Fir Vale Academy
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Y11 Core Homework.

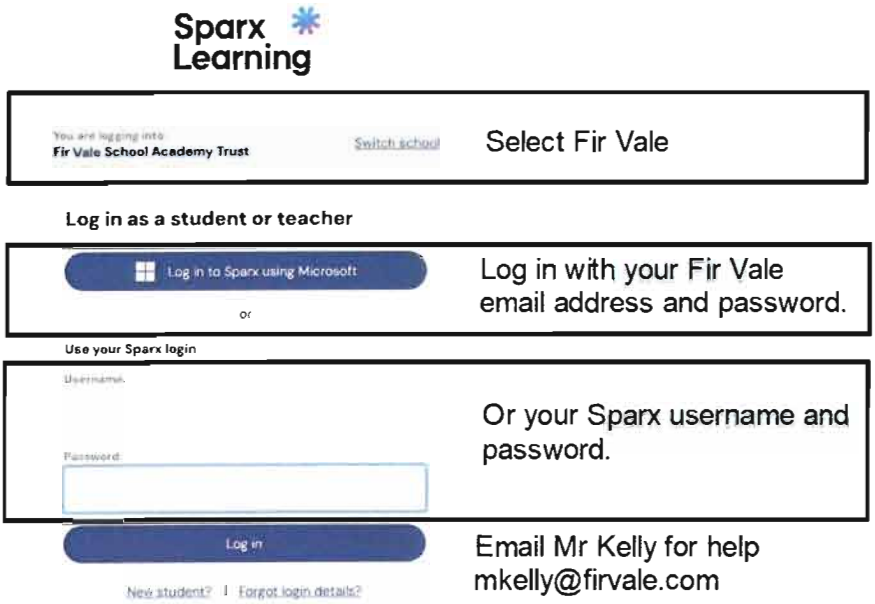
Maths. English. Science.

Summer Holiday – 2025.

Name: _____

GCSE Maths Summer Revision

Go to www.sparxmaths.uk

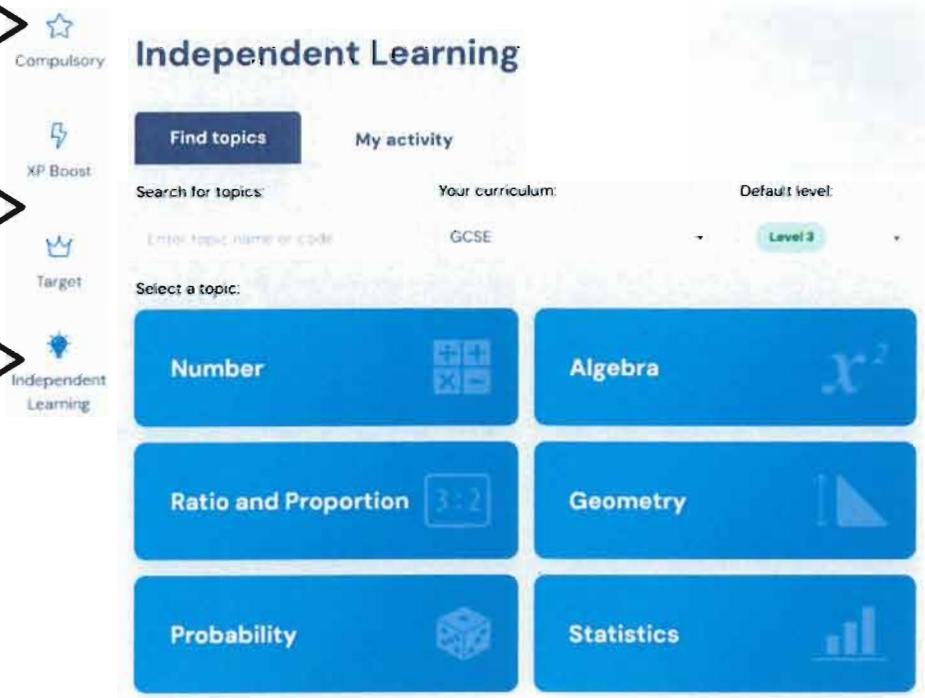


If you have completed all your homework tasks you can use Independent Learning to revise any topic in Maths.

First do all the Compulsory homework.

XP Boosts and Targets will also help you improve.

Independent Learning has every topic



You can use these lists of Sparx Topics to choose what to revise.

Scan the QR codes on your phone.

