Composite (QTC)**	Responds to pressure to create circuits -Switches on mobile phones, pressure sensors and speed controllers
5	**Photochromic Pigment**	Reacts to light - Used **to protect your eyes from harmful UV rays**

Design & Technology; Food	Unit 2 - Macro/micro-nutrients	Year Group: 10

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Macronutrients

1	**Carbohydrates – starchy**	Provide slow releasing energy. Sources: bread, pasta, oats, rice, potatoes.
2	**Carbohydrates – sugar**	Provide instant energy. Can be natural or added. Sources: fructose, lactose, fizzy drinks, sweets
3	**Protein**	Essential for growth and repair. Provide a secondary source of energy.
4	**HBV**	Proteins that contain all the essential amino acids our body cannot produce itself. Sources: meat, fish, milk, cheese, yoghurt
5	**LBV**	Proteins that contain some of the essential amino acids our body cannot produce itself. Sources: beans, lentils, grains
6	**Fat**	Provides vitamins A, D, E and K. Keeps the body warm and offers insulation. Stored energy.
7	**Saturated**	Solid at room temperature often referred to as bad fat as can increase risk of heart disease Sources: meat, dairy, coconut
8	**Unsaturated**	Liquid at room temperature often referred to as healthy fat as can lower risk of heart disease Sources: olive oil, nuts, seeds, avocados
9	**NSP / Fibre**	Helps with digestion and lower cholesterol. Sources: wholegrains, nuts, seeds, fruit and veg
10	**Water**	Essential for existence. Transports nutrients, helps digestion, flushes out waste, maintains body temperature

Micronutrients & Minerals

Water soluble		
1	**Vitamin B complex**	Helps release energy from food. Consists of B1, B2, B9, B12 Each B vit is found in different food sources.
2	**Vitamin C**	Helps iron absorption. Improves immune system. Antioxidant. Sources: fruit and vegetables
Fat Soluble		
3	**Vitamin A**	Helps vision. Structure of skin and keeping immunesystem healthy. Sources: dairy, dark green veg, orange fuit/veg
4	**Vitamin D**	Helps calcium absorption. Prevents bones disease. Sources: fish oil, dairy, sunlight, fortified cereal and margarine
5	**Vitamin E**	Helps maintain healthy skin and eyes. Forms red blood cells. Sources: dairy, nuts, dark green veg
6	**Vitamin K**	Helps blood clot / needed for healthy bones Sources: dark green veg, fish, liver and fruit.
Minerals		
7	**Calcium**	Keeps bones and teeth health and strong Sources: dairy, dark green veg, fish bones
8	**Iron**	Needed to transport oxygen around the blood Sources: red meat, wholegrain foods, green veg
9	**Sodium**	Controls the amount of water in the body . Makes nerves and muscles work properly
10	**Potassium**	Help maintain fluid levelsinside our cells
11	**Magnesium**	Helps maintain normal nerve and muscle function

Key Vocabulary

1	**Macronutrients**	A nutrient your body requires in large amounts (grams)
2	**Micronutrients**	A nutrient your body requires in large amounts (mg)
3	**Water soluble vitamins**	Vitamins that are found in water (vitamins B,C)
4	**Fat soluble**	Vitamins that are found in water (vitamins B,C)
5	**Mineral**	Nutrients our body requires in small amounts (calcium, iron, sodium)
6	**RDI**	Recommended Daily Intake. A guide provided by the NHS with the quantities we should be aiming for daily.
7	**Portion control**	Healthy diets not only have the correct balance, but have the right portion sizes. **Vegetables** = double cupped palm. **Grains/Starches** = clenched fist. **Protein** = palm of hand. **Fruits** = clenched fist. **Thumb** = fats.
8	**Eat Well Guide**	A guide provided by the Government to show the amount each food group we should be eating daily
9	**Calories**	The amount of energy in an item of food or drink is measured in calories
10	**Source**	Where the nutrient is found e.g. which foods contain it

- ❑ **Research the RDI amounts**
- ❑ **Who is the Eat Well Guide not suitable for?**
- ❑ **How does food effect our mental health as well as physical?**

Design & Technology; Food	Topic: Unit 1 H&C provision	Year Group: 10	BECKFOOT SCHOOL enjoylearnsucceed

AC1.1 Hospitality and catering providers

1	**Commercial**	For profit – to make money.
2	**Non-commercial.** 	Not for profit. Includes catering in education, healthcare and the armed forces.
3	**Residential**	You can sleep there
4	**Non-residential**	You don't sleep there. 
5	**Counter service**	Order, pay and collect food at the counter
6	**Table service**	Order, pay and receive food at their table
7	**Guerdon system**	Food cooked or prepared for in front of customer on a trolley
8	**Front of house**	Front of house refers to any staff the customer may see.
9	**Back of house**	Back of house refers to staff the customer may not see,
10	**Kitchen brigade**	System of setting out job roles in the kitchen
11	**Star rating – hotel standards**	Rated from 1-5. 5 being the highest rating.
12	**Restaurant standards**	Michelin Guide, AA award rosettes, Good Food Guide
13	**Food hygiene rating** 	**Food Hygiene** are the conditions and measures necessary to ensure the safety of food from production to consumption
14	**Environmental standards**	10 standards promoting sustainability and reducing the impact on the environment

AC1.2 Working in the hospitality and catering industry

1	**Training**	Lots of training courses available; food hygiene cert, City and Guilds, Level 1 2 and 3.
2	**Personal attributes**	Personality trait: Organised, reliable, team player, friendly, approachable ect,
3	**Skills**	Computer skills, good local knowledge, ability to multi-task, communication skills

AC1.3 Describe working conditions of different job roles across the hospitality and catering industry

1	**Types of contracts**	Full-time/part time permanent contract. Casual work/ zero hour contracts.
W 2	**Supply & demand**	There are certain times in the year when staff demand increases (New Year, Christmas).
3	**Remuneration**	Reward on top of basic pay. E.g. tips, service charge and bonuses
4	**Holiday entitlement**	Set number of Paid leave each year.

AC1.4 Explain factors affecting the success of hospitality and catering providers

1	**Cost**	Materials, labour costs, advertising
2	**Profit**	A business needs to make profit to be successful
3	**Economy**	Value of the £, food production in the world, price of oil/fuel and if the economy is stable
4	**Environmental factors**	Waste, reduce, reuse, recycle and sustainability
5	**Technology**	Social media, kitchen and food technology
6	**Customer demographic**	Different types of customers require different things.
7	**Competition**	There is lots of competition and it's important to stand out.
8	**Trends/ Media**	Food trends, media advertising and search engine results.

Key Vocabulary

1	**Hospitality**	The **friendly** treatment of **guests** and **strangers**.
2	**Customer**	Person who **books' receive** the service.
3	**Service**	To **do/provide** something for someone else, this can be **paid** for or done for **free** depending on the business,
4	**Business**	the **buying** and **selling** of goods/services to **make money**,
5	**Accommodation**	a room, group of rooms, or building in which someone may live or stay.
6	**Catering**	Offering the **provision** of **food and beverages**

Music	Topic: Unit two – Music for ensemble	Year Group: 10/11

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1. Jazz and Blues

1	**Scat**	Vocal improvisation using wordless/nonsense syllables.
2	**Improvised**	Music made up on the spot.
3	**Blue notes**	Flattened 3rd, 5ths, 7ths.
4	**Syncopation**	Emphasising the off-beat.
5	**Call and response**	A phrase played/sung by a leader and repeated by others.
4	**Walking bass**	A bass line that 'walks' up and down the notes of a scale/arpeggio.
5	**Swing style**	Quaver rhythm with a triplet/Dotted feeling.
6	**Rhythm Section**	Drums, bass (guitar or double bass) and piano/guitar that provide the 'drive' of the ensemble.
7	**Horn Section**	Trumpet, trombone and saxophone
8	**12 Bar Blues**	A repeated 12 bar chord pattern used in the blues. I I I I IV IV I I V IV I I/V

2. Chamber Music

1	**Chamber Music**	Music for a small ensemble, originally played in a small room in someone's home
2	**String quartet**	Small ensemble of two violins, viola and Cello.
3	**Basso continuo**	A type of instrumental accompaniment, common in Baroque music, played by organ, harpsichord or cello. Keyboard players often added chordal harmonies.
4	**Sonata Form**	A piece in three sections, Exposition, Development and recapitulation.
5	**Romantic Chamber music**	Chamber music groups were more varied in the Romantic era, using a wider range of instruments (e.g. piano quintet, horn trio). Performances happened in larger concert halls as well as in small 'chambers'.