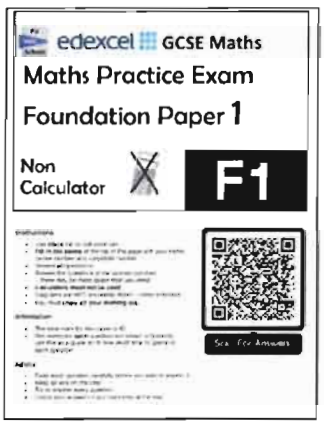
SCAN ME

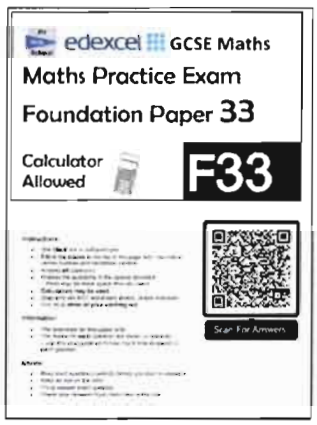
Foundation

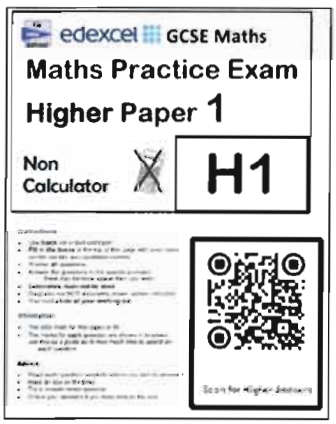
SCAN ME

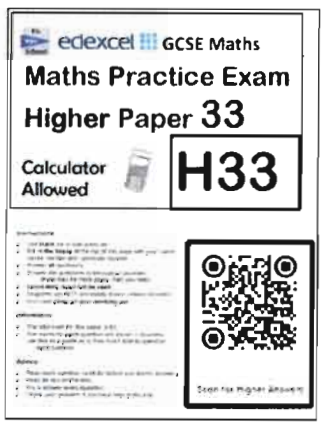
Higher

There are lots of practice exam papers available from the school library.









You can get the answers for all of these papers by scanning these codes.

Foundation Papers

Foundation Answers

Higher Papers

Higher Answers

The best way to revise is to do some **Sparx**

and some **practice exam papers.**

Email Mr Kelly if you need any help **mkelly@firvale.com**

AQA

GCSE English Language and Literature

Retrieval and Encoding

Language Paper 1: 1 hour 45 minutes – 5 questions

Language Paper 2: 1 hour 45 minutes – 5 questions

Literature Paper 1: 1 hour 45 minutes – 2 questions

Macbeth and A Christmas Carol

Literature Paper 2: 2 hours and 15 minutes – 4 questions

An Inspector Calls, Power & Conflict Poetry, Unseen Poetry and Unseen Poetry comparison

Name:

Teacher's name:

Week 1

Task 1	**Chapter 1 'The Great Gatsby' By F.Scott Fitzgerald** **List 4 facts you learn about the narrator's house:** I lived at West Egg, the—well, the less fashionable of the two, though this is a most superficial tag to express the bizarre and not a little sinister contrast between them. My house was at the very tip of the egg, only fifty yards from the Sound, and squeezed between two huge places that rented for twelve or fifteen thousand a season. The one on my right was a colossal affair by any standard—it was a factual imitation of some Hotel de Ville in Normandy, with a tower on one side, spanking new under a thin beard of raw ivy, and a marble swimming pool, and more than forty acres of lawn and garden. It was Gatsby's mansion. **1.** **2.** **3.** **4.**
Task 2	**Language Paper 2 Question 3** **The Things They Carried By Tim O'Brien** I feared the war, yes, but I also feared exile. I was afraid of walking away from my own life, my friends and my family, my whole history, everything that mattered to me. I feared losing the respect of my parents. I feared the law. I feared ridicule and censure. My hometown was a conservative little spot on the prairie, a place where tradition counted, and it was easy to imagine people sitting around a table down at the old Gobbler Cafe on Main Street, coffee cups poised, the conversation slowly zeroing in on the young O'Brien kid. At night, when I couldn't sleep, I'd sometimes carry on fierce arguments with those people. I'd be screaming at them, telling them how much I detested their blind, thoughtless, simple-minded patriotism, their prideful ignorance, their love-it or-leave-it attitudes, how they were sending me off to fight a war they didn't understand and didn't want to understand. **How does the writer use language to describe the effects of war?**

Planning space. One quotation per bubble and space to annotate with ideas:

Task 3	**How is the character of Gerald presented in An Inspector Calls?** **Use the quotations below to help you:** 1. **'Favourite haunt of women of the town'** 2. **'we're respectable citizens not criminals'.** 3. **'What about this ring?'**
Task 4	**Encoding: This is an opportunity to look at lots of texts that all use the same symbolism for different meanings. Today's symbol is <u>HANDS:</u>** 1. **War Photographer:** 2. **Remains:** 3. **Lady Macbeth:** 4. **Macbeth:** 5. **Scrooge:**

Task 5

'Technology is slowly consuming us all. Whether it is using social media, asking machines to set timers or cars driving themselves, is there anything we can do independently anymore?

Write a newspaper article where you discuss your point of view.

Use the space to plan below:

Drop:

Zoom:

Shift:

Echo:

Week 2

Task 1

'The Other Side of the Dale' written in 1998 by Gervase Phinn (AQA Nov 17)

Sister Brendan, the Head teacher, saw my car pull up outside her office window and was at the door of the school to greet me before I had the chance to straighten my tie and comb my hair. She beamed so widely that, had she worn lipstick, I would have expected to see traces on her ears. The small school was sited in the disadvantaged centre of Crompton, a dark and brooding northern industrial town. Tall black chimneys, great square, featureless warehouses, and row on row of mean terraces stretched into the valley beyond. The school was adjacent to a grim and forbidding wasteland of derelict buildings and piles of rubble, surrounded by half-demolished houses which seemed to grow upwards like great red jagged teeth from blackened gums. From the grime and dust I walked into an oasis: a calm, bright, welcoming and orderly building.

Choose four statements below that are true:

A The inspector travels to the school by train.

B Sister Brendan reacts quickly to the arrival of the inspector.

C The people who live in the centre of Crompton are mostly wealthy.

D There are no chimneys or warehouses in Crompton.

E The school is situated next to a wasteland.

F Some of the houses in the town have been damaged.

G The inspector thinks Crompton is a lively, cheerful place.

H The school is well cared for

Task 2

A Christmas Carol: Stave 3
The Children of Ignorance and Want

Yellow, meagre, ragged, scowling, wolfish; but prostrate, too, in their humility. Where graceful youth should have filled their features out, and touched them with its freshest tints, a stale and shrivelled hand, like that of age, had pinched, and twisted them, and pulled them into shreds.

1. Define the terms 'ignorance' and 'want'

2. Looking at how they are described, what are the hidden meanings of words such as 'yellow, meagre, ragged, scowling, wolfish'?

3. How might this moment in the novella project hope, as well as horror?

Task 3

An Inspector Calls: Mr Birling

Look at the following adjectives and write down a quotation and/or a moment from the play that supports each one. An example has been done for you:

1. **Selfish**

2. **Capitalist**

3. **Heartless –** 'hard headed practical man of business' – this suggests that Mr Birling will not be running his factory with compassion for his staff members but rather concentrating on efficiency and money. He dismisses Eva when she rightfully asks for a pay rise and instead punishes her for demanding a pay that reflects the effort her job requires of her, by sacking her.

4. **Ambitious -**

Macbeth by William Shakespeare
Act 1: Lady Macbeth

How does Lady Macbeth's character change throughout the play?

Act 2 Scene 2		Act 5 Scene 1

Task 4	'a little water clears us of the deed'		'Out damned spot! Out I say!'
	Act 1 Scene 5		Act 5 Scene 1
	'pall thee in the dunnest smoke of hell'	VS	'hell is murky'

Week 3

Task 1	**Moby Dick** **By Herman Melville** Call me Ishmael. Some years ago — never mind how long precisely — having little or no money in my purse, and nothing particular to interest me on shore, I thought I would sail about a little and see the watery part of the world. It is a way I have of driving off the spleen, and regulating the circulation. Whenever I find myself growing grim about the mouth; whenever it is a damp, drizzly November in my soul; whenever I find myself involuntarily pausing before coffin warehouses, and bringing up the rear of every funeral I meet; and especially whenever my hypos get such an upper hand of me, that it requires a strong moral principle to prevent me from deliberately stepping into the street, and methodically knocking people's hats off — then, I account it high time to get to sea as soon as I can. **List 4 facts you learn about Ishmael:** **1.** **2.** **3.** **4.**
Task 2	**Macbeth By William Shakespeare** **The character of Macduff:** **Tick the adjectives that describe Macduff accurately:** Loyal Neglectful Dishonourable Tyrannical Warrior Ambitious Below are 3 quotations. What does each one suggest to us about Macduff?