8. Key vocabulary

1	**Chord**	Two or more notes played together.
2	**Triad**	Three notes played together.
3	**Chord Sequence**	A series of chords.
4	**Diatonic Harmony**	The chords all belong to the key.
5	**C Major**	Happy sounding key – no sharps or flats.
5	**F Major**	Happy sounding key – 1 flat (Bb)
5	**G Major**	Happy sounding key – one sharp (F#)
5	**Bb Major**	Happy sounding key – two flats (Bb and Eb)
9	**D major**	Happy sounding key – two sharps (F# and C#)

Listen to Blues by B.B.King and Bessie Smith and Jazz by Louis Armstrong, Ella Fitzgerald and Dizzie Gillespie.
Listen to Chamber music of Haydn, Schubert and Clara Schumann.

Music	Topic: Unit two – Music for ensemble	Year Group: 10/11

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1. Musical theatre

1	**Solo**	A song for one singer.
2	**Duet**	A song for two singers.
3	**Trio**	A song for three singers.
4	**Ensemble**	A song sung by a small group.
5	**Chorus**	A large group (usually the full company/cast).
4	**Recitative**	A vocal style that imitates the rhythms and accents of speech.
5	**Overture**	An orchestral introduction to the show, which usually uses tunes from the show.

2. Voices and instruments

1	**Soprano**	High female voice
2	**Alto**	Low female voice
3	**Tenor**	High male voice
4	**Bass**	Low male voice
5	**Synth**	An electronic musical instrument, typically operated by a keyboard, producing a wide variety of sounds by generating and combining signals of different frequencies.
6	**Pit orchestra**	The band used in musicals, may use strings, woodwind (reeds), brass and percussion.
7	**Doubling**	A pit band player performing more than one instrument in a show.

3. Key vocabulary - Texture

1	**Monophonic**	A single melody line
2	**Homophonic**	A chordal style or melody and accompaniment moving together.
3	**Polyphonic**	A more complex (contrapuntal) texture with a number of different lines.
4	**Melody and accompaniment**	A tune with accompaniment (e.g. chords)
5	**Unison**	All parts play/sing the same music at the same time.
6	**Chordal**	The music moves in chords (e.g. like a hymn/chorale).
7	**Descant**	A decorative, higher pitched line.
8	**Countermelody**	A new melody, combined with the theme.
9	**Round**	A short (vocal) canon.
10	**Canon**	The melody is repeated exactly in different parts but starting at different times, with parts overlapping.
11	**Drone**	Long held notes
12	**2, 3, 4 part texture**	Textures which have 2/3/4 different lines.

Listen to a wide range of musical theatre including pieces by Kander and Ebb, Rodgers and Hammerstein, Lloyd Webber and more modern Jukebox musicals

Subject: Art Textiles	**Topic:** Structures Development and Experimentation	Year 10

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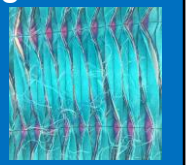
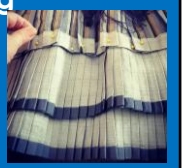
1. Contextual Links

1	**Jose Romussi**	Jose Romussi was born in 1979 in Santiago, Chile. His first approach to art was seeing his mother painting. In 2010 when he was in New York he decided that art was what he wanted to do, and then started doing some artworks involving embroidery and painting. From 2010 to 2014 he worked with different subjects such as ballerinas, portraits with embroidered flowers and skulls, and landscapes.	