	1. 'O horror, horror, horror!' 2. 'most sacrilegious murder!' 3. 'all my chickens and their dam...?' 4. 'Turn hellhound, turn!'
Task 3	**Language Paper 1 Question 5** **Either: Describe a time in your life where you wanted to escape a terrible time.** **OR: Write the opening of a story where you journey to another country.** 

Task 4	**An Inspector Calls By J.B Priestley** **The Inspector** Purpose (what is the job of this character?): Most popular stage direction 'cutting in': Top 3 quotations: 1. 'it's better to ask for the earth than to take it' 2. 'We don't live alone. We are members of one body. We are responsible for each other' 3. 'in fire, blood and anguish'
Task 5	**Language Paper 2 Question 5 Topic** **Explore some ideas you could use in a question about society:** **Positive and negative examples in society**

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Science Homework Sheets.

Biology. Chemistry. Physics.

Topic 1 – Cell Biology	
What are the functions of the key organelles in an animal cell?	
What extra structures do plant cells have?	
How are bacteria different from animal and plant cells?	
What is the difference between eukaryotic and prokaryotic cells?	
What is the function of a sperm cell, and how is it adapted?	
What is mitosis used for?	
What is the cell cycle?	
What is a stem cell?	
Where are stem cells found?	
Give two potential uses of stem cells in medicine.	
What is diffusion?	
Give two examples of diffusion in the body.	

What is osmosis?	
What is active transport?	
Where does active transport happen in the body and in plants?	
What is the function of ribosomes?	
How does a light microscope differ from an electron microscope?	
Why are muscle cells packed with mitochondria?	
How is a root hair cell adapted to absorb water and minerals?	
What is the formula to calculate magnification?	
What is the approximate size of a human cell?	
What is the main advantage of embryonic stem cells over adult stem cells?	
Why is using embryonic stem cells controversial?	
How do meristem cells help plants?	
What are the three main methods of transport in cells?	

Topic 2 - Organisation	
What is the sequence from cell to organism?	
What is the function of enzymes?	
What does amylase break down and into what?	
What does protease break down?	
What does lipase break down?	
Where is bile made and stored, and what is its role?	
What are the main parts of the circulatory system?	
What is the job of the right and left sides of the heart?	
What are the three types of blood vessel?	
What are the four components of blood?	
How do red blood cells carry oxygen?	
What is coronary heart disease?	

What treatments exist for heart disease?	
Name two risk factors for non-communicable diseases.	
What is cancer and how is it caused?	
Why is the small intestine adapted for absorption?	
What is the role of hydrochloric acid in the stomach?	
What colour does iodine turn in the presence of starch?	
What is the function of platelets?	
How does smoking affect the circulatory system?	
What does plasma carry?	
What do white blood cells do?	
What is the function of capillaries?	
Why does your pulse increase during exercise?	
What is a stent and what is it used for?	

Topic 3 – Infection & Response	
What are pathogens?	
Name the four types of pathogen.	
How are pathogens spread?	
Name and describe two viral diseases.	
Name and describe two bacterial diseases.	
Give one fungal disease and its effects.	
Give one protist disease and how to prevent it.	
What are the body's non-specific defences?	
What are the three ways white blood cells defend the body?	
How do vaccines work?	
What do antibiotics treat and what can't they treat?	
Why is antibiotic resistance a problem?	

Where did traditional medicines come from?	
What happens in drug trials?	
What is a placebo?	
What is an antigen?	
How do antibodies work?	
What is herd immunity?	
Why can antibiotics not treat viral infections?	
What are the symptoms of malaria?	
How can disease spread be reduced?	
What causes antibiotic resistance?	
How is the development of new drugs tested?	
What are monoclonal antibodies?	
How can plant diseases be identified?	

Topic 4 - Bioenergetics	
What is photosynthesis?	
What is the word equation for photosynthesis?	
What are the limiting factors of photosynthesis?	
How is glucose used by plants?	
What is aerobic respiration?	
When does anaerobic respiration happen and what does it make?	
What is oxygen debt?	
What is anaerobic respiration in yeast called?	
What are the uses of fermentation?	
Why do breathing and heart rate increase during exercise?	
What is metabolism?	
Give an example of a metabolic reaction.	

Why is respiration important?	
How does exercise affect muscles?	
How can you measure the rate of photosynthesis in the lab?	
Why is photosynthesis called an endothermic reaction?	
Where does photosynthesis take place?	
Why do plants store glucose as starch?	
How does temperature affect photosynthesis?	
What are three uses of energy released by respiration?	
What type of respiration occurs in muscles with little oxygen?	
How is lactic acid removed from the body?	
What is the role of mitochondria in respiration?	
What is the symbol equation for aerobic respiration?	
Why do athletes train to improve aerobic respiration?	

Topic 5 - Homeostasis	
What is homeostasis?	
Why is homeostasis important?	
What does the nervous system do?	
What is a stimulus?	
What are the three main parts of the nervous system?	
What are receptors?	
What are effectors?	
What is a reflex action?	
What is the correct order in a reflex arc?	
Name one reflex action.	
What is the function of the endocrine system?	
What are hormones?	

Where is insulin produced?	
What does insulin do?	
What causes Type 1 diabetes?	
How is Type 1 diabetes treated?	
What is the role of glucagon?	
What is the main female reproductive hormone?	
What is the main male reproductive hormone?	
What does the menstrual cycle prepare the body for?	
What hormone causes ovulation?	
Which hormone maintains the uterus lining?	
Name one method of hormonal contraception.	
Name one non-hormonal method of contraception.	
What is IVF?	

Topic 6 – Inheritance & Variation	
What is a chromosome?	
What is a gene?	
What is DNA?	
What is sexual reproduction?	
What is asexual reproduction?	
What is a gamete?	
How many chromosomes are in human body cells?	
How many chromosomes are in human gametes?	
What does dominant mean in genetics?	
What does recessive mean?	
What is a genotype?	
What is a phenotype?	

What is genetic variation?	
What is environmental variation?	
What is mutation?	
What is evolution?	
What is natural selection?	
Who proposed the theory of evolution by natural selection?	
What is selective breeding?	
What is genetic engineering?	
Give one use of genetic engineering.	
What is a fossil?	
What can fossils tell us?	
What is extinction?	
Give one cause of extinction.	

Topic 7 - Ecology	
What is an ecosystem?	
What is a habitat?	
What is a population?	
What is a community?	
What is interdependence?	
What is a producer?	
What is a consumer?	
What is a decomposer?	
What is a food chain?	
What is a food web?	
What is a predator?	
What is prey?	

What is adaptation?	
Name a structural adaptation in a polar bear.	
What is the carbon cycle?	
How does carbon enter the atmosphere?	
How is carbon removed from the atmosphere?	
What is the water cycle?	
What is global warming?	
What gas contributes most to global warming?	
What is deforestation?	
Why is biodiversity important?	
What reduces biodiversity?	
How can biodiversity be maintained?	
What is pollution?	

Atomic structure	
State the subatomic particles which make up an atom Give their mass and charge	
Explain why atoms have no overall charge	
Describe what an isotope is	
Explain what the 23 and 11 represent in the following	$^{23}_{11}Na$

Atoms, elements, compounds & mixture	
Define what an atom is	
Define what an element is	
Define what a compound is	
Define what a mixture is	

Separation techniques	
Describe what filtration is and what is it is used to separate	
Describe what distillation is and what is it is used to separate	
Describe what chromatography is and what is it is used to separate	

Model of the atom	
Describe what the plum pudding model of the atom was	
Describe what new evidence the scattering experiment provided about atoms	
Explain how that evidence caused the model of the atom to be change	
Explain how the work of Chadwick altered the model of the atom	

The periodic table	
State the rules for filling electron shells	
Explain what information the group gives about an element	
Explain what information the period gives about an element	

Metals & non-metals	
Describe what a metal is	
Describe what a non-metal is	
Describe where metals and non-metals are found on the periodic table	

The development of the periodic table	
Describe how elements were originally classified on the periodic table	
Explain the problems this caused with determining where elements should go	

Explain how Mendeleev overcame these problems	
Explain why Mendeleev's works was accepted by scientists	
Group 0	
What is the name given to group 0 elements	
Explain why group 0 elements are unreactive	
Write the electron configuration for Helium and Neon	
Explain the trend in the boiling points of group 0 elements as you go down the group	
Group 1	
What is the name given to group 1 elements	
Write the electron configuration for Sodium and Potassium	
Describe the reaction of group 1 metals with oxygen	
Describe the reaction of group 1 metals with chlorine	
Describe the reaction of group 1 metals with water	
State the trend in reactivity down the group Describe the trend in reactivity down the group	
Group 7	
What is the name given to group 7 elements	
Write the electron configuration for Fluorine and Chlorine	
Explain the trend in melting and boiling points as you go down the group	
State the trend in reactivity down the group Describe the trend in reactivity down the group	
Describe what happens in displacement reactions of halogen	
Explain what will happen in each case	