3. Tools and Equipment

1	**Heat Gun**	A heat gun emits a stream of hot air at a high temperature. This is used in textiles to heat and melt synthetic fabrics to create interesting effects.
2	**Wadding** 	Wadding, also known as batting or padding, is one of the most essential parts of the quilting process. It affects the durability of the finished product and can provide the warmth, shape and structure of the finished product.
3	**Organza** 	Organza is a thin plain weave sheer fabric that is traditionally made from silk or synthetic fibres such as polyester or nylon. Typically used for evening or bridal wear. Within art textiles we use this synthetic fabric with the heat gun to create interesting textures.

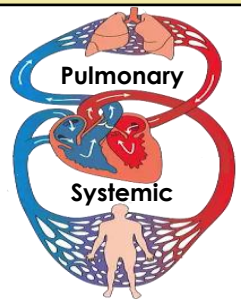
3. Key Vocabulary

1	**Quilting** 	A quilted fabric is made up of three layers - an outer lining material holds the middle layer of cotton or polyester wadding and a base layer. Quilting is decorative and can be done in various shapes and functional providing a insulated fabric good for outdoor clothing.
2.	**Slashing** 	Slashing is a process that involves layering up fabric, stitching usually in parallel channels and then cutting through to the base layer. This can then be brushed to fray it, exposing the layers below and producing velvet like texture.
3	**Pin Tucks** 	A pintuck is a very narrow tuck made at regular intervals, mostly parallel to each other. It creates a beautiful texture on fabric and is regularly used to embellish clothes and linen.
4	**Pleating** 	Pleats are folds of fabric that can be made in different ways to add fullness. They are often used for fabric to be full in one area but fitted in another and can add shape and movement.
5	**Laser Cutting** 	Laser cutting uses a computerised machine to cut and engrave onto fabrics. With laser cutting, the laser beam melts the fabric in a controlled manner and prevents fraying. Denim fabric gets a "stonewash" effect without being treated with chemicals. The denim is bleached by the heat of the laser.

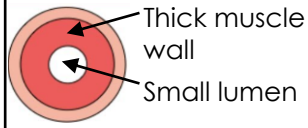
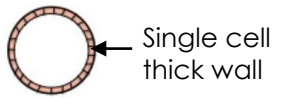
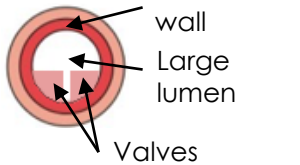
Subject: **GCSE PE**	Topic: **1.1 – Applied Anatomy and Physiology**	Year Group: **10/11**

1.1.d Cardiovascular System

KG1 – Double circulatory system

	System	Structure	Description
1	Pulmonary system		Vessel circuit linking the **heart** and **lungs** Carries deoxygenated blood from the heart to the lungs and oxygenated blood back to the heart
2	Systemic System		Vessel circuit linking the **heart** and **body tissues** Carries oxygenated blood from the heart to the body tissues and deoxygenated blood back to the heart

KG2 – Types of blood vessel

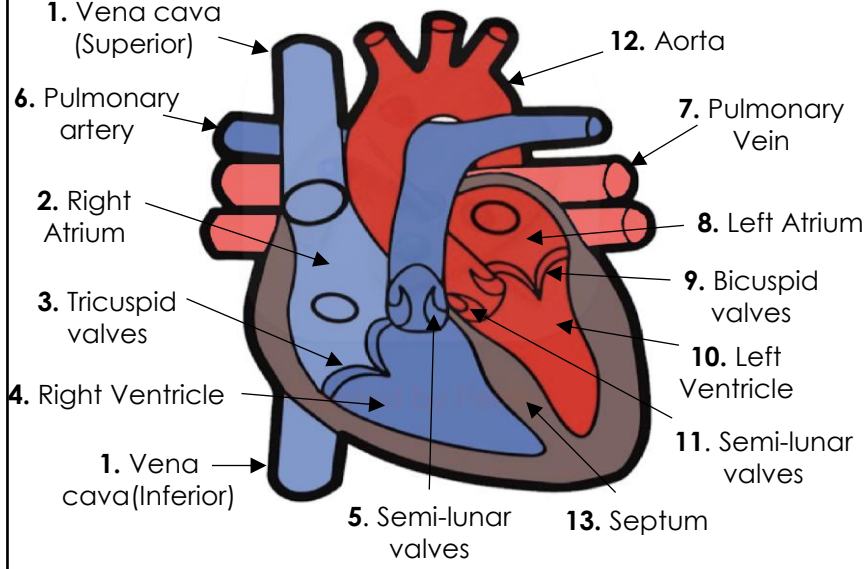
	Vessel	Structure	Description	Examples
3	Arteries		Carries blood **a**way from heart **Most** carry oxygenated blood Under high pressure	Aorta Pulmonary Artery
4	Capillaries		Allow gaseous exchange	Found around: • muscles • lungs • other organs
5	Veins		Carry blood **in**to the heart **Most** carry deoxygenated blood Under low pressure	Vena cava Pulmonary vein