Types of bonding	
Define **covalent** bonding & state what type of atoms it is between	

Define **ionic** bonding & state what type of atoms it is between	
Define **metallic** bonding & state what type of atoms it is between	
Ionic bonding	
Determine the charge on the following ions Na Mg Br O	
Draw & explain the bonding in NaBr $MgCl_2$	
For each of the following, describe the advantage and disadvantage of that way of representing ionic compounds 1. Dot and cross 2. 3D model 3. Ball & stick	
Covalent bonding	
Determine how many covalent bonds each of the following need H C Cl O	

Draw the bonding in HCl NH_3 O_2	

State symbols	
Identify what the following state symbols mean (s) (l) (g) (aq)	
Structure & properties of ionic compounds	
Describe the structure of ionic compounds	
Explain why ionic compounds have high melting points	
Explain when, and why, ionic compounds can conduct electricity	
Structure & properties of small covalent molecules	
Explain why small covalent molecules have low melting and boiling points	
Explain why the boiling point of Br_2 is higher than that of Cl_2	
Structure & properties of giant covalent molecules	

State the properties of **diamond** Explain, in terms of structure & bonding, why it has these properties	
State the properties of **graphite** Explain, in terms of structure & bonding, why it has these properties	
State the properties of **graphene** Explain, in terms of structure & bonding, why it has these properties	

State the properties & uses of **fullerenes** Explain, in terms of structure & bonding, why it has these properties	
State the properties of **polymers** Explain, in terms of structure & bonding, why it has these properties	
Structure & properties of metals	
Describe the structure of a metal & why metals are malleable	
Explain why metals are good conductors of heat & electricity	
Conservation of mass	

State the conservation of mass law	
Explain why the mass might appear to increase in a chemical reaction	
Explain why the mass might appear to decrease in a chemical reaction	
Calculate the M_r	
Calculate the M_r of the following MgO Na_2O $Mg(OH)_2$	
Moles	
Describe what a mole is	
State the Avogadro number	
Write the equation for moles Rearrange for mass and M_r	
How many moles in 16g of H_2O	
How much would 6 moles of CO_2 weigh?	
0.5 moles of an element has a mass of 6g. Identify the element.	
Concentrations	
Describe what concentration is	
Give the equation for calculating moles from a concentration	
Calculate the concentration of 0.20 moles of NaOH in 150 cm^3	
Calculate the number of moles in 200 cm^3 of 0.10 mol/dm^3 HCl	
Calculate the concentration of 0.150 mol/dm^3 NaOH in in g/dm^3	
0.30 moles of NaOH is dissolved in 300 cm^3 of water. Calculate the concentration in mol/dm^3 & in g/dm^3	

Acid, alkalis & pH	
State what ions acids produce	
State what ions alkalis contain	

State what the pH scale is and where acids, alkalis and neutral substances can be found	
State the colour of acids, alkalis and neutral substances in universal indicator	
Explain the difference between a strong and a weak acid	
Explain the difference between a dilute and concentrated acid	
Explain the link between pH and the concentration of hydrogen ions	
Neutralisation	
Describe what a neutralisation reaction is	
Write the ionic equation for neutralisation	
State what can neutralise an acid	

Predict the products of the following neutralisation reactions	1. Iron hydroxide + Nitric acid → 2. Potassium oxide + Hydrochloric acid → 3. Sodium hydroxide + Nitric acid → 4. Lithium hydroxide + Hydrochloric acid → 5. Magnesium oxide + Nitric acid → 6. Iron hydroxide + Sulphuric acid → 7. Calcium oxide + Hydrochloric acid →

Electrolysis	
Describe when an ionic compound can conduct electricity	
Describe what electrolysis is	
Name the electrodes used in electrolysis	
What charge do metals usually have?	
So which electrode will a metal ion move to?	
What charge do non-metals usually have?	
So which electrode will a non-metal ion move to?	
Predicting products of electrolysis	