KG3 – Role of red blood cells

	Component	Function
6	 Red blood cells	Transports oxygen to working muscles Carries carbon dioxide away from working muscles

KG4 – Structure of the heart

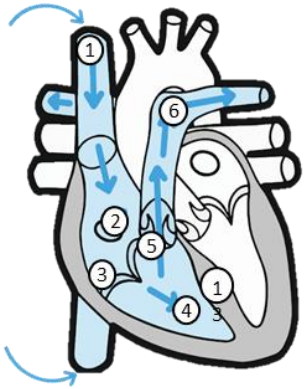
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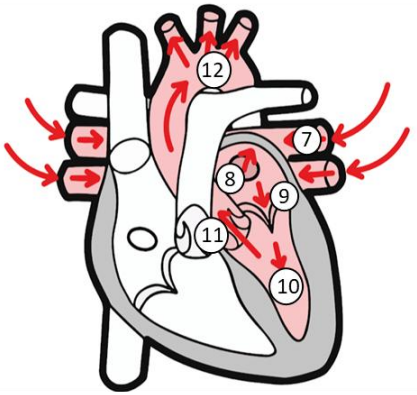
Subject: **GCSE PE**	Topic: **1.1 – Applied Anatomy and Physiology**	Year Group: **10/11**

KG5 – Pathway of blood

Right side (**Deoxygenated** blood from the body)



Left side (**Oxygenated** blood from the lungs)



	Component	Function	Component	Function
8	1. Vena cava	Brings deoxygenated blood from body	7. Pulmonary vein	Brings oxygenated blood from lungs
9	2. Right atrium	Pumps blood into the right ventricle	8. Left Atrium	Pumps blood into the left ventricle
10	3. Tricuspid valves	Stops backflow of blood into right atrium	9. Bicuspid valves	Stops backflow of blood into left atrium
11	4. Right ventricle	Pumps blood through the pulmonary artery to the lungs	10. Left ventricle	Pumps blood through the aorta to the body
12	5. Semi-lunar valves	Stops back flow of blood into the ventricle	11. Semi-lunar valves	Stops back flow of blood into the ventricle
13	6. Pulmonary artery	Carries deoxygenated blood to lungs	12. Aorta	Carries oxygenated blood to body
14	13. Septum	Divides the left and right side Stops oxygenated and deoxygenated blood mixing		

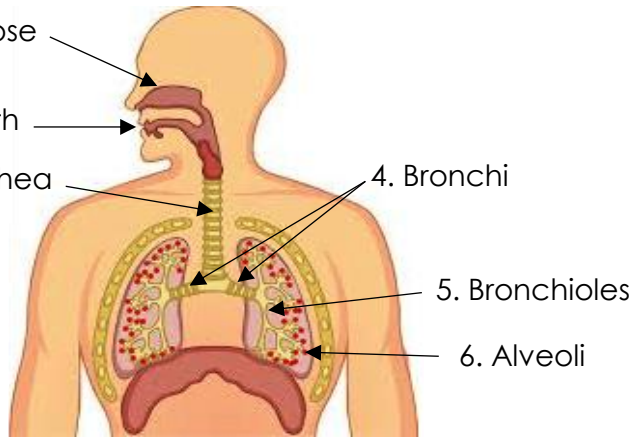
KG6 – Definitions

	Term	Relationship	Definition	Units
15	Heart rate (HR)	HR ✖	The number of beats per minute	BPM
16	Stroke volume (SV)	SV	The amount of blood that leaves the left ventricle per beat	ml
17	Cardiac Output (Q)	= Q	The amount of blood that leaves the left ventricle per minute	Litres/min