Predict the products of the following molten compounds, stating at which electron each product will be formed 1. Potassium Chloride 2. Sodium Sulphate 3. Lithium Oxide 4. Copper Chloride 5. Magnesium Bromide	
State what additional ions are present in the electrolysis of an aqueous compound	
Explain how the product is determined at the negative electrode	
Explain how the product is determined at the negative electrode	
Predict the products of the following molten compounds, stating at which electron each product will be formed 1. Potassium Chloride 2. Sodium Sulphate 3. Lithium Oxide 4. Copper Chloride 5. Magnesium Bromide	
Extraction of aluminium	
State the name of the ore aluminium is contained in	

State the chemical name for this compound	
Explain why this ore can't be used in electrolysis to produce aluminium	
Describe what is added, and explain why, to enable the electrolysis of this ore	
Describe the process of the extraction of aluminium from this ore	
Explain why the positive electron needs to be continually replaced	
Balance the equation for this process	$Al_2O_3 \rightarrow Al + O_2$

Reactivity series	
Explain what determines the reactivity of a metal	
Explain what the reactivity series is	
Explain how the reactivity of a metal could be experimentally determined	
Describe the reactions of potassium, sodium and lithium with acids	

Describe the reactions of magnesium, zinc and iron with acids	
Describe the reaction of copper with acids	
Displacement reactions	
Describe what a displacement reaction is	
Write a word equation for the reaction of Potassium & Sodium chloride	
Define oxidation and reduction in terms of electrons	
Write a symbol equation for the reaction of Potassium & Sodium chloride	
Write a set of half equations for the reaction	
Explain if the sodium, and the potassium, have been reduced or oxidised	
Reactions of metals and oxygen	
Describe what happens when metals react with oxygen	
Write a word equation for the reaction of magnesium with oxygen	
Reactions of metals, metal oxides and metal carbonates with dilute acids	
Describe what happens when metals react with acids	
Write a word equation for the reaction of magnesium with hydrochloric acid	

Describe what happens when metal-oxides react with acids	
Write a word equation for the reaction of zinc oxide with nitric acid	
Describe what happens when metal-carbonates react with acids	
Write a word equation for the reaction of iron carbonate with sulphuric acid	
Extraction of metals	
Explain why gold can be mined directly	
Explain how metals are extracted from their ores	

Endothermic and exothermic reactions	
Explain what the conservation of energy is	
Explain what an endothermic reaction is	
Explain what an exothermic reaction is	
Give examples of exothermic reactions	
Give examples of endothermic reactions	

Describe what the activation energy is	

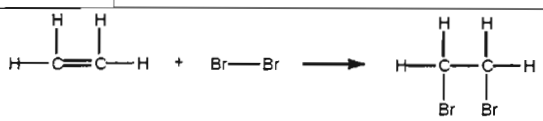
Reaction profiles

Draw and label reaction profiles for endothermic and exothermic reactions	
Practical work	

Energy change of reactions

Explain what happens to the bonds in a chemical reaction and if these process are endothermic or exothermic	

Calculate the energy change of the reaction & determine if this is an exothermic or endothermic process	



Bond	C-C	C=C	C-H	C-Br	Br-Br
Energy (kJ/mol)	348	612	412	276	193

Topic 1 – Energy	
What is energy?	
Name 8 energy stores.	
What are the 4 main energy transfers?	
What is the law of conservation of energy?	
What is the formula for kinetic energy?	
What is the formula for gravitational potential energy?	
What is the formula for elastic potential energy?	
What is the formula for work done?	
What is the formula for power?	
How is energy dissipated?	
What is efficiency?	
How can we improve efficiency?	

What is specific heat capacity?	
What is the formula for specific heat capacity?	
What are the main energy resources?	
Which energy resources are renewable?	
Why are fossil fuels non-renewable?	
What are the environmental issues of fossil fuels?	
What are the advantages of renewable energy?	
What is base load electricity?	
Which energy resources are reliable?	
Which energy resources are unreliable?	
What is thermal conductivity?	
What is insulation used for?	
What is a Sankey diagram?	

Topic 2- Electricity	
What is current?	
What is the unit of current?	
What is potential difference?	
What is resistance?	
What is the equation linking V, I, and R?	
What is the equation for charge?	
What is the equation for energy transferred?	
What is the power equation using voltage and current?	
What is the power equation using resistance and current?	
What is the mains electricity supply in the UK?	
What colour is the live wire?	
What colour is the neutral wire?	