Subject: **GCSE PE**	Topic: **1.1 – Applied Anatomy and Physiology**	Year Group: **10/11**

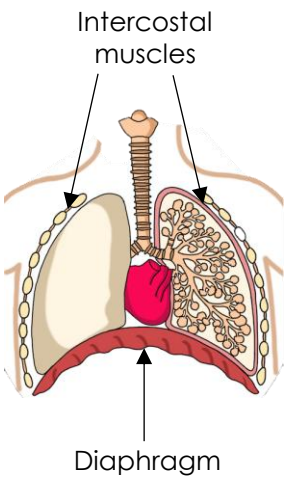
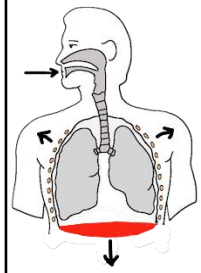
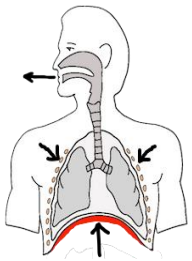
1.1.e Respiratory Systems

KG1 – Pathway of air through the respiratory system



Structure	Role
1. Nose	Entry point of air (filters, warms and moistens air)
2. Mouth	
3. Trachea	Takes air to the lungs
4. Bronchi	Splits the air into the left and right lung
5. Bronchiole	Carries air to the alveoli
6. Alveoli	Site of gaseous exchange

KG2 – Respiratory muscles

	Respiratory Muscles	Phase of breathing	Muscle		Role	Result
7		Inspiration		Intercostals	**Contracts** to move the **ribs up** and **out**	**Increases** the **space** in the thoracic cavity **Reduces** the **pressure** in the lungs Air moves **in**
8				Diaphragm	**Contracts** to move **down** and **out**	
9		Expiration		Intercostals	**Relaxes** to move the **ribs down** and **in**	**Decreases** the **space** in the thoracic cavity **Increases** the **pressure** in the lungs Air moves **out**
10				Diaphragm	**Relaxes** to move up	

Subject: **GCSE PE**	Topic: **1.1 – Applied Anatomy and Physiology**	Year Group: **10/11**

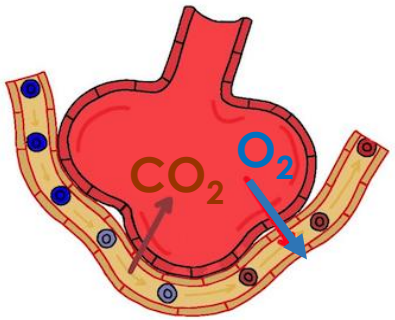
KG3 – Breathing volumes

	Term	Relationship	Definition	Units
11	Breathing rate (f)	f ✖ TV = VE	Frequency of breaths per minute	Breaths per minute
12	Tidal volume (TV)		The volume of **air** inhaled or exhaled in **one breath**	Milliliters (ml)
13	Minute ventilation (VE)		The volume of **air** inhaled or exhaled **per minute**	Litres per minute (L/min)

KG4 – Alveoli and Gaseous exchange

14	Gaseous exchange	Process of oxygen diffusing from alveoli into blood and carbon dioxide diffusing from blood into the alveoli

Alveoli

		Structure	**Function**
15		Walls 1 cell thick	Allows gases to pass through **quickly**
16		Large surface area	Allows **more** gases to pass through
17		Walls are moist	Allows gases to **dissolve** to pass through
18		Surrounded by capillaries	Provides blood for gaseous exchange

KG5 – Aerobic and Anaerobic exercise

	Structure	Description	Intensity/duration	Waste product	Examples
19	Aerobic	Energy production **using oxygen**	Moderate intensity Long duration	CO_2	Marathon **Full** netball game Triathlon
20	Anaerobic	Energy production **without oxygen**	High intensity Short duration	Lactic Acid	100m Sprint Javelin Golf swing

Notes