What colour is the earth wire?	
What does the earth wire do?	
What is the frequency of UK mains?	
What is a direct current (d.c.)?	
What is a series circuit?	
What is a parallel circuit?	
What happens to resistance if you add resistors in series?	
What happens to total resistance in a parallel circuit?	
Why do appliances have a fuse?	
What is the National Grid?	
Why is electricity transmitted at high voltage?	
What do step-up transformers do?	
What do step-down transformers do?	

Topic 3 – Particle Model of Matter	
What are the three states of matter?	
How are particles arranged in a solid?	
How are particles in a gas?	
What is density?	
What is the formula for density?	
What is internal energy?	
What happens to internal energy when temperature increases?	
What is specific heat capacity?	
What is specific latent heat?	
What is the formula for energy change in state?	
What is the latent heat of fusion?	
What is the latent heat of vaporisation?	

What is the behaviour of gas particles?	
What happens when gas particles collide with walls?	
What happens to gas pressure if temperature increases?	
What is the effect of volume on pressure (at constant temp)?	
Why does heating a gas increase pressure?	
What is absolute zero?	
What is the unit of pressure?	
Why does a sealed container explode when heated?	
Why is gas compressed in cylinders?	
What does a heating curve show?	
What happens to temperature during a change of state?	
What does melting mean?	
What is evaporation?	

Topic 4 – Atomic structure	
What are the three subatomic particles?	
What is the charge of a proton?	
What is the charge of a neutron?	
What is the charge of an electron?	
Where is most mass in the atom?	
What is the relative mass of an electron?	
What is an isotope?	
What is radioactive decay?	
What are the three types of radiation?	
Which radiation is most ionising?	
Which radiation is most penetrating?	
What blocks alpha radiation?	
What blocks beta radiation?	
What blocks gamma radiation?	
What is a half-life?	
What are the dangers of radiation?	
What is contamination?	
What is irradiation?	
What is background radiation?	
What is a nuclear equation?	
Why do scientists wear lead aprons near radiation?	
How is radiation used in medicine?	
What is nuclear fission?	
What is nuclear fusion?	
Why is fusion not used in power stations?	

Topic 5 - Forces	
What is a force?	
What is the unit of force?	
What is a contact force?	
What is a non-contact force?	
What is the force of gravity on Earth?	
What is weight?	
What is the formula for weight?	
What is the difference between mass and weight?	
What is a resultant force?	
What happens when the resultant force is zero?	
What is work done?	
What is the equation for work done?	

What is the unit for work?	
What is elastic deformation?	
What is inelastic deformation?	
What is Hooke's Law?	
What is the unit of spring constant?	
What is speed?	
What is the formula for speed?	
What is velocity?	
What is acceleration?	
What is Newton's First Law?	
What is Newton's Second Law?	
What is Newton's Third Law?	
What affects braking distance?	

Topic 6 - Waves	
What is a wave?	
What are the two types of wave?	
Give an example of a transverse wave.	
Give an example of a longitudinal wave.	
What is the wavelength?	
What is amplitude?	
What is frequency?	
What is the wave speed equation?	
What is reflection?	
What is refraction?	
What is the electromagnetic spectrum?	
Name three electromagnetic waves.	

Which EM wave has the highest energy?	
Which EM wave has the longest wavelength?	
What are X-rays used for?	
What are gamma rays used for?	
What is a danger of ultraviolet (UV) rays?	
How do we hear sound?	
What medium does sound travel fastest in?	
Why does sound not travel in a vacuum?	
What happens to frequency if pitch increases?	
What does the ear convert sound into?	
What is ultrasound?	
What are seismic waves?	
How are waves used in sonar or echo sounding?	

Topic 7 - Magnetism	
What is a magnet?	
What are the two types of magnet?	
Where is the magnetic field strongest?	
What is a magnetic field?	
How can you show a magnetic field?	
What happens when like poles are near each other?	
What happens when opposite poles are near each other?	
What is an induced magnet?	
What are magnetic materials?	
What is an electromagnet?	
How can you make an electromagnet stronger?	
What is the motor effect?	

What does a motor do?	
What factors affect the force on a wire in a magnetic field?	
What is a solenoid?	
What does reversing the current do to the magnetic field?	
What is a relay?	
What is magnetic flux density?	
What happens when a current-carrying wire is placed at 90° to a magnetic field?	
How does a loudspeaker use magnets?	
What is electromagnetic induction?	
What is a generator?	
What do transformers do?	
What are transformers made of?	
Why are transformers only used with a.c.?